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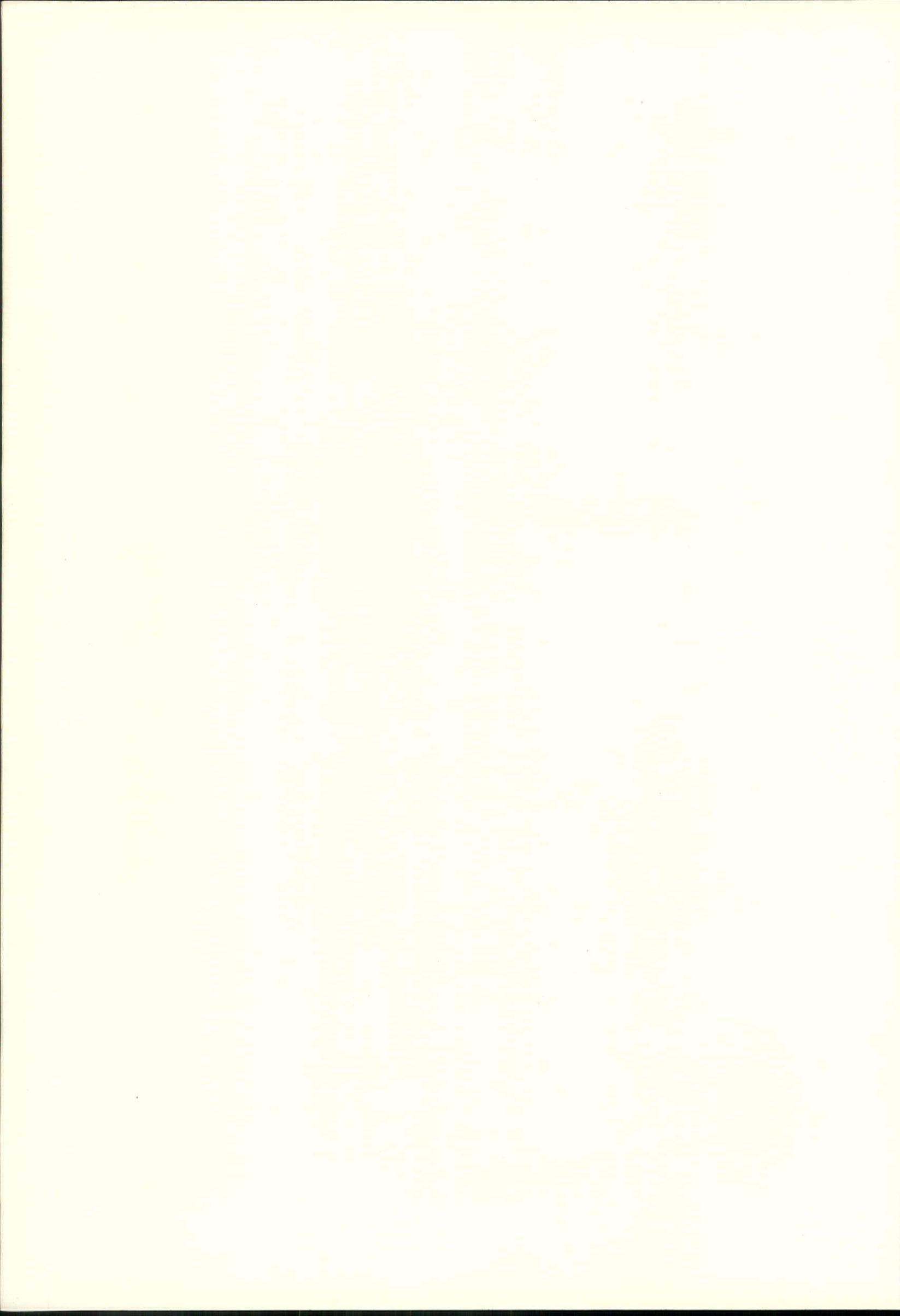
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# THE AMERICAN ARCHITECT

AND

## BUILDING NEWS

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# The American Architect and Building News

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THERE is so much about the recent partial collapse of the roof of the Charing Cross station that justifies apprehension, that the hysterical condemnation of iron and steel delivered by a man of the standing of Mr. T. G. Jackson, R. A., is very unfortunate; for the general feeling seems to be that, first of all, the public must be assured that Mr. Jackson is absolutely and inexcusably wrong, while examination of this particular case was a quite secondary matter. It appears to be the general opinion that the failure was due to the snapping of the tie-rod of the bow-string arch that formed the second principal from the end of the train-shed. This allowed the crown of the arch to sag with its roof covering, drawing toward itself the next principal, and finally the wind-screen or glazed filling of the gable end of the shed, all giving way slowly until the lattice girder making the lower edge of the wind-screen was dragged from its support and fell; its fall sending over the brick walls upon which the roof trusses rested, and so finally allowing the wreckage to reach the ground. There is testimony that fifteen minutes elapsed between the moment when the tie-rod was heard, and seen, to part and the moment when the wreck was complete. This providential slowness of action is probably one of the reasons why the loss of life was not greater. For the moment this is enough to say about this particular accident.

BUT if we consider the accident as merely typical of possibilities, it becomes really alarming. Here was a roof built only forty-five years ago, a roof well built and well designed; yet, after less than half a century, it has failed, not through any vice of design, but solely through and because of vice or flaw in the particular material of which it was built. "Vice" seems the more proper term, since it is hardly fair to charge the disaster to any "flaw" of material or workmanship, the structure having endured for nearly fifty years. The rather startling lesson to be drawn from this accident seems to us to be this: Examination of the wrecked and unwrecked portion of the roofs is said to reveal the

fact that the integrity of the members of the roof trusses had been impaired—in places seriously impaired—by oxidation; and, further than this, the structure gave evidence that it had not been properly cared for by the railway corporation. Now, if a great railway corporation which must, of course, understand the necessity of watching carefully over its metallic structures, and which has a large and competent force of engineers and mechanics constantly occupied in watching and caring for them, has allowed so important a structure as a great train-shed roof to get into such evil state as alleged, what is likely to be the condition of metallic structures of about the same age which have not throughout their term of life been under the eyes and charge of skilled observers? For fifty years the great English and American iron-works have been turning out and erecting, merely as so much merchandise, great metallic roofs, now scattered everywhere over the globe and sheltering all varieties of industries. Have these great roofs been, are they being, properly watched and cared for? Americans, who, familiar with the way their own railroads misuse their train-sheds, may think the Charing Cross roof was subject to an excess of sulphurous acid fumes from the engines' smokestacks, should remember that engines are not allowed to enter the Charing Cross station, and that consequently the metal-work was subjected to merely the general atmospheric conditions that prevail in London. Those inclined to support metal construction as nearly impeccable may be inclined to ask: "If metal construction has the vices that are alleged, why is it that there have not been more failures amongst the hastily-built, ill-designed and worse cared-for railroad bridges in America?" The answer is simply that the growth of traffic and the increased weight of rolling-stock have caused the replacing of the early bridges long before time and fatigue had developed the vices of their material. But there has not been the same reason for replacing the early roofs, and it may well be questioned whether some of them are still protected by a factor-of-safety.

THE Boston Society of Architects will very much regret having to take up arms against the new Mayor of Boston, whose first act it was to restore to their former positions the three members constituting the School-house Commission, so wrongfully deprived of office by Acting-Mayor Whelton during his short dream of omnipotence. For this exhibition of fair-minded good sense the Boston architects are properly grateful, and, as we say, it will be distasteful to them to oppose strenuously, as they must, what appears to be a pet project of the city's new official head. In his inaugural message Mr. Fitzgerald is so ill-advised as to revive, and warmly recommend for adoption, one of the most immoral schemes that have ever had birth in Boston. The possibility that the much-needed new city-hall should ever be erected on the already too small Public Garden cannot be contemplated by thinking men without indignation; but, fortunately, there are so many men of such different

classes who are already indignant that, supposing the proposition could be referred to the public at once, it would be "snowed under" beyond recovery, in spite of the fact that the statute enabling, in 1859, the creation of the Public Garden expressly provides that "nothing herein contained shall render it unlawful to erect a city-hall in the Public Garden." This essentially permissive proviso would seem to make it quite possible for a Mayor who "does things," as Mr. Fitzgerald aspires to be, to take some practically irretrievable action in the matter, disguising his steps with the astuteness of the experienced politician. It is against such a surprise as this that the excellent Legislative Committee of the Boston Society of Architects must be peculiarly awake.

THE last time this immoral proposition was brought forward we pointed out that, since the city officials themselves seemed to acknowledge that there was no real reason why the city-hall must be in the very maelstrom of commercial activities, there was an ideal site which there were good reasons for selecting, in spite of its great cost. As our opinion is unchanged, we will recommend once more that there be taken, by right of eminent domain, by the Metropolitan Park Commission, subject to the city's right to erect upon some portion of it a municipal building commensurate with the city's needs and of dignity to befit its site, all that land to the north of the Public Garden bounded by Beacon, Charles, Mount Vernon and River streets. This site, if not beyond rivalry, would at least be an extremely good one for the building in question, while as a matter of urban improvement the result would justify the expense; for, by clearing away these blocks of old and low dwelling-houses not only the beautiful Charles River Basin would be merely, as now, the private possession of cooks and maids living in the rear sides of Beacon street houses, but the River-bank Parkways of the Metropolitan Board would be married to the system controlled by the Boston Park Commissioners. Even if the land is not desirable for a city-hall site, we hold that it is pre-eminently a proper "taking" for the Metropolitan Park Commissioners to have under consideration.

IT is a poor rule that doesn't work both ways, and the Trenton, N. J., *Times* is only logical—and its logicalness throws an interesting side light on the architects' license laws—when it remarks: "When the architects begin to boycott the State and cities, it is about time for the Legislature to take a hand and repeal the act of 1902, which creates a monopoly in architecture in New Jersey." We italicize, merely to show that this New Jersey editor, at least, understands the real intent and meaning of these license laws, however much their beneficiaries may strive to disguise the disagreeable truth from themselves and from others.

WE take rather a personal interest in a "spite-fence" war that is just now raging in Cleveland, partly for the reason that the aggrieved party, Mr. T. F. Laist, was the first holder of the *American Architect* Traveling

Scholarship, and partly because his enemy, if the allegations are true, seems to have done a very unhandsome and unusually mean thing, even for a millionaire. It is alleged that, finding that Mr. Laist, who had secured a ninety-nine-year lease of certain lots on Euclid avenue, could not be persuaded not to erect thereupon a "terrace" or apartment-house, now actually called the "Del Prado," his wealthy neighbor voyaged to Washington and there made known to the Supervising Architect that his representative at Cleveland during the construction of the new Post Office was engaged in speculative building. Now, whether Mr. Laist was merely exercising his unquestionable right to invest his own money as would any other capitalist, whether he was actually pursuing his professional vocation as an honest "sundowner" according to the accepted traditions of Government employ in Washington, or whether he had really transgressed the bounds of professional propriety, we do not know. But as the alleged complaint was laid about the time of the issue of the reform edict against "sundowning," it was only natural that Mr. Laist's dismissal should follow the filing of the complaint, and again it is only natural that he should oppose in every way the maintenance of a constant reminder of his injury in the shape of a "spite fence"—now threatened to be in steel, since a city ordinance forbids the building of a wooden fence near enough to the Euclid avenue line to allow of its doing all possible damage to the offending "Del Prado."

IN a recent issue of *La Construction Moderne*, M. Ravon, Secretary of the Committee on Jurisprudence, in answering an enquiry, incidentally opens our eyes to a possible further claim that high apartment-buildings may have to our abhorrence. In explaining the rights of co-proprietors of a building, M. Ravon points out that, while no one of them may at his will make alterations in those parts of the structure that the co-proprietors use in common, each of them may at his pleasure make all the changes that please him in those parts of the structure that belong to him, "provided that he does no injury to the stability of the building, nor causes any wrong to his co-proprietors." On Fifty-ninth Street and other places in this city, apartment-houses have been built, sometimes by groups of friends and sometimes by speculating builders, on such terms that the fee of the apartment—usually an entire floor—passed to the tenant. If, then, the French view of an owner's rights should obtain in this country, architects might find their "creations" improved, story by story, with the striated artistic whims of the proprietors of the several stories in question. This architectural bedlam seems a logical possibility—since at present there is, we imagine, no law against it—while as an artistic impropriety it is no more of a crime than the present aspect of any street in the city now offers to one who has regard for the unities of urban architecture. That this is so can be proved by imagining the aspect of the street, so far as color, material and mass go, if the buildings facing upon one block should be revolved vertically upward on the corner until their several vertical façades become but the horizontal fronts of the several stories of a single building.

NOTES ON REINFORCED CONCRETE.<sup>1</sup>

THE important element in all concrete is the cement. While the other ingredients, composing the most of the bulk, may be varied to almost any extent and are comparatively inexpensive, the cement is the binder upon the quality of which the strength of the concrete depends. Before the invention of Portland cement, the natural cements had been used for concretes for years, but on account of their slowness in acquiring strength, and the uncertainty of the resulting mixtures, the use of such concretes was limited to a large extent to mass work and filling. Upon the discovery of the process of manufacturing a cement which would set in a reasonable time, wet or dry, and would rapidly acquire a strength nearly as great as its final, began a development of construction in this direction, which is even now only in its infancy.

Engineers are apt to be conservative, even more so than architects. We are suspicious of innovations, and rightly so, for we cannot take chances in the construction of buildings, bridges, dams, etc., which are intended to last for generations, and upon the security of which thousands of lives depend. At the same time, we cannot all of us wait for somebody else to do the experimenting, and we should all share the responsibility of broadening the application of a worthy innovation. By carefully considering successful experiments in certain lines, we can often assure ourselves with sufficient positiveness that a slightly different application will be successful. It is in this way that the field of usefulness of concrete has widened and is now widening in constantly expanding circles.

During the phenomenal growth in the manufacture of Portland cement in this country during the past twenty years there naturally was evolved a great variety of specifications, so that one scarcely knew how to properly describe the material. This condition is now somewhat improved.

The first step in standardizing specifications was to devise rules for making tests. This work was undertaken by a special committee of the American Society of Civil Engineers, appointed several years ago, and the result of the labors of the committee in this direction was embodied in a report which appeared in 1903. This report described in detail a method of conducting every part of the work of preparing samples and conducting tests. It has been published in most of the engineering periodicals, and also by many technical societies, and is now pretty generally adopted throughout the country. It has become a general custom to specify that "all tests of cement shall be conducted in accordance with the recommendations of the committee of the American Society of Civil Engineers," and this clause may safely be inserted in any specification.

The next step towards correlating requirements was taken by the American Society for Testing Materials, which, by a committee, drew up a "Standard Specification" for natural and Portland cements, which was adopted by this Society about a year ago, and which has since been adopted by other engineering associations and is becoming more and more the type upon which American specifications are modeled. This specification, while fixing certain definite limits, allows some latitude in others, so that the purchaser can, if he like, call for a very high grade cement, or, if the work will warrant it, for a second-grade product, which will not develop quite as much strength, but may be used economically where the greatest strength is not required.

This fact points to the conclusion that cements are of different classes. This is undoubtedly the case. No dealer will admit that his brand is second-class, but it does not stand to reason that all can be the best, as the advertisements would have us believe. There are plenty of brands, however, that run so uniformly good that a failure in any test is rare, while there are others that should not be used for important work without rigorous testing.

Reinforcement in concrete work has many advantages, all based upon the fact that it strengthens the material in the one way in which it is deficient, namely in tension. Roughly speaking, concrete has from eight to ten times as much strength in compression as it has in tension; but the difference is really greater than this, because in the process of setting there is always a liability to cracks, which may be so minute as to be invisible, but which may wholly ruin its tensile strength. Moreover, in building concrete structures it is generally impossible to place the material continuously and not allow parts to become set before new material is joined to them. Where a setting

joint occurs it is practically impossible to develop much tensile strength. It is therefore a safe rule never to count upon any tension in the concrete, but, wherever tension can under any circumstances develop, to use steel.

At first thought it may seem as if, in ordinary building construction, there would not be many places where tension would develop, but this is far from the truth. Of course, we all know that the lower surface of a beam or slab is strained in tension, and we readily admit that if concrete is used for such members, we must reinforce these parts. Do we also think of the fact, equally apparent, that every beam or slab that is made monolithic with adjacent beams or slabs is strained in tension at its top, over and near to the points of support? The overlooking of this important fact is accountable for more cracks in concrete construction than any other one cause. But there are other characteristics of concrete that produce tension—namely, shrinkage during setting and temperature changes.

The tendency to shrinkage cracks can be overcome by reinforcement, though the exact amount of steel necessary for the purpose is one of the questions upon which experimental research has thus far shed little light. It is conceded that if the area of steel in the cross-section amounts to one per cent. of the area of the concrete, it will surely prevent shrinkage cracks; but in most cases it seems likely that considerably less steel will accomplish the same result. It is safe to say, however, that shrinkage must always be reckoned with and allowed for, and we cannot be too careful in providing for it.

Tensile strains are produced by temperature changes, for the reason that concrete expands and contracts as the temperature rises and falls, to a much greater extent than many other materials of construction, such as stone, brick and wood. Its coefficient of expansion is almost exactly the same as that of steel.

The effect of reinforcing a wall is not to introduce an element with a different coefficient of expansion, but rather to give the material a tensile strength. The steel alone has sufficient elasticity to more than balance the temperature changes.

The effect of combining steel with concrete is apparently to give the latter a certain ductility. This effect is particularly noticeable in reinforced slabs. If a concrete slab without reinforcement is loaded it will break down suddenly before it has deflected appreciably. On the other hand, if the slab is reinforced, it will show an almost incredible deflection before it breaks or even before cracks appear. It has been held by some that the steel changes the character of the concrete in some mysterious way, so that the molecules flow and readjust themselves in a deformed position. M. Considère, the French engineer, has experimented by removing concrete from an overstrained test-piece, and found that it retained a considerable tensile strength. On the other hand, American experimenters have discovered minute cracks on the tension side of loaded slabs developing at deformations not far in excess of those which would have ruptured unreinforced beams. It seems most probable that the cause of the apparent ductility of the reinforced slab is due to the fact that, as long as the concrete adheres perfectly to the reinforcement throughout its length, no cracks can develop which are wide enough to be visible, though there may be an infinite number each of infinitely small extent. As soon as the steel begins to slip, however, which it most certainly will, about the time it reaches its elastic limit, the cracks will localize at the point of greatest strain, and will soon show themselves. A fact which points to this condition is that we never notice any cracking sound during a test of concrete slabs. It is always something of a surprise when we find the first crack that it has formed without our hearing it.

The bearing of this peculiar effect of the reinforcement in producing apparent ductility upon tensile strains due to temperature and shrinkage is that by using a sufficient amount of steel we can prevent entirely the localizing of cracks, and it is not probable that where cracks are kept so small as to be invisible they can be at all harmful.

The question frequently arises in large buildings whether it would not be better to provide expansion-joints where motion can take place freely. This method sometimes has to be resorted to, but it is beset with difficulties greater than might at first be imagined. The only way to make a true expansion-joint seems to be to make a complete physical separation of the two parts of the building, each standing on its own bottom, and with no members transferring shear across the joint. Naturally such joints must go through the outside walls and their architectural effect must be taken into account.

<sup>1</sup>A paper, by Mr. J. R. Worcester, C. E., read before the Boston Society of Architects, Dec. 5, 1905.

The applications of reinforced concrete to buildings are not confined to any one part, but may include practically the entire structure. It may almost always be used in foundations in one form or another, and for many types of foundation-work it is extremely valuable. In some locations also a great economy can be effected in the retaining-walls, by the thinning of which both materials and space are saved.

In connection with the use of reinforced concrete in foundations, a word should be said with regard to the danger to the steel of corrosion. When first it was proposed to use steel in such work, it was thought by many that the concrete, being more or less porous, would allow water to reach the steel and that it would be sure to rust. This fear has proved to be unfounded, and we can safely assume that where the reinforcement is well covered with the concrete it will not rust.

Reinforced concrete has been used to some extent for columns, and it has a field in this direction—within certain limits. The limitations, as they appear at present, are dependent upon two considerations, namely, the size of the columns, and the question of how much the concrete can be injured by fire.

With regard to size, we find that concrete columns are bulky, particularly in high buildings. For instance, in an eleven-story office-building in Boston, concrete columns in the first story would require an area of cross section of about 3 per cent. of the floor-space. That is, for a spacing of 15 ft. x 20 ft., they would need to be about 3 feet square. This clearly indicates a limitation in one direction. It must be admitted that authorities are not in very close agreement as to the allowable strains for columns, and we know that office-buildings to the height of sixteen stories have been supported on reinforced-concrete columns. The wisdom of this may be demonstrated later.

As to the effect of fire on concrete, it has been proved that a sufficiently intense heat applied to concrete through a long enough time will lessen its compressive strength. It was also shown in the Baltimore fire, that columns with reinforcement near the surface were liable to crack, along the line of the rod, from the heat of a conflagration. It is still a matter of debate whether sufficient heat can be generated by a fire within an incombustible building to injure the columns to the danger-point. If so, we clearly have another limitation to their use, for it must be borne in mind that a column is a more vital part of a high building than a floor, from the fact that the whole building depends upon a column, while only a limited portion depends upon the floor.

There are still other difficulties in the application of reinforced concrete to columns, though these are mainly of a practical nature and will undoubtedly be overcome as time goes on.

The above disadvantages are referred to, not to frighten architects out of the use of concrete in columns, but merely to warn them that there are a good many problems in this direction which have not been fully solved.

The use in beams and girders of reinforced concrete is not by any means as problematical as in columns. While the last word has by no means been said as to the wisest and best way to proportion these members, we know enough to proportion them with reasonable economy and with abundant assurance of safety. There is one requisite in the design of a building in which concrete girders and beams are to be used economically, and that is to allow sufficient depth. If you allow only as much as would be required for steel beams and their fireproofing, you are likely to get into trouble. You should have a little more, perhaps 3 or 4 inches. By wasting materials you can often get along with the same space, but only at the expense of materials and an increase of your dead load. Until recently one feature of the design of beams has been frequently overlooked, and that is the shear. This has resulted in a number of unnecessary failures. A steel beam is very rarely weak in shear, but a reinforced concrete beam is pretty sure to be, unless the designer provides for this strain. Concrete itself is only a little better in shear than it is in tension, and there is as much need of providing steel to withstand the one as the other. The shear that causes failure in this class of work is not the vertical shear, but the horizontal shear. The arrangement of steel which is adopted to resist the shear is not always the same. It sometimes takes the form of vertical stirrups, and sometimes a part of the horizontal steel is bent up towards the end of the beam in a diagonal direction. Sometimes both methods are employed.

The consideration of beams leads us to what is the most familiar use of reinforced concrete, and that is in slabs. A slab is nothing but a beam of which the width becomes so

great as to fill all the space of the floor. This increase in width has the important effect that we usually have ample concrete to resist the shear without reinforcement. In slab construction the first use was made of reinforcement.

Many systems of reinforcing slabs have been devised and most of these systems are good, provided the amount of steel is properly determined. There are, however, some features of the construction that must not be overlooked. The dealers in different forms sometimes make claims for their product that cannot be safely admitted. In calculating the strength of a slab, we must consider that the steel is concentrated at the centre of gravity of the metal, and this must be placed high enough above the bottom of the slab so that the whole of the steel will be properly fireproofed. In some cities it is required that there shall be at least 2 inches of concrete below the bottom of the steel. Here in Boston, however, this has never been required, but common prudence would dictate that there should never be less than three-quarters of an inch. It is also claimed that some bars are better than others because of their high elastic limit. Theoretically this is true, so far as the point where cracking will take place is concerned, but engineers are conservative about allowing greater strength to be figured for this reason: because the increased elastic limit is obtained either by stretching the bar by some process of distortion, or by using a high carbon steel, either of which methods tends to produce brittleness and decrease the ductility.

As to the advantage of using a distorted bar on account of its greater grip on the concrete, it may be said that in slabs, there is very seldom a case where greater adhesion is necessary than will naturally occur between a plain section and the concrete.

A word should be said with regard to cinder-concrete in connection with slabs, for it is in this class of work that cinders are used. Cinder-concrete differs from stone in having for an aggregate a soft, light, porous material instead of a hard, solid, non-porous substance. The result is that it has a low crushing-strength, a low modulus of elasticity, and is liable to greater variations in strength on account of the difficulty of determining the quality of the cinders. On the other hand, cinder-concrete is fully as fireproof as stone concrete, if not more so; it is lighter, and it has the property of allowing a nail to be driven into it and holding the nail with considerable tenacity. As a result of these qualities, it is safe to say that while cinder-concrete may be used for fireproofing, in some cases for partitions and roofs and for filling, it should never be used for slabs having any considerable span or where subjected to any great strains.

The use of concrete in walls is attended with some difficulties, and at best does not show the same relative economy over other forms of construction as is met with in the case of floors. The difficulties are partly because the outside face of a wall must have some attention paid to its appearance, and if built in the usual way, with board forms put together, hit or miss, the appearance will not be pleasing. Another trouble is that where exposed to the outside air there is more effect from temperature-changes and shrinkage than in interior work. A third objection to this use is in the fact that, generally speaking, there is very little concrete in proportion to the amount of forms necessary, which means that the cost per cubic foot is high. Walls have sometimes been built of concrete without reinforcement, except possibly in the way of lintels over windows, the walls being laid as thick and heavy as they would be if built of brick, but in this sort of construction there is grave danger of cracks. Others have been constructed with reinforcement, both horizontally and vertically, using very thin walls between piers. They have also been constructed with a double thickness and a hollow space between. The reinforced walls have generally been found satisfactory, so far as danger from cracks is concerned, and so far as the writer is aware, no difficulty has been experienced from dampness when only a single shell has been used, though it is quite possible that there have been such cases. The double wall is supposed to be safer in this respect, and is generally unobjectionable except in the matter of expense.

Thus far we have been considering only walls made of monolithic construction. There is another type coming into use, and that is concrete blocks. These have been used in the West much more largely than in this vicinity, but they are gradually working into this region. There are a large number of patented processes for producing concrete-blocks, and it is said that

under favorable circumstances they can be made and laid up much cheaper than any other form of masonry.

Of course, by the use of blocks it is possible to avoid two of the greatest difficulties with monolithic construction, namely, the question of forms, which are wholly dispensed with, and the difficulty of surfacing.

In order to make this concrete-block construction reach its greatest economy, it would be extremely desirable if some general units could be decided upon for the dimensions of blocks, so that walls could be constructed without excessive cutting and fitting. If this were done, there is no doubt that blocks could be used to great advantage. As to the strength of these walls, it may be safely assumed that walls of the same thickness as brick can be made with very considerable hollow spaces and still have greater strength. It is quite possible that we shall get to using considerably thinner concrete walls than the present brick walls. Of course, in the block construction no reinforcement is used, and we do away with the danger of shrinkage-cracks, for the reason that each block gets its shrinkage while seasoning before being laid in the wall. Temperature-changes will, of course, take place, and this fact must necessarily be taken account of, though generally speaking any cracks from this cause would occur in the joints where they would be so minute as to be invisible.

Much has been said of late as to the relative economy of concrete construction compared with other forms, and if the cost of lumber goes on increasing we shall hear more in future. There are so many indeterminate quantities involved in this question that it is impossible to formulate any definite rules of general applications. We may, however, assume certain conditions and work out a comparison which sheds a little light on the subject.

Take, for instance, a steel beam 10 in. x 25 lbs. as a basis of comparison. This at 4c. per lb. erected, will cost \$1.00 per lin. ft., if not fireproofed.

A hard-pine timber, to have equivalent strength according to the Boston Building Law, would need to be about 9½ in. x 14 in. This at \$60 per M., erected, would cost 66½ cents per lin. ft.

A concrete beam by itself would need to be, with an economical proportion of steel, about 12 in. x 18 in., and would cost about 97 cents per lin. ft. If, however, the beam is monolithic with a slab floor, so that it forms a T section, the slab being say 4 in. thick, the portion of the beam below the slab might be 5 in. x 14 in., costing only about 52 cents per lin. ft.

The last system has the advantage over the other two of being fireproof. The steel beam can be made so, at an additional cost of, say, 20 cents per lin. ft., making its cost nearly three times that of concrete.

To carry the comparison a little farther, suppose this beam to be one in a mill-construction building, and compare the cost of the floor of one bay 8 ft. wide per lin. ft., using for non-fireproof construction 3 in. under-flooring and ¾ in. finish, and for fireproof construction a 4 in. slab, including a granolithic finish. We find that the all-wood construction would cost about \$2.46 per ft. of bay; the wooden-floor-steel-beam construction about \$2.80; the all-concrete construction \$2.85 per ft., and the steel beam with concrete slab, the beam being fireproofed, about \$3.53. It should be noted, however, that in the last two cases, on account of the greater dead weight we have less capacity for live load. To bring them up to the same live capacity we should have to increase the cost of the concrete up to \$2.99 and the steel to \$3.83. This means that the concrete system would cost only about 6% cents per square foot more than the cheapest possible construction and about 10½ cents less than the common fireproof construction.

In closing it may be interesting to speak of a few concrete buildings in this vicinity, from which it is possible to obtain a very good idea of the appearance of the work, and by keeping track of how they wear, we shall, in time, learn of the permanence of the construction.

There is a little building near the lower end of State street, built a little more than a year ago by the Aberthaw Construction Co. for the Boston Transit Commission, under Mr. E. L. Reed's superintendence, that is well worth a close inspection. It is only a covering for a stairway one story high, but it is very perfect in its execution. The reinforcement in this is complete. The walls are solid and monolithic, and the surface was obtained by picking and hammering.

At Beverly are the concrete shops of the United Shoe Machinery Co. These were built in 1903 by the R. L. Fosburg

Co., beginning in the dead of winter. The construction is monolithic, with vaulted walls, and floors and columns are all of reinforced concrete. The surface of the outer walls was hammered. Mr. F. M. Andrews, of Dayton, O., was the architect.

In the summer of 1904, the Aberthaw Construction Co. built a contagious-ward for the Waltham Hospital, from Mr. E. L. Reed's design and under his supervision. This building is monolithic reinforced concrete, throughout, with vaulted walls, having a hammered surface.

During the last few months, the Eastern Expanded Metal Co. has constructed the Park Square Motor Mart for the Jordan estate, from the design and under the supervision of Mr. E. T. Barker. This is a notable building from the originality of the design. The exterior is covered with sheet metal, and so are the interior columns, which are cylindrical. These columns were cast into the metal shells which served as forms, though supported by a lagging of wood. There are some very long-span girders in the floors, and the interior fire-walls are made of reinforced concrete. No surfacing has been attempted on the interior concrete, it being left as cast in the forms.

At Brockton, the Eastern Expanded Metal Co. has also built, this summer, an eight-story office building for the Anglim estate, designed and supervised by Mr. J. William Beal. This is of reinforced concrete throughout, except for a facing of brick, and is of the skeleton type of construction, the walls being single thickness, monolithic, with thin panels between piers. A visit to this building would well repay anyone contemplating this type of construction.

#### PAINTING.<sup>1</sup>

A GOOD painter will often get better results with a fair paint than a poor workman will get with a praiseworthy one. The method of application is about as important as the quality of the paint used, for the reason that a layer of air and water which it may hold exists upon all surfaces. This layer of air prevents close adherence of the paint to the surface, and it can only be gotten rid of by thoroughly brushing the paint out onto the surface and into the body of the material underneath. A distinguished British painter and author writes: "The less paint that is put on at each operation, consistently with a proper covering of the ground, the better will be the ultimate result be. Less paint and more painting," he impresses as a need "to quite 90 per cent. of his painter students." The personal equation always counts in painting as it does in almost everything else. From experiments with an ocular micrometer in connection with a microscope, we find that single coats of the same paint may vary in thickness from 1/500 inch to 1/1,000 inch. The variations in thickness from these extremes and intermediate points are due to the varying pressure of the brush under the hands of the painter. Much of the poor work done nowadays results from the quality of the tools purchased by or supplied to the painters. We insist that a good workman to do good work must have good tools to work with; that is, brushes not over 3½ inches wide and full or thick with good, stiff bristles. For the highest class of work we prefer what they call down East "pound brushes"—that is, round brushes with good, stiff okatka bristles in them, not less than 6 inches long. With one of these properly bridled, a painter can do more and better work in a day than it is possible for him to do with the ordinary flat brush that is usually furnished him, and which costs little less. The good workman will always pay special attention to the coating of edges, and those parts of a structure where water and dirt will lodge, and to the filling in of all crevices, beads and mouldings to prevent the incursion of water. These hidden parts are often the vital ones in bridges or in buildings of steel-cage construction, and they are those which should have the most vigilant and constant attention.

The durability of paint will be affected by the number of coats applied—e. g., two coats of paint will wear better than one; three coats of paint will wear better than two and four coats of paint will wear better than three. The theory upon which we design coatings, both for wood and for metal, is, that the primer or foundation coat should be considered as structural material whose function is both to exclude air and moisture from the material underneath it and to form a receptive surface for subsequent coats. It is further our theory that in the sequence of coats this primer or foundation coat should dry more quickly and harder than any one covering it. Where it is desired to finish a structure in white, or in a light tint composed largely of a white

<sup>1</sup>Extract from a paper by Mr. Houston Lowe, read before the Engineers' Society of Western Pennsylvania.

pigment, we have reason to infer that it is wise to limit the number of coatings applied to three, exclusive of the primer; the reason for this limitation being that our knowledge includes no inert pigment which, when used alone with linseed oil, will have sufficient hiding power to serve as a satisfactory paint pigment. The consequence is that to produce a good paint in white or some light tint it is necessary to use pigments like white-lead or zinc-white that react with the oil and continuously weaken it until its power as a binder is finally destroyed. With paints made from inert pigments and linseed oil it is undoubtedly true that, provided a sufficient interval be allowed to elapse after each coat for it to dry and harden, the greater the number of coats and the greater the total thickness of the layer, the greater will be the degree of impermeability to air and moisture, and also the greater the degree of resistance to atmospheric influences.

Linseed oil in drying takes something from the air—viz., oxygen—and gives off something to the air—viz., carbon-dioxide and water. Mulder describes the process beautifully and calls it "the breathing of the drying oils." The things favorable to the drying of oil paints are light, pure, dry air and moderate artificial heat. The things unfavorable to the drying of all paints are a humid atmosphere, darkness, noxious gases and low temperature. The amount of time which should be allowed to elapse between coatings of any given oil-paint will vary so much with the location of the structure, the kind and condition of the surface, the quality of the paint, the atmospheric conditions when the painting is done, and for the first few days after it is done, that it is obvious no set period of time can be named. However, a painter who is interested in his work can always determine whether one coating is fit to receive another by noting its lustre, the time when the paint no longer sticks to the dry skin of the finger, and the time when the layer cannot be moved under heavy pressure. Blistering, cracking and peeling of paint are often due to the fact that under-coats were too elastic when they were painted over. If a piece of work be painted coat upon coat of oil color before each coat is sufficiently dry, the movement and shifting of the under-coats in their effort to obtain oxygen for their proper hardening will either rupture—i. e., crack—the top coats or lift them up in the form of blisters. Pearce, in his excellent book on painting, says that four days is not too much to allow for the proper drying of oil color which will nominally dry in twenty-four hours. The period may be shortened by additional driers; but a good rule is to allow all paint to stand four times as long as it takes to arrive at superficial dryness.

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## ILLUSTRATIONS.

NO. 213 MAYO STREET, RICHMOND, VA. MEASURED AND DRAWN BY MR. G. R. TOLMAN, ARCHITECT.

**M**AYO STREET before the war was one of the principal residential streets of Richmond; but, fallen from its former rank, for many years this quarter has been inhabited by colored people, always poor and sometimes virtuous.

If this house has any particular history, diligent inquiry has failed to reveal the fact. The exterior is simple and well proportioned; an air of respectability and reserve pervades it, that quality which succeeding generations of builders and "Arketeks" were unable to see or feel.

The entrance has a charming character of its own: it gives to a well-proportioned oblong hall, enriched with dado, plaster cornice and coffered ceiling. The stairs in the rear are screened off by curved-topped, slatted, double swinging half-doors, harmoniously disposed by a reversed curve under an elliptical arch.

These stairs, 3' 7½" wide, light and fragile as they seem with their three-inch square turned columnar newels, in height equal to the stair width, stand firm and strong to-day. All this in spite of the fact that daily and nightly for years drunken men and women have crawled up and down them, heeling from port to starboard, with tacks loose and three sheets in the wind—the hand-rail and slender balusters serving as their mainstay or parent stem from which they radiated in more or less graceful curves. One may conclude that their stability (I refer to the stairs) is due to the fact the balusters are inserted into the rail in such a manner that the longway, 1¼ inches, is perpendicular to the sectional axis of the rail, thereby giving more base and bearing. The drawings will more fully explain this, also the well studied manner by which the rail is carried over the newels on the half-landing of the flight which, together with the ramp up to them, make a continuous hand-rail from story to story.

The well-proportioned standing-finish throughout is hand-wrought, in portions varying slightly in detail, each fitted to its place. The muntins and stiles of windows are unique as to their moulded surface, giving a pleasing effect and style of their own to the whole window.

The frieze panels over doors and windows to parlor and dining-room are decorated by wood-carving executed by a free and knowing hand, conventional in treatment yet showing the characteristics of each type, so that they may be readily identified. Whether executed on the solid or applied, there was no way to ascertain, as removing the paint for any considerable area was out of the question. It is slightly undercut, and the fact that none has come away is a bit of evidence for its solidity. The freely rendered oak leaves, for instance, hardly ever repeat themselves exactly, but all swing together as an harmonious whole, showing the undulations of the leaves in keeping with their character without imitating nature too closely. The doors had narrow stiles, with the wide lock-rail usual to the Georgian period. This wide rail, by the by, gives a unity of feeling to the whole door.

The door and window caps are particularly simple, but graceful and pleasing, their heavy projection and broad top would give a natural resting place for rare plaques and other decorative features, a very sensible and appropriate place to put such things when one has no private museum attached to his house. The plaster cornices, light and expressive, were placed in all the rooms of first and second stories, evidently to emphasize their form, thereby fulfilling one of the elementary principles of good decoration. Why this familiar feature of the Georgian period is not more frequently developed by modern architects one fails to understand. Simple, direct, and American by long residence, capable of almost infinite variation, it is a logical motive suggestive of a purpose, and not of a chateau in France or castle in Spain.

It may be noted there are but two rooms upon a floor, yet the impression made upon the visitor is not of a cramped tenement but a spacious mansion, due entirely, I think, to the well-proportioned parts and attention given to scale in the unity of the whole.

The dumb-waiter in the dining-room was too small to pass up a roasted turkey, but ample for a few black bottles, unless the guests were all four-bottle men, then they could come up in relays and the darkeys could do the rest—they always had plenty of them and they could be relayed also.

From this dining-room one could pass out onto a very broad two-decked piazza or "gallery," by two windows so arranged with swing-doors at bottom as to afford ample head-room: from the gallery there were steps leading down to the back yard.

The kitchen was under the dining-room and connected by door and opening in wall, evidently to pass food through, with a room to the front, which may have been a breakfast-room or childrens' dining-room. From this room there was a small lobby giving to a side entrance, from the passageway, thence by steps up to the street level, all this floor being on a level with the back yard. There were brick quarters for the servants in the yard, which contains a tree of a century's or so growth, evidence of the age of the premises.

This estate was on a high land breaking away into a steep bluff directly in the rear. One could overlook the Shockoe Creek Valley, a small tributary to the James, the windings of that river and the hills beyond. There always being a breeze blowing up from the river on the hottest days, the site is cool and comfortable.

Not far from the junction of Shockoe Creek and the James River was formerly a natural stone platform serving as the only landing in dead water for boats coming up the James, as the river forming the southern boundary of Richmond was full of falls and rapids. Here the Indians gathered and all the early pioneers of this section. This point has long since been filled up; while the creek serves as a handy sewer, the bluff, valley and hills remain.

While this house may not form a large section of frozen music, it exhibits marks of design and must have had an intelligent maker, it never was palatial, but in its old age it plainly shows it has been what it professed to be, a comfortable, attractive American home.

STAIRCASE AND MANTELS IN SAME HOUSE.

DINING-ROOM DETAILS IN SAME HOUSE.

SKETCH DESIGN FOR CHRIST CHURCH, WEST HAVEN, CONN. MESSRS. H. M. CONGDON & SON, ARCHITECTS, NEW YORK, N. Y.

The church is designed to be built of local stone plastered inside, with an open-timber roof and cypress trim. Seating capacity 410 in the nave, 34 singers and 8 clergy in the choir, and in a "nun's gallery" over the north chancel aisle there is room for an auxiliary choir of a dozen or more women; the organ being placed in a similar gallery opposite. Cost about \$35,000.

ROOD AND CHAPEL SCREENS: PLATES 10-17.

The screens of S. Petronio, Bologna, range from the later Gothic to the middle Renaissance. The earlier screens are similar in comparison to that of St. Mark's and, as in that example, colored marbles are employed. But in S. Petronio some polychrome decoration is also used.

In the few early examples of Rood-screens in Rome, all Gothic influence is lacking and the most conspicuous example of chapel screens—that in the Vatican—is quite Classic in detail and composition.

The marble screen in the Sistine Chapel, the illustration of which composes the greater part of this number, was built in 1473 from the designs of Baccio Pintelli. The chapel in which it stands, the Capella Sistina, is so called from its builder—Six-

tus IV. The room is oblong in shape, being 133 feet long by 45 feet wide; the choir occupies over two-thirds of the chapel.

The walls beneath the windows were originally hung with tapestries worked from the "cartoons" of Raphael, but are now painted with representations of hangings. The upper part and ceiling contain a series of remarkable frescos by the most famous artists of the fifteenth century who were employed by the Pope to decorate this private chapel in a manner which indicates, to-day, the lavish use of wealth by the Church at that period.

The artistic value of these frescos and their place in the history of art make the casual observer indifferent to the beauties of the gallery and the screen, the only architectural decoration in the room. The screen, designed by Baccio Pintelli, the architect of the chapel, is about 45 feet long and 12 feet high. The bronze grille, filling the panels between the pilasters, has been removed to allow a better view for the "student" and the "personally conducted."

The historian may be able to explain the hiatus in the development of the church screen in Italy, for there are but few examples of the late Renaissance, and the scant Rococco examples vary greatly in type. The illustration shown, from Naples, is in the usual style, though free in detail, but the barrier at Brescia—it cannot be called screen—is a mere assembly of sculpture, a product of the wildest Rococco imaginings. W. T. P.

## NOTES AND CLIPPINGS.

**GRANITE FROM INDIA.**—It is said that India is to come into the market as a granite exporter, and that the employment of labor at sixpence a day will enable the material to be produced at a cost far below that at present ruling even in Norway and Sweden. The report appears to have originated in the fact that the Bombay Port Trust have resolved to use granite quarried in the southern portion of the Presidency for the entrances to the docks in that port. It is, however, a long step from the supply of merely local requirements, to an export trade upon a profitable basis, especially when it is borne in mind that the freight of granite from Europe to India is frequently as much as the first cost of the material itself, and labor in India, although it is to be had at an exceedingly low price per day, is so ineffective as to be very costly when the amount of production is taken into account. It should never be forgotten that the cost of labor per hour or per day is only one of the factors of cost. The real test is the cost of production—in other words, the efficiency of the labor employed. The principal benefit obtained by the introduction of labor-saving appliances is the increase of the efficiency of labor. One of the disadvantages of a low labor cost per hour is that the introduction of labor-saving machinery is discouraged, and although it is frequently argued that the development of labor-saving machinery tends to the decay of the handicraftsmen, yet it cannot be gainsaid that the countries in which machinery has obtained its greatest developments are just those in which wages are the highest per day with a cost of production relatively low.—*Stone Trades Journal*.

**DEATH OF THE SCULPTOR ARMSTEAD.**—Mr. H. H. Armstead, R.A., the well-known sculptor, died early in December, aged 79. His two most important works were the sculptured decorations on the Colonial Office in Whitehall and the southern and eastern sides of the podium of the Albert Memorial; for the latter he designed eighty-four life-sized figures in marble, representing the musicians, poets, sculptors and painters of the Italian, German, French and English schools and other "ideal" statues. He did the external stone sculptures at Eaton Hall, Warwickshire, the carved oak panels in "The Queen's Robing Room" at Westminster Palace, the marble reredos in Westminster Abbey, the great fountain in King's College, Cambridge, the statue of Lieutenant Waghorn at Chatham, and numerous statues and busts. "His work had monarchical character and simplicity, and will always be remembered as belonging to the front rank of British sculpture," says Mr. M. H. Spielmann.—*Builders' Journal*.

**WORK OF REPAIRING ST. MARK'S.**—The work of restoration at St. Mark's is going on satisfactorily. The scaffolding supporting the Apocalypse vault, which was most in danger, has been completed without injury to the decoration. The pillars of the tribune and the chief walls have been protected and supported. The preservation of the basilica is now insured.—*N. Y. Tribune, Jan. 1*.

**COPPER SULPHATE FAILS TO PURIFY WATER.**—The statement comes from Manila, Philippine Islands, that the copper sulphate

method of water purification has failed there. It will be remembered that a member of the Government's scientific staff at Washington made great claims for this substance as a safe and effective disinfectant for public water supplies a few months ago. Dilutions as high as one part per million were, he said, effective. The Bureau of Government Laboratories at Manila is reported to have gone into the subject very carefully and has found that even in strengths of 1 to 150,000 the copper required four hours to stop the growth of cholera germs. It was not considered safe to use this concentration in water drunk day after day by persons of all ages, so the method has been discarded. It is suggested that the failure at Manila, after its apparently successful use on water supplies in this country, may be due to some peculiarity of the water there, and that copper sulphate can only be effectively used on waters of certain compositions. It will be remembered that experiments made some time ago in England also seemed to discredit Mr. Moore's claims.—*N. Y. Globe*.

**THE "CHRIST OF THE ANDES."**—The placing of a colossal statue of Christ on the Argentine border between Chile and the Argentine Republic, 14,000 feet above the sea, occurred March 13, 1904. The base of the statue is in granite. On this is a granite sphere, weighing some fourteen tons, on which the outlines of the world are sketched, resting upon a granite column 22 feet high. The figure of Christ above, in bronze, is 26 feet in height. The cross supported in his left hand is 5 feet higher. The right hand is stretched out in blessing. On the granite base are two bronze tablets, one of them given by the Workingmen's Union of Buenos Ayres, and the other by the Working Women. One of them gives the record of the creation and erection of the statue; on the other are inscribed the words: "Sooner shall these mountains crumble into dust than Argentines and Chilians break the peace to which they have pledged themselves at the feet of Christ the Redeemer."—*Boston Transcript*.

**THE ART OF CROSS-EXAMINATION.**—A Devonshire architect was a witness in a county court dispute as to "ancient lights." The gentleman in question deposed that the light alleged to have been diminished was really as good as ever, and in proof of his assertion he said he went to the locus in quo with a very small print book and could read it easily.

Up rose counsel in cross-examination, and the following dialogue ensued:

"Have you it?" Witness: "Yes."

"What is it?" "The New Testament."

"What part of it did you read?" Witness: "'Woe unto you also, ye lawyers.'" (St. Luke, xi., 46.)

Amid laughter the cross-examination came to a speedy close.—*Sheffield Independent*.

**QUARTZ GLASS.**—Glass that can be heated white hot and then plunged into cold water without breaking would seem an impossibility, but it has been recently made an accomplished fact. It is made from Brazilian quartz pebbles heated red hot and then thrown into distilled water. Then the purest pieces are selected and welded into the oxyhydrogen blow-pipe into long stems like straws, from which glass vessels of any shape can be made. Thus far this quartz glass has been employed chiefly for making laboratory apparatus. A test-tube, however thin, made in this way will not break when a white-hot coal is dropped into it.—*Stone Trades Journal*.

**THE YERKES JAPANESE ROOM.**—To procure a Japanese room, says Mr. Will H. Low, the late C. T. Yerkes sent W. B. Van Ingen, a well-known decorative artist, to Japan with the exact measurement of the room to be decorated in Japanese fashion. Mr. Van Ingen consulted with the best authorities, and the result was a room built entirely over there, taken apart and brought here, with half a dozen artist artisans, who put the room together here. It is a very remarkable specimen of an excellent type of modern Japanese art.

**BRONZE STATUE OF HENDRIK HUDSON.**—Mr. Francis Bannerman has offered to erect at his own expense on Polopens Island, at the entrance of Newburgh Bay, a bronze statue of Hendrik Hudson, 30 feet high. His proposition was accepted by the Executive Committee of the Hudson Tercentenary Committee.

**THE LIBRARY OF ST. MARK, VENICE.**—The corner of the famous Sansovino Palace, containing the royal library, which was cut by the collapse of the Campanile in July, 1902, has been perfectly restored, without requiring the demolition of that part which was thrown out of place.

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THE spectacular catastrophe on Monday night at Haverstraw, N. Y., has many of the earmarks of perfectly inexcusable blundering on the part of some responsible person. It is not easy to comprehend how the working of a great clay-pit some two hundred feet deep should have been driven so close to a couple of streets full of inhabited houses as to make disaster almost inevitable. Whether the landslip was due solely to undermining by the brickmakers, whether frost or perhaps a leaky street water-main had anything to do with the accident, we do not know. But it is known that people were in a state of apprehension and that some of them had already vacated their houses; further, that when the first slight slip occurred people were awakened and help summoned. It was while the town firemen, who had answered the alarm, were trying to save furniture and goods that the final slip occurred engulfing thirteen houses and twenty-two persons, of whom six were firemen. The burning of the wrecked buildings merely made the state of the buried victims more irremediable. The accident has its special warnings for architects, who are responsible to their clients for the *vices du sol*, as the French law puts it, and it will be well for any architect, young or old, who is asked to place a building upon the crest of some bluff or river-bank where the presence of underlying clay strata may be suspected to take steps to inform himself as to the real facts and how the strata dip, and what the angle of rest suggests as to the chance of the proposed structure coasting, some day or night, down into the river below.

“A STROLL in any of our cities,” says the New York *Evening Post* in a recent editorial that may be found elsewhere in this issue, “or a glance at an album of Buenos Ayres will equally give evidence of the pervasiveness of the École.” And that’s the pity of it. The work of the École is “pervasive,” horribly so; but that is far from being proof that it is good and desirable;

it may be merely proof that it is fashionable, as much “the mode” in South America as it is just now in New York. No one more than we applauds and admires what there is to esteem and acclaim in the methods and practices in vogue at the École des Beaux-Arts; but what we do look forward to with no little apprehension is the unfortunate effect on the architecture of this country of the violent propaganda now being carried on by the Society of Beaux-Arts Architects. Are we to wear our “best clothes” every day in the week? Must we live on sponge-cake all the time and have never a taste of hog and hominy? Must we leave Beaux-Arts-embellished New York only to find Philadelphia, Cincinnati, Chicago, St. Louis, Salt Lake City and San Francisco all bedight with the same flummery? Traveling will have an unendurable sameness, if this is to be the case. Already one finds there is a terrible tameness in the modernized aspects of European cities, once so charmingly individual. Paris, Brussels, Dresden, Prague, Vienna, Buda-Pesth, Buenos Ayres, Valparaiso and Santiago might, architecturally speaking, easily interchange their addresses without loss, or be called Tweedledum or Tweedledee.

WE hold no brief from the established architectural schools, we simply dread the result that the American one-thing-at-a-time habit and a National School of Architecture under Beaux-Arts auspices must inevitably accomplish, when brought into working conjunction. After all, is not the Society of Beaux-Arts Architects possibly mistaking causes, in attributing the successes of its individual members exclusively to the merits of the Beaux-Arts system? In the greater number of cases these men entered the École after having profited by a more or less complete course in some American professional school, a training which, in some cases, had been preceded by a full college course for the bachelor’s degree, and it is precisely because of this better preparation that the average American record is as good as it is—that is better than the average French record—while, if credit is to be given exclusively to the Beaux-Arts system, the relative standing should, of course, be reversed, considering the accepted superiority of French temperament over American in all that concerns art. Further, there is to be considered the measureless influence of comparative observation made during the European travels which practically are part and parcel—and very important ones, too—of the education of every American pupil at the École des Beaux-Arts. To assign to a single cause results proceeding from so many contributing influences seems to us rather illogical.

IT would seem as if the National School of Architecture projected by the Society of Beaux-Arts Architects should have an influence of some kind—possibly a hostile one—on the establishment of that older scheme for instruction in art, the School of Fine Art, to be ruled over jointly by the National Academy of Design, Columbia University and the Metropolitan Museum of Art. It is satisfactory to learn that those interested in

the enterprise are resolutely at work trying to raise the half million dollars which the required building demands, and that their task has been lightened by the assurance that, if they succeed in raising only half the required sum, a few wealthy friends of art and artists have already pledged themselves to contribute a similar amount.

IT is also exceeding good news that the joint committee of the National Academy of Design and the Society of American Artists have at length formulated the conditions governing the proposed merger of the two societies which they are ready to submit to the consideration of the organizations in question. It is rumored that amongst the agreed stipulations is one providing that there shall be added to the roll of the Academicians twenty-five architects—or, rather, that the number of full Academicians may at some time include as many as twenty-five architects, and so equal the number of sculptor Academicians. As the number of Associates in all three branches of art is to have no fixed limit, it will be possible to have, in time to come, an indeterminate number of architects connected with the reformed and liberalized Academy.

IT is doubtful whether artists appreciate that they are favored as no other class is in the matter of free advertising in the daily papers, advertising which actually sells their wares and yet for which they have to pay nothing. Even authors have to pay more, for, indirectly, they have to bear the cost of the copies of their works which the publishers send out to the press for review. The newspapers are really very good-natured to painters and sculptors, even those which, as is alleged, are unwilling to give the name of the architect in connection with the illustration of the building he designed unless paid to do so, as for so much advertising. But while we have grown accustomed to having newspapers increase the income of artists gratuitously, it is still rather strange to find them publishing in their news columns the particulars of a competition for a pair of bronze doors for the Naval Academy Chapel, in place of relegating the matter to the advertising columns. Perhaps it is an indication of the growth of the general interest in matters of design. The competition in question is one to be held, under the auspices of the National Sculpture Society, to secure models for a pair of bronze doors for which Colonel R. M. Thompson, of the Class of '68, has provided fifteen thousand dollars. Until January 20, any sculptor can procure from the Society, at 215 West 57th street, New York, a detailed programme, a photograph of a model of the Chapel and other material, and then have until March 20 to deliver the required model at the Society's rooms, where judgment will be rendered by a jury consisting of Col. Thompson and Ernest Flagg and W. B. Chambers, architects, and Charles Grafty and D. C. French, sculptors.

THE vagaries of lawyers and judges are comparable only to the guilelessness with which material-men and building-contractors seem to conduct their business. Still, as "Jersey justice" is supposed to be the very best

brand, what seems to be a very extraordinary case of unfair ruling may be legally beyond scrutiny. A certain Hebrew Aid Society, of Perth Amboy, N. J., made a contract with a certain builder for the erection of a small synagogue at a cost of ninety-five hundred dollars. The builder, finding he was losing money, finally abandoned his contract and disappeared. The congregation then finished the building, apparently on credit, and paid into the Court of Chancery for the satisfaction of its creditors the unexpended balance of its building-fund, amounting to some thirty-five hundred dollars. At various times between May and November last, sundry creditors, as they discovered the true condition of things, served on the Society "stop orders"—whatever they may be. All this happened a year ago and the money paid in to court has been useless to any one. A week or two ago, the Vice-Chancellor, reaching the matter on his docket, took it up and ruled that he would deal chronologically with the claims filed, and finding that the first one filed was correct ordered it to be paid in full, and it was so paid. The curious—we hardly dare to say unfair—result of this ruling is that this eldest claim absorbed nearly twenty-five hundred dollars of the sum in the court's charge, and did not leave enough of a balance to pay even the next younger claim, which was for twenty-five hundred dollars, even, much less anything for the five other claimants whose unpaid bills foot-up some thirty-eight hundred dollars. The Society, by placing its possessions in the court's hands, evidently expected that even-handed justice would be done its unfortunate creditors, and we fancy that most business laymen will feel that all the creditors should have received "so many cents on the dollar."

THE "Waldorf-Astoria" in New York is, or used to be, we believe, the joint property of warring cousins, while the "Hotel Astor" belongs to the estate of but one of these; and he just now must experience a sense of jubilation when he discovers that the latter and newer hotel is marked up by the tax-assessors only one hundred thousand dollars—to \$3,300,000, that is, while the taxable valuation of the older establishment is advanced by more than a million and a half dollars—to \$10,700,000; becoming thus one of the most highly-valued buildings in the city, ranking close to the great Equitable Building at \$11,000,000. The assessors' list affords always an interesting study to the uninitiated, and one cannot help wondering why two adjacent houses in Fifth avenue, presumably occupying similar sites and neither enlarged nor altered since the last assessment, should have been advanced in value—one by \$25,000 and its neighbor by only \$15,000. The advance of \$800,000 on the Metropolitan Life Building is sufficiently accounted for by the progress that has been made on the newer portion of the great building; but we quite fail to find a satisfactory explanation for the fact that the valuation of the Produce Exchange Building remains unchanged at \$4,500,000 while the essentially similar building of the New York Stock Exchange advances by \$190,000—to \$4,990,000. One would suppose the Produce Exchange to be sufficiently within the Wall Street area to be affected in some degree by its always advancing values.

CHURCH TOWERS AND SPIRES.<sup>1</sup>

IN a survey of the development and design of English Mediaeval towers and spires, the prospect which stretches away before the mind's eye from Tudor to Saxon England is so extensive, and it may be viewed from so many standpoints, that it would be impossible in an hour's paper to do more than refer broadly, in some cases even superficially, to the more salient features which arrest the attention in such a survey. Moreover, the subject is so attractive, and so capable of being attractively illustrated, that many have taken in hand to set forth in order its principal features, and I shall not attempt to adduce any new facts or invent any new theories. It is difficult, indeed, unless one is content with minor examples, to find any illustrations which have not already been given in that excellent series of drawings in "*Wicke's Towers and Spires*," which, since its publication in 1855, has been regarded as the standard work on the subject. And it is a subject which is so dependent on illustration that I shall rely on the lantern photographs rather than on any words of description.

I will first illustrate the historical evolution of the tower and spire, and its employment in connection with the rest of the building, and then consider some special points relative to tower and spire design. The typical position for the tower in an English church is the centre of the west end, making, with the western terminations of the north and south aisles, a symmetrical façade. Usually it stands free on its three sides, but occasionally the aisles are brought up to its western face, as at Grantham. If the tower in this position forms the western termination of the nave, it contains on its west face, the central doorway and the west window. The whole composition is evidently intended to impress the worshipper as he approaches it from the front. It is the frontispiece, behind which the church lies more or less hidden.

This is still more the case with the typical cathedral front, where two towers flank the central doorway, and the composition is still less suggestive of the sectional outline of the nave and aisles behind, especially when, as in so many French examples, the central gable is masked by a horizontal arcade. It is not unlike, in its intention and conception, the façade of an ancient Egyptian temple, which masks the building behind, and in which the pylons flanking the central doorway may be compared to the western towers of the Gothic cathedral. Occasionally, indeed, a still more magnificent façade is presented, either by extending the screen beyond the towers, to flanking north and south turrets, as at Lincoln, or placing the towers themselves outside the aisles, and decorating the extended front with splendid sculpture, as at Wells, or, grander still, the arcaded caverns of Peterborough. At Exeter twin Norman towers form the transepts, while Ely is the only example of a cathedral with a western tower on the central axis, a position so common in the parish church. Some of our cathedrals have no western towers now remaining, as Winchester; and poor, indeed, do their fronts appear in comparison with those we have been considering.

The dome of the Byzantine and the lantern of Spain and the South of France becomes, in Normandy, the central tower, and no Norman or Anglo-Norman cathedral was complete without it. In France the loftiness of the high vault compelled her architects to substitute for the central tower the elegant, but far less imposing, timber flèche; and if, after contemplating the wonderful loftiness and airiness of her cathedrals we return dissatisfied with the low proportions of our own, let us find our consolation in the fact that this very lack of internal height has secured for us the retention of the central tower.

The typical Norman cathedral, then, had both central and western towers, as at Southwell, and it is only when all three are present that the English cathedral realizes its full majesty and becomes, in fact, one of the grandest works of man. It is possible that each tower was intended—after the Norman period—to carry its spire. Not a few had timber and lead spires at one time, which have since been taken down. Lincoln once had small timber spires on the western towers, as shown on old prints, and a spire no less than 523 feet high on the central tower. It is possible, too, that Peterborough was intended to carry spires on all its five towers, but Litchfield alone of all the cathedrals retains her triple spires, and these endow her with such grace that she becomes one of the most beautiful and distinctive in the country.

In the smaller Anglo-Norman churches a central tower, or, rather, one which occupies an analogous position on the central

axis at the eastern part of the nave, is not uncommon, as at Iffley. Occasionally a western tower also exists, and this tandem disposition recalls the twin towers so common in Auvergne, as at Issoire and Brioude and in other parts of Central France, although it is improbable that there is any historical connection between the two types. Ely, however, is the only English cathedral with this arrangement.

Of the Saxon towers still remaining many of them are in the centre of the west end, as at Earls Barton, and it seems not improbable that the western position of the tower in subsequent styles was due to a continuation of this essentially English arrangement, a supposition rendered the more probable by the rarity of central-western towers in Normandy.

If we pursue the subject backwards and ask what was the origin of these Saxon towers, we are led to the larger subject of the origin of the Romanesque tower, and to a consideration of those at Tours, Ravenna, Milan and Central Syria. But this would lead us astray from our present subject.

Although the central-western position of the tower is the typical one for the parish church, it is occasionally found on one side, as at St. Mary Redcliffe, Bristol, or All Saints, Stamford. At Wisbech the tower is almost detached from the church, and in the surrounding district may be found several instances in which it is wholly so. The magnificent tower of West Walton, some few miles away, forms, in fact, the lych-gate of the churchyard.

Detached towers are also a local peculiarity of Herefordshire.

While in an overwhelming majority the tower plan is square, the octagon is occasionally found, as at Stanwick; and in Norfolk and Ireland the round tower is frequent, in the former due to the use of flint and the difficulty of building quoins in that material.

Both Saxon and Norman towers must have been roofed with wood, and a simple squat pyramid, like those which the late Mr. Christian reconstructed on the Norman west towers of Southwell, must have been very frequent, because their construction would be the simplest and most direct, or the pyramid may have been set diagonally, as at Sompting. But timber spires must also have existed, for they are represented in old manuscripts. Their form, in all probability, resembled the ancient timber spires still existing at East Meopham and Newhaven, which, though not of actual Norman date, probably reproduce the design of the Norman originals. This form of spire is octagonal in its upper portion, the diagonal sides bending out below towards the angles of the tower, which they meet in a point. Its shape is due to the timber angle-pieces of the spire being framed into a collar, which is supported by the hip-rafters of the lower spreading sides. This type of spire is common in Germany, as at Erfurth, and also in Scandinavia, as at Alsog and Beo in Island of Gotland. Its character varies considerably according to the relative slope of its upper and lower portions. A fine modern example is that of All Saints' Church, Margaret Street, by the late Mr. Butterfield. Both this form of spire and the squat pyramidal roof were subsequently translated into stone, and the former may be found as late as the Perpendicular period, as at Bythorn. We may also suppose that an octagonal timber spire arose sometimes from a flat tower roof, and gave rise to that form of spire so common in France, of which Christ Church, Oxford, is an example. This form, however, like the simple pyramid, was destined to die out, while the broach spire which, if it did not originate in Northamptonshire, was certainly developed in that district, took its place in the Lancet period. The broach spire is, in the main, a copy in stone of a timber roof, and its cardinal sides come down over the sides of the tower and end in dripping eaves, but the broaches which fill the triangular spaces between the diagonal sides of the spire and the angles of the tower are of true stone construction, and, whether their sloped sides meet those of the spire high up or low down, will determine very much the general outline and character of the spire. At first these broach spires are of an obtuse angle and have bold spire lights. They appear as veritable stone roofs, and whether they rest on a slight cornice or corbel table, always overlap the walls of the tower to form dripping eaves. One of the noblest spires of this type is to be found at Frampton, a small village near Boston, hidden among trees. In the towers of the Lancet period, buttresses are sometimes employed in pairs at the angles—the diagonal buttress comes later—but they stop at the belfry-stage against the flat pilasters which have been retained from the earlier style. The staircase turret likewise stops short either of the belfry-stage or the spire eaves, and a corbel-table is carried between the angle pilasters so as to offer an unbroken square as seating for the spire. In some cases, as

<sup>1</sup>A paper by Mr. W. H. Bidlake, read before the Architectural Association, Dec. 15, 1905.

at Ely, Walsoken, West Walton, bold octagonal buttresses occur at the angles of the tower and reach to the cornice line. These must either have been finished with pinnacles, as at Oxford Cathedral, or have carried timber spirelets in conjunction with an octagonal timber spire over the tower, as at Sutton St. Mary. Possibly towers of still earlier date were similarly treated, as the Norman central towers of Norwich and Tewkesbury probably had timber spires. With the exception, however, of an occasional saddle-back roof, it is improbable that any towers were considered complete in the Lancet and Geometrical periods without a spire either of timber or stone.

As the style advanced the broach spire became more acute and loftier, and the broaches and spire lights less in proportion. The broaches, moreover, began to take to themselves pinnacles either at the extreme angle of the tower or at their apex against the spire, or midway up the slope. Lichfield central spire has two pinnacles on each broach. Next, the bottom spire light was no longer placed on the cornice, but higher up the spire, and the upper spire lights more frequently alternated on the diagonal and cardinal sides. Their gablets were frequently crocketed, and niches with crocketed gable heads were placed at the apex of the broaches lying back on the spire, as at Ketton and St. Mary's, Stamford. The spire itself becomes ribbed or ribbed and crocketed along its angles, and has an occasional horizontal band or moulding, and more pronounced mouldings and a more definite cornice marks its junction with the tower.

At length a momentous change takes place. Cornice and dripping eaves are alike abandoned, and a passage is made round the base of the spire, probably a practical innovation to facilitate the repair of the spire; for spires were more frequently struck by lightning in those pre-lightning-conductor days than at present. For safety's sake the passage required a parapet, as at Ashbourne. Although the parapet might slightly overhang the faces of the tower, being carried forward on the cornice, especially when pinnacles supported it at the angles of the tower, yet it was necessary to set the spire and its broaches in a little so as to allow room for the passage. And thus commenced the shrinking of the spire. Woodford is a simple example of a parapet carried round a broach spire; and, near by, Denford, across the meadows of the Nene, has a parapet carried round a spire of the timber type. Some very fine steeples belong to this Transitional type, and pre-eminent among these is Grantham. Not far away is Newark, evidently by the same architect. Heckington is a particular noble steeple of this type. It is of strong outline and fine proportions, and its large hexagonal pinnacles admirably support the lines of the spire. It has but little ornament—a little crocketing on the buttress gablets and some carved bosses in the cornice, and the belfry lights are single. It is one of those masterpieces which are independent of any added ornament for their beauty.

In the simple type of broach spire the lines of the broaches satisfactorily carried down those of the spire to embrace the angles of the tower, and, whether seen in front or diagonal elevation, there was a complete unity between tower and spire. Not so with the parapet spire. The first effect of the parapet is to introduce strong horizontal lines between tower and spire. Its second is to cause a certain shrinking of the spire to allow a passage round its base. The third is still more important, and more pregnant of future development. It results from the fact that, while the apparent breadth of the tower increases from the front and angle elevation in the ratio of the side to the diagonal of a square, that of the octagonal spire remains the same. Hence the spire which seems in correct proportion to the tower on front elevation appears too narrow and shrunken on the angle elevation, and the angle pinnacles in like manner appear to have moved away from it, leaving a disconnecting and awkward gap in the skyline, as at Solihull. As long as the broaches were retained their full height behind the parapet, as at Newark, this difficulty hardly presented itself. But hardly had the parapet been introduced when the broaches began to shrink and ultimately to disappear behind it. The church at Godmanhurst furnishes an example.

Then commenced a series of experiments to overcome this double difficulty, namely, the disconnecting effect of the parapet between tower and spire on the one hand, and the difference between the apparent proportions on the other. The most evident solution, and the one that was at first attempted, was to make the angle pinnacles of the tower so massive and tall that the tower should seem to be carried up into the domain of the spire, and the pinnacles themselves should, on the angle elevation, appear to support the spire and fill up the gap between its sides and the angles of the tower. Lichfield is an illustration of

this. These large pinnacles begin to appear, in fact, before the broach has quite disappeared, as at Heckington. Other fine examples are to be found at Oundle and St. Mary Redcliffe, Bristol. The disadvantage of this arrangement is that the pinnacles tend to block the passage round the spire. At Oakham the pinnacles, though still massive are rather smaller, and connected with the spire by horizontal masses of masonry, which are pierced so as to form bridges across the passage. It is the embryo of the subsequent flying-buttress.

The second method adopted was to keep the tower pinnacles comparatively low and subordinate them to an inner range which filled the space between them and the spire, as in the central tower at Chichester, or the more magnificent one of Salisbury. In fact, in this grand example, the problem seems solved. The inner pinnacles are a mean between the outer pinnacles and the spire, and the eye, following upward the lines of the tower, passes by easy steps from angle pinnacles to inner pinnacles, and from these to the spire itself. Tower and spire are welded together and the unity of the broach steeple is restored. Moreover, the angle view is equally satisfactory with that in front. Yet the parapet is not sacrificed, the tower and spire retain their respective characters, and there is not that confusion between them which one finds sometimes on the Continent, as at Freiburg, and St. Stephen's at Vienna, in which it is impossible to say where tower ends or spire begins.

An elaboration of this idea is to be found at St. Mary's, Oxford. Here, in place of the tower pinnacles each of the pair of buttresses at the tower angles carries an elaborate gabled and crocketed canopy over a sculptured figure, and the inner pinnacles are in two stages with similar elaborate ornament, the whole combining with the spire lights to form a cluster of richly-decorated gablets and pinnacles, from the centre of which the spire rises. This type of clustered spire reaches its fullest expression in the south flanking tower of the west front of Peterborough, in which graceful triangular spirelets rise between tower pinnacles and spire having one side of the triangular base adhesive to the spire, and the opposite angle carried by the tower pinnacle and allowing a clear passageway beneath. The height of the spirelets is so arranged that their apex is on the line drawn from the apex of the tower pinnacles to that of the central spire. In contemplating such an example as this one recognizes that the central spire is only one of a cluster, and has entirely ceased to represent the tower roof, as in such early broach spires as Frampton. It has, in fact, ceased to be an essential part of the tower, and has become only an ornamental accessory. It is, therefore, sooner or later, doomed to obey the inexorable law of extinction of useless members.

But there was yet a third way (to be seen at Higham Ferrers) of connecting the angle of a tower with spire, and one which became very popular with the Perpendicular architects. It is to put a small pinnacle at the tower angle, and connect it with the spire by a flying-buttress, a poor contrivance, but serving in some degree to carry the eye over the hiatus between tower, pinnacle and spire on the angle elevation. The buttress abuts against the centre of the diagonal side of the spire, and seems sadly to lack articulation, and its particular form suggests resistance to a thrust, which if it existed would make short work of buttress, pinnacle and all. Higham Ferrers and Rushden may be taken as typical examples of this method. Also Moulton and Whittlesea. The magnificent steeple of Louth is the only one in which the flying-buttress seems worthy of its position. No, I am forgetting, there is one at Newcastle, in that land of programmes, in which the flying-buttress has run away with the spire. At Middleton Cheney an inner range of small pinnacles is introduced, and these are connected by flying-buttresses both with the spire and the tower pinnacles. It suggests a tentative arrangement which, in the neighboring church of King's Sutton, is fully worked out. Here the inner pinnacles are of fine proportions, while the tower pinnacles are mere outliers but connected by a strand of stone which rather suggests open tracery than a flying-buttress. This really belongs to the group of clustered spires and is very elegant and beautiful.

We now come to the fourth and last method of uniting tower and spire—by the interposition of an octagon. This occurs in its most rudimentary form at Abingdon, which consists in little more than setting the spire on an octagonal drum and marking the junction by an embattled string. At Exton a beautiful little steeple, amid beautiful surroundings of wood and park, affords an excellent example of the employment of the octagon. The tower pinnacles finish in miniature embattled octagons, which assist in harmonizing tower and spire and giving breadth to the design. The octagon, however, seems so evidently to exist at

the cost of the spire that the latter looks somewhat strangled by it. But you will already have forestalled me and arrived at Coventry first. It is impossible to speak of the association of octagon and spire without immediately thinking of St. Michael's. While elsewhere in the Perpendicular period they were more busy with towers than spires, the Coventry people seem to have reared their spire as a vindication of the spire and a protest at its increasing neglect.

And a very noble steeple it is, although it excites our wonder as a *tour-de-force* as much as our admiration as a design. The truth is it looks a little too unstable: attenuation is written on every part; the octagon seems balanced on the tower, the spire on the octagon, and the weak ogee flying-buttresses add very little to the sense of stability, and rise too high from the tower pinnacles, which are themselves weak in outline. The corona of open panelling at Patrington serves a similar purpose with the octagon, and may almost be regarded as such. A fine design is here marred by the ridiculous straddle tower pinnacles and their flying-buttresses and the poor belfry windows. A quite unusual arrangement is found at Maxstoke Priory, where the lower angles are canted in great triangular slopes and the spire set on the octagon so developed. If at Exton the octagon is taken out of the spire, at Wilby it is no less evidently taken out of the tower. The three stages are too equal, and the tower is low in proportion, and appears crushed by its load.

It is on the same lines as this steeple that some of the large German steeples are designed, to which I have already referred, and in which the tower passes insensibly into the spire, as at Freiburg, St. Stephen's at Vienna, and Cologne Cathedral. At Graffham, near Huntingdon, the angles at the upper part of the tower are cut off by squinches carrying pinnacles to form an octagonal base to the spire, an arrangement of which Bloxham may be considered as an elaboration. But if it is true that in the Perpendicular period some of our most famous spires were erected, it is no less true that it is the tower which is characteristic of the style, as exhibited at St. Neots.

By this time the spire had come to be regarded so entirely as an ornamental adjunct and finish to the tower that there was no reason why, if the design required it, it should not be dispensed with altogether. Moreover, the spire was costly, and involved a more difficult problem in design and construction than a square tower with parapet pinnacles and a flat timber roof. Not that one would wish to disparage the Late Gothic tower, for it shares with the fan-tracery vault and the open-timber roof the honor of demonstrating to the world the vigor and originality of the English Perpendicular school.

That the Perpendicular builders were sensible of the value of the spire as a crowning feature of the design, the steeples of Coventry and Louth are sufficient witness, and they not infrequently erected timber and lead spires over towers which were otherwise complete without them, as, for example, the three towers of Lincoln. As Northamptonshire and Lincolnshire, with Peterborough as centre, is the home of the spire, so Somersetshire, with Glastonbury or Wells as centre, developed the most important school of tower design, although Norfolk and Suffolk may lay claim to many excellent examples.

The Somersetshire type is sufficiently distinctive, notwithstanding considerable variation in individual towers, that it can be at once recognized. Of lofty proportions, these towers are usually divided into three stages by string-courses, and the buttresses, which are in pairs, are set in a little way from the angle of the tower, allowing the string-course to peep out, as it were, at the angle. The buttress weatherings usually line with the strings and carry crocketed pinnacles set diagonally, and with one angle engaged with the buttress face above. Similar pinnacles flank the windows of the belfry-stages, pierce the centre of the parapet, or are employed at the tower angles with larger pinnacles to form a complex pinnacle system, in which at times an isolated pinnacle is hung out at the angle, supported by a grotesque below, and united above by a strand of stone to the main pinnacle. The parapets are usually embattled and have pierced traceried panelling, and occasionally, as at Glastonbury and Taunton, are very elaborate. In these cases the angle pinnacles are usually of open tracery work. The lowest stage of the west face is occupied by the Tudor arched door, enclosed within a square frame of mouldings, which are sometimes the plinth mouldings brought down with a west window over. Niches for sculpture are often freely used for surface decoration, and the coupled belfry windows are usually filled with a stone lattice of pierced quatrefoils in place of the usual oak louvres. Occasion-

ally, too, sunk quatrefoils form decorative bands beneath the main cornice or intermediate string-courses.

There are several fine towers outside the Somersetshire district which belong, more or less, to this type, as at Wrexham and Evesham. St. Neots, near Huntingdon, has an unusually fine tower for the district, with certain points of resemblance to the Somersetshire towers. But the strings and buttress weatherings do not line, the engaged pinnacle is of different design, and the belfry lights are insignificant, and go far to spoil the beauty of the design. The central portion of the parapet is carried up higher than the sides in a manner peculiar to this eastern district, other examples occurring at Huntingdon, St. Martin's, Stamford and Wisbech. A smaller, though not less beautiful, tower is to be found at Tichmarsh, in the land of spires, decorated with quatrefoil bands and gabled niches and crowned with a forest of pinnacles. Here, as in many east county towers, a band of quatrefoils is carried beneath the plinth weathering. There are a few towers carrying octagonal lanterns, as at Irthlingborough. At Lowick the whole design is of excellent proportion, and the octagon ends in a corona of pinnacles. But the grandest example is to be found at Boston, irreverently called "Boston Stump."

The central tower, that crowning glory of the English cathedral, differs from those hitherto described in that it stands on four isolated piers hidden by the adjoining roofs. As a consequence the bold angle buttresses are dispensed with, as there is no support for them, and the tower rises to the parapet without a break in its vertical lines. A comparison between the central and western towers of Canterbury will emphasize this point. Very frequently the central tower carries an octagonal thickening at the angles which carry the angle pinnacles, as at Lincoln. The western towers of this cathedral, though of rather later date, are designed on similar lines. Sometimes small diagonal buttresses are employed, feeling out, as it were, towards the angles of the crossing, as at Gloucester, with its reduced and improved copy at Malvern. Inasmuch as the central tower has to span the nave and transepts, it is necessarily broad, and, as it rises only two stages above the roof, its chief characteristic is its imposing mass, as at Hereford and Wells. Hedon is a fine example of a central tower over one of the larger churches, and Melton Mowbray over one of the smaller ones.

Many of the features of tower and spire design have already been noticed in the survey of their development. It remains to examine one or two points more in detail.

With the exception of the central towers, most towers have an upward diminution, not only to give them an air of stability but, when they carry spires, to counteract the optical illusion of their spreading outwards at the top, due to slope lines of the spire. This diminution is obtained in various ways: By setting in each stage on the string-course from the stage below, as in the Saxon towers and the Lancet towers of West Walton and Walsoken; secondly, by the diminution of buttress projection, as in the vast majority of towers; and thirdly, by giving a batter to the tower or to the buttresses, or both, as at Market Harborough.

Small towers occasionally have no buttresses; the majority have pairs of buttresses, either exactly at the tower angle, as at Grantham, or set in a short distance, as in the Somerset towers; a lesser number have diagonal buttresses, while not a few have an octagonal thickening at the angles. St. Margaret's, Leicester, has diagonal buttresses set upon the usual pair of buttresses below. Of the octagonal angled towers Magdalen Tower, Oxford, is a fine example. This tower also illustrates an important point in tower design, the severity and plainness of the lower stages, and the increase in lightness, elaboration and ornament towards the top.

The fenestration of the Lombard towers followed this principle, and Giotto's campanile is an excellent example of it. Lancet towers, on the other hand, are frequently covered with tiers of arcading over their whole surface, which extend even round the octagonal angles, as at Walsoken, Raunds and West Walton. Raunds has a unique decoration of zigzag weatherings, with the angles decorated by sunk quatrefoils. The staircase turret has already been referred to as stopping beneath the broach spire, or even below the belfry-stage. Sometimes it is incorporated with the angle buttresses, as at Heckington and Grantham, in the latter case carrying a larger pinnacle than the other tower angles. At other times it projects boldly from the middle of the face of the tower, or near one angle, or at the angle itself, and stops below the parapet, or is carried up above it. In the latter case it is often finished with an embattled top or spirelet.

Next to the main lines of stages, buttresses and strings the belfry windows claim our attention. They are, as it were, the eyes of the tower, and a wrongly light, as at Ringstead, does not look intelligent. Single belfry lights are to be found at all periods, from Polebrook and Heckington to York and Boston. These are often supported by blank panels at the sides, as at Denford and Frampton, or, to take later examples, by the traceried panelling of St. Peter's, Derby. But the general rule is to group the belfry lights in pairs. To more intimately associate them they may be placed beneath the same gabled weathering, as at Newark, or even under the same label, arched or ogee (All Saints, Stamford), or square (King's Sutton), or a crocketed pinnacle may be run up between them. As with the single lights the wall on each side may have flat panels of similar design to the belfry windows, as at King's Norton and Manchester, or the panelled decoration may be so completely carried over the surface that the belfry lights appear rather as interruptions in it, as at Gloucester. Or again, they may be supported by niches, as at Northleach. Less frequently the lights are arranged in triplets, as at Ketton and Kettering.

The lights themselves may have heads of all shapes—obtuse, lancet, ogee, or square-headed, as at Aldwinkle, and St. Peter's, Bath. In Northampton the belfry lights are filled up with a lattice of brick; in Somerset a stone lattice of quatrefoil tracery; elsewhere, generally with small oak louvres like Venetian blinds. In the great French towers the louvres are very large, and give a fine effect of shadow, as at Bourges. The tower frequently occurs, and occasionally the jambs and mullions are extended down below the sill to enclose a traceried panel, which may extend to the next string-course, as at St. Cuthbert's, Wells. The ringing-stage usually single and less conspicuous windows, although in some of the great towers and steeples they are double, and of large proportions and elaborate ornament; examples of such occur at Coventry, Louth, Wrexham and Taunton. The lowest stage of the tower facing west contains the grand door, for use on State occasions, with the west window over it forming, in many cases, one composition with it by having its sill on the tower hood-mould, as at Northleach, or being included within the same arched recess, as at Whittingendine. Many of these west doors are very fine, as at Kettering and Middleton Cheney, and are worthy of independent study. In the Northamptonshire district the west door is recessed with a shallow porch, which further emphasizes its importance. Such occur at Higham Ferrers, at Rushden, and at Keystone, and with these illustrations I will bring my paper to a conclusion.

#### FEDERATION IN ARCHITECTURAL EDUCATION.

"AN architect in America," it has been said, "is simply a draughtsman who has landed a job." If this be true, the problem of architectural education is simply that of doing the best one can by draughtsmen. It was in this belief that the Society of Beaux-Arts Architects, some years ago, opened classes in draughtsmanship and elementary design, admitting all comers, and following the method of competitive instruction which they themselves had learned at the great French school. The success of the transplanted system has been surprising. From the New York classes have come not only architectural draughtsmen of high quality, but also graduates who might claim the title of architect by a better right than the definition just quoted. In fact, the Paris prizeman of the new school receives the signal privilege of admission without examination at the mother school in Paris.

Inspired by their great success, the Society of Beaux-Arts Architects now makes the rather startling proposal that its classes should be recognized and supported by all the architectural schools in the country. This means more than the general acceptance of the Paris method: it involves the turning over of all practical instruction in architecture to a central school in New York, the outlying faculties retaining only their courses in mathematics, engineering, art-history, and, in general, the bookish subjects subsidiary to the main study of design. It requires, withal, that these established institutions shall make generous contribution of their funds to a new school to be developed from that so successfully conducted by the Beaux-Arts Architects. Naturally, a summons to partial harakiri—or better, to radical self-amputation—has not been obeyed cheerfully by the elected victims.

But we have to do, after all, rather with a matter of principle than of politeness. If our traditional schools of architecture are so bad as they are said to be, they must soon shrink to their

professors and stipendiaries; if the Beaux-Arts training is the sole excellent, it must prevail. All must admit that the plan of the Beaux-Arts Architects is thoroughly serious, and cannot safely be laughed down. For a generation and more Americans have brought back the training of the Paris ateliers, whose former students include with few exceptions the ablest of the younger architects. Moreover, the École des Beaux-Arts has at least worked out a system thoroughly practical and generally influential. A stroll in any of our cities, or a glance at an album of Buenos Ayres, will equally give evidence of the pervasiveness of the École. One might go farther and say that this system is not only the best, but that it is perhaps the only one that deserves a title implying doctrine and coordination.

Since the really simple methods of France are obscured by the jargon of graduates, a word of explanation may not be amiss. The instruction is, first of all, competitive; all the students of any grade work upon the same programmes and under identical limitations of time. The conditions for the imaginary buildings planned and designed by the students are, as near as may be, those of actual practice. For example, no student is told to design a porter's lodge, but one with stipulated accommodations, fixed entrances, upon land of a certain lie, in connection with a mansion of a certain style. Promotion depends upon achieving a satisfactory rank in a determined number of these competitions, and the aspirant not merely gains the advantage of superior criticisms of his own design, but profits even more by studying in the periodical exhibitions the solutions of the problem offered by his fellows. Awards of excellence are based largely on merit of plan, upon design in relation thereto, and strict conformity to the programme is required. No attention is paid to prettiness of rendering, and rather little regard is given to novel or ingenious handling of ornamentation. The eminently practical nature of the plan explains at once its attractiveness to American students and their success when once they have passed the rigorous barriers of the École. It is this system that its former pupils have transported to New York, and wish to establish universally.

The scheme, in general, contemplates a central school, superseding that of the Society of Beaux-Arts Architects, managed and supported jointly by the architectural schools of the country. This central body would fix the programmes for the entire federation, and would judge the drawings wherever made. It would thus control the practical instruction in designing, and draughting-rooms outside of New York, whether in university departments or elsewhere, would virtually become branches of the central school. Reciprocally, the existing architectural schools would be asked to open their archaeological and scientific courses to members of the classes in design, and to grant them diplomas upon examination. Such in brief is the project.

Its accomplishment must probably await a better understanding between the Beaux-Arts Architects and the faculties and alumni of our university schools of architecture. The archæologizing tendency in the university schools, which is unaffectedly scorned by the Paris contingent, is a necessary condition. In the absence of great monuments, we cannot count upon the student inhaling tradition and inspiration with the air he breathes, and must fall back upon the admittedly poor substitute of books and photographs. On the other hand, our architectural faculties have been by no means proof against academic mildew, and have been too slow to recognize the advantages offered by the training of the École. Some kind of reconciliation between the two is evidently desirable.

The classes of the Society of Beaux-Arts Architects were established with the very practical end of supplying trained draughtsmen, and the hope of turning out architects also. For this reason, the courses were open to all, without examination or other restriction. It is difficult to see how federation can be made with schools requiring for admission examinations or a college degree. It is probably true that any school of applied art must languish in academic surroundings. Architecture has fared only a shade better under such conditions than "Practical Politics," which was for a time assiduously cultivated at the University of Chicago. Hence a strong architectural school, managed by practical architects, and free from university entanglements, would be welcome. But, frankly, we do not see how the Society of Beaux-Arts Architects can expect much aid from the universities in founding such a school. An increasing interchange of courtesies between the more enterprising architectural schools and the New York ateliers there may undoubtedly be. To expect more in the near future requires a somewhat unrestrained enthusiasm.—*N. Y. Evening Post.*

## EFFLORESCENCE ON MASONRY.

IN a letter to the *Glasgow Herald* Mr. Samuel Ansell, of the local Technical College, has furnished the following account of his examination of the white salt found on stone in the new part of the Central Station. He says: "I collected some a few weeks ago and had it examined in the chemical laboratory of the Technical College, when it was found to be sulphate of lime. This sulphate would be formed by the sulphurous acid fumes acting upon the carbonate of lime which forms the binding material of the stone (in this particular stone there was 9 per cent. of carbonate), and converting it into sulphate of lime, which has no binding properties—the result being disintegration and decay of the stone. To see what effect the use of Portland cement as a mortar had on the conversion of the carbonate into sulphate of lime, I cut a piece of cement mortar out of a joint between two stones, and had the amount of sulphate of lime present in the mortar determined to see by this if the lime in the cement had neutralized all the sulphuric acid, also present in the cement. The result of the analysis was that the lime had neutralized all the sulphuric acid, so that there had been no free sulphuric acid left to act upon the stone and form the sulphate showing on its surface. The cause of the sulphate being at first formed near the beds and joints is, in my opinion, that these parts are kept moist by the evaporation of the water with which the mortar had been prepared, more especially where the joints had been 'grouted' or filled up with liquid mortar. The damp surface here provided forms a medium for the conversion of the sulphurous fumes into sulphuric acid, which, acting upon the carbonate, would convert it into sulphate of lime.

"If this be the cause, then I fail to see what good or preservative effect the 'seasoning' of the stone would have, especially in the case of stones where the carbonates of lime or magnesia form the binding material of the stone. No amount of air-drying in a purer atmosphere than we have in Glasgow will change the carbonate or make it less readily acted upon by sulphuric acid, so that when the 'seasoned' stone was built and soaked with water as a part of the building operations the same chemical action would set in as in the case of newly-quarried stone. Where the binding material of a stone is of a felspathic nature there will be present in the stone a quantity of alkalis in a soluble form, which on being exposed to the atmosphere would come to the surface of the stone and there in conjunction with the carbon dioxide in the atmosphere would form an insoluble silicate on the surface of the stone, which would have a preservative effect. To allow of this taking proper effect the stone would need to be cut to the exact shape and size, then allowed to season, for if the seasoning process was completed before the stone was cut the skin would be cut off, and as far as the stone was concerned, it would have been better never to have been seasoned, as there would be no reserve of sap in it to again form an impervious surface.

"Stone should be cut and built immediately on being quarried, and as little water used in the operation of building as possible. On no account should the joints of a stone be 'grouted' up; the joint can be properly filled with mortar without using 'grout' if only a little time and pains be taken. By the process of 'grouting' a quantity of water far in excess of what is required for the crystallization of the mortar is used. The surplus water has to evaporate through the stone to the surface, as already described. There is another objection to 'grouting' apart from the question of decay, namely, that of adding water to cement mortar which has already begun to crystallize."

## ILLUSTRATIONS.

SQUADRON "C" ARMORY, BROOKLYN, N. Y. MESSRS. PILCHER & TACHAU, ARCHITECTS, NEW YORK, N. Y.

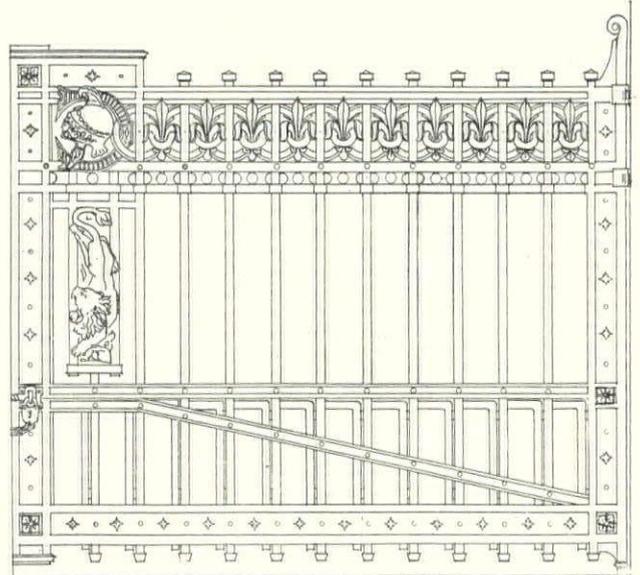
THE commission to design and erect an armory building for Squadron "C," N. G., N. Y., in Brooklyn, N. Y., was awarded to Pilcher & Tachau as the result of a competition. The professional advisers of the Armory Board were Prof. A. D. F. Hamlin, of Columbia University, and Mr. Griffith, architect of New York. An appropriation of \$500,000 was made by the city to cover the cost of the armory building.

The building will have a frontage of 260 feet on Bedford Avenue and a depth of 382 feet on President Street and 330 feet on Union Street. Provision has been made for a large administration building, shower-baths, locker-room, squad-room, saddle-room, lounging-room, officers' quarters, swimming-tank, riding-hall and a series of isolated stables.

The style of the armory structure is that known as "L'Art

Nouveau." It is the first building in this style to be erected in Brooklyn. Integrity of design and construction has been made the main thing in the composition. The façades echo not only the interior arrangement, but also emphasize the structural elements that enter into the make-up of the building. The details throughout are adapted to the material of which they are built and the whole structure gives a sense of homogeneity that is remarkable in American monumental construction.

As was natural in the problem of a cavalry armory, great attention was given the subject of the care of the troop horses. The stables are arranged in separate blocks. Each block is isolated from its neighbor by a 10-foot court. At the end of the stable corridors there are large windows, and, further, there is provided, at a height of 8 feet from the floor, a window for each stall. These lighting and ventilating facilities combined with an overhead ventilating scheme insure a perfect circulation of air and an abundance of light.



ONE VALVE OF MAIN GATE.

The stall floors are of concrete thoroughly damp-proofed with three layers of felt heavily coated with coal-tar pitch. The stall floors are covered with a grating of oak and drain into a gutter common to all stalls. This gutter grades to the centre of the stable, where a bell-trap provides a protected discharge. The central corridor of the stable has a base floor of water-proofed concrete, upon which a top floor, composed of common brick set on edge in cement, is laid. Common brick was employed for this corridor floor because it reduces the chance of a horse slipping, more than any other material.

Connecting the stables and lighted and aired from the stable courts is the mounting or service corridor. The troopers assemble here before entering the ring, access to which is provided by great double doors opposite each stable block. This 16-foot service-corridor makes a cut-off between the stables and the riding-hall and administration-building and eliminates the possibility of stable odors pervading them. It also isolates the different parts of the armory in case of fire.

The placing of the stables upon what is virtually a second floor, the south side of the plot being 12 feet lower than the north side, gives ventilation beneath the stables and provides a covered space for the introduction of feed and the carting away of refuse without nuisance to adjoining property. In the basement has been placed a rifle-range, 100 yards long; engine, boiler, locker, laundry, toilet and storage rooms.

The concrete roof of the immense riding-hall is supported by seventeen steel arches of the sickle form, so maximum strength with a minimum of weight has been achieved. The trusses are anchored at their south ends to a firm concrete foundation and further enclosed in the massive brick side-wall between the riding-hall and mounting-corridor. The north ends of the trusses are shod with a thick steel plate and a similar plate is set immovably into the foundation under each arch support. Between these plates are 3-inch friction-rollers, on which the upright rests and on which it may move freely inward or outward in response to temperature changes. On the north side of the riding-hall the truss uprights are not built into the wall, as on the other side. Free space, larger than that required for

NOTES AND CLIPPINGS.

the free movement of the steel, is provided. As the whole mass of the ring steel turns with the sun, extra space is allowed for this torsion. The dimensions of the riding-hall, clear of all obstructions, are 180 feet by 311 feet. The trusses are 80 feet high.

The roof of the riding-hall is composed of concrete slabs covered with a fireproof mineral roofing cement. The concrete slabs are 2½ inches in thickness and average 5 feet 6 inches in length by 2 feet in width. Specially constructed moulds were made in shape to conform to the lines of the roof of the ring. The blocks cast in these moulds consist of a rich cinder-concrete enclosing a No. 24 expanded-metal lath. Each of the blocks was cast with a tongue and groove. When set in place the tongues and grooves of adjacent blocks were made to fit close and the ends were bolted to the steel arch construction by means of splice-plates set in countersunk sections of the concrete blocks. After all blocks were set in place, the joints were pointed and a most satisfactory result was obtained.

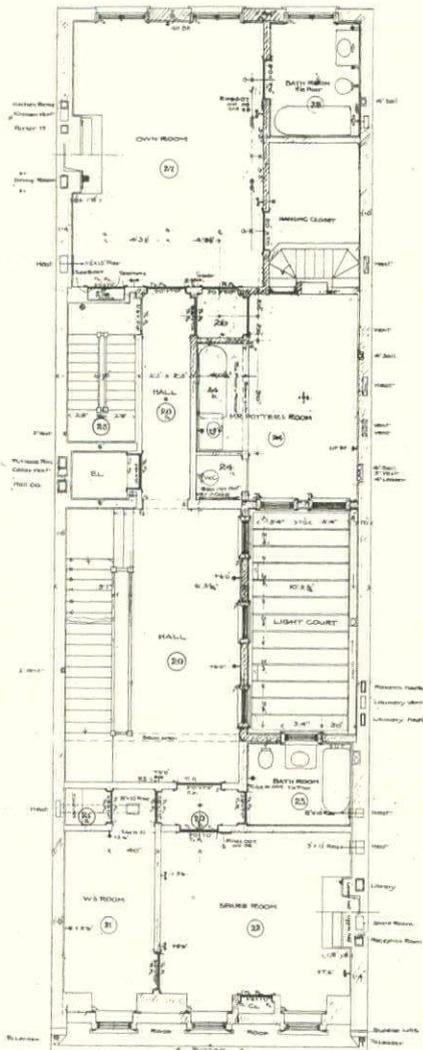
The concrete slabs were then covered with a fireproof mineral cement in which were bedded two thicknesses of D. T. felt. The fireproof cement consists of a mixture of coal-tar and an assembled mineral. The cement thus formed gradually hardens and adheres satisfactorily to the steep curved surface of the roof.

NORTH AND SOUTH ELEVATIONS OF THE SAME ARMORY.

LONGITUDINAL SECTIONS OF THE SAME ARMORY.

DETAILS OF THE SAME ARMORY.

HOUSE OF MRS. E. C. S. POTTER, 123 EAST 73D ST., NEW YORK, N. Y.  
MESSRS. ROBERTSON & POTTER, ARCHITECTS, NEW YORK, N. Y.



HOUSE OF C. S. HOUGHTON, ESQ., CHESTNUT HILL, MASS. MESSRS. CHAPMAN & FRAZER, ARCHITECTS, BOSTON, MASS.

Additional Illustrations in the International Edition.

GENERAL VIEW OF THE NEW DINING-HALL: HARVARD CLUB, W. 44TH STREET, NEW YORK, N. Y. MESSRS. M'KIM, MEAD & WHITE, ARCHITECTS, NEW YORK, N. Y.

AXEL HAIG.—Mr. Haig—or Hagg, to give his patronymic its native form—was born in Katthamra, in the Swedish island of Gothland, in the house which had been the home of his family, for generations. His schooldays were spent at Wisby, where, midst seaport scenes, a fondness for boating and ships led to Axel being sent to Karlskrona to study naval architecture in the great Swedish Government Dockyard there. He remained three years. With the purpose of widening his knowledge, the student then came over to England and sought in vain for employment in London. At Port Glasgow, on the Clyde, however, before long he obtained a post with Lawrence Hill & Co., the famous ship-builders. The immediate connection between architecture and a ship is neither close nor obvious; but it so happened that his master, Mr. Hill, essayed to build himself a house about this time, and young Haig accordingly made the plans. He admits that this early effort at design is still standing, but as the architect he modestly declines to reveal its identity. Such was the incident which appears to have influenced the future career of the ship's draughtsman, so that when his engagement terminated in three years' time from its commencement at Port Glasgow, we find Mr. Haig leaving the Clyde and the shipping business altogether, seeking more peaceful and more congenial avocations. An introduction was obtained to the late Ewan Christian, in whose office, in consequence, Mr. Haig remained for nine years, his chief allowing him to undertake perspective work for other architects. Notably among them ranks foremost the late William Burges, A.R.A., whose designs owe very much to Mr. Haig's skill and accuracy in their artistic delineation, nearly all of Burges's designs having been put in perspective by him. His drawings of William Burges's scheme for the decoration of St. Paul's Cathedral, shown at the Royal Academy in 1875, are conspicuous cases, and were exhibited with Mr. Haig's name attached in the catalogue.

Sir William Emerson, as a pupil of Burges, also largely employed Mr. Haig, as did the late E. W. Goodwin, who, at one time and for some years, was an intimate friend of Burges. No one ever can be said to have exceeded Mr. Haig in this branch of his art, which he practised with considerable success for a long while, till travel and a wider outlook induced him to become an etcher, and devote himself to less technical performances. The first step in this direction was brought about by Sir Rowand Anderson's intention of publishing a book on "Medieval Scottish Architecture," for which work Mr. Haig was engaged. He set to work at once with the needle without receiving any lessons, but aided by the writings of Mr. P. G. Hamerton. The west doorway of Holyrood, done at this time for this work on Scotch Architecture is an entirely charming example among these earlier etchings. The writer of this notice having many years ago received an impression of this plate with another from Jedburgh Abbey, as a personal gift from Dr. Anderson, the beauty and artistic merit of both etchings have long been familiar and are treasured among other household embellishments of a like kind. These two plates were subsequently issued by Mr. Dunthorn, only fifty impressions being printed. "The Vesper Bell," executed in 1879, the earliest and scarcest of Mr. Haig's more important works, remains one of his most beautiful compositions. It was founded upon studies in Nuremberg. A year later "The Morning of the Festival" fairly took the artistic world by storm, though our preference is given to another masterly "fancy picture," entitled "A Quiet Hour."—*The Building News*.

NEW YORK BUILDING STATISTICS.—The building statistics from 1870 to 1905, inclusive, are as follows:

	No. plans filed.	Est. cost of structures.		No. plans filed.	Est. cost of structures.
1870.....	2,351	\$34,668,998	1888.....	3,076	\$47,142,478
1871.....	2,782	42,585,391	1889.....	2,621	68,792,031
1872.....	1,728	27,884,870	1890.....	3,507	74,676,373
1873.....	1,311	24,936,535	1891.....	2,821	56,072,624
1874.....	1,388	16,667,414	1892.....	2,967	59,107,818
1875.....	1,406	18,226,870	1893.....	2,272	55,162,953
1876.....	1,379	15,903,980	1894.....	2,592	51,420,577
1877.....	1,432	13,365,314	1895.....	3,838	84,111,033
1878.....	1,672	15,219,680	1896.....	3,149	71,889,765
1879.....	2,065	22,567,322	1897.....	3,516	83,668,840
1880.....	2,252	29,115,335	1898.....	3,626	72,794,011
1881.....	2,682	43,391,300	1899.....	4,894	127,211,255
1882.....	2,597	44,793,186	1900.....	1,969	57,233,355
1883.....	2,623	43,214,346	1901.....	2,512	118,897,820
1884.....	2,812	42,215,423	1902.....	1,703	88,044,400
1885.....	3,370	45,918,246	1903.....	1,757	81,419,414
1886.....	4,097	58,479,653	1904.....	3,040	96,749,840
1887.....	4,385	66,839,980	1905.....	4,805	162,801,769

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A CAREFUL reading of the stenographic report of the thirty-ninth annual convention of the American Institute of Architects shows that, however satisfactory the social side of the occasion may have been, the actual work of the convention was particularly barren of real interest and fruitless of result. The central features of the occasion were the papers and reports on the inexhaustible topic of competitions and the discussions that followed them, all in the main based on the intended and implied censure of those who took part in the Cook County Court-house competition that was embodied in the report of the Board of Directors. The action actually taken was intended to be negative and wishy-washy, but it none the less did a wrong to the actual competitors for which we think there was particularly little justification. It looks, now, a little as if the trouble had been not that certain Fellows and Associates of the Institute chose to take part in the competition under their unquestionable right to accept or reject the schedule of charges the Institute recommends—and nothing more than recommends—but that they had not joined hands with those who declined the offered terms and so prevented the modifying of the terms in such a way as to allow these objectors actually to take part. In plain words, the objectors’ bluff was called, and the subsequent complaints and proceedings are susceptible of a very unpleasant interpretation. In fact, all these endeavors to apply “discipline” have about them a disagreeable taint of the trade-union and the police-court. We have not space this week, but shall devote our issue next week to this competition matter.

THE well-known military aphorism, “an army marches on its belly,” might fairly be complemented with one declaring that American architecture makes progress on its stomach, so close seems to be the connection be-

tween actually doing something and the dinners and banquets which are the effective instruments of the most successful architectural associations. The lack of interest in this year’s proceedings of the Washington convention may be due to the fact that it was held, as it were, in the partial vacuum between last year’s highly interesting and successful “banquet” and the similar occasion which, next year, is to signalize the fiftieth anniversary of the founding of the American Institute of Architects. For this occasion the convention has instructed the President and Directors to arrange some “signal honor,” in the guise of a medal or however else, to be offered to “the persons who have done the most for the profession or the Institute during its fifty years of existence.” With this pleasurable uncertainty before them, we fancy there will be several distinguished members of the profession who will attend next year’s banquet feeling much as a child does just before he puts his hand into a “grab-bag.”

THE fact that, although the report of the Committee on Education refers to both the proposed Columbia-Academy-of-Design School of Fine Art and to the “National School of Architecture” suggested by the Society of Beaux-Arts Architects, this mention provoked no slightest discussion of these two most interesting schemes makes us surmise that, possibly, “practising architects” may suspect that, after all, they are not just the very best persons to take practical charge of such educational undertakings.

THE Committee on Competitions in their report declare that they “do not feel that there should be any ‘mixed’ competitions,” but that all competitions should be “either ‘limited’ or ‘open.’” We, on the other hand, are confident that the very best form of competition, and in its results the fairest to the profession, the public and the client, is the mixed or rather the “compound” competition consisting of two parts, the first open to everyone and only for the selection of a given number of designers which shall equal the number of specially invited architects with whom they shall compete in the second and final part of the competition.

THE Institute, which already recognized the potential value as members of a certain class of draughtsmen who, under the present organization of office-work, are never like to practise independently, amended its by-laws so that such persons, if thirty years of age and otherwise meeting the requirements, become eligible for Associate membership without being required, as hitherto, to have been “in the employ of a Fellow of this Institute for five years or more.”

A “GHOST” has at length risen who can do something more than walk, for M. Paul Nocquet, who, it appears, won the Prix de Rome in 1900 and came to this city some three years ago, seems disposed to talk about the injustice that sculptors here habitually do to

the ghosts they employ. M. Nocquet has circularized all the sculptors in the country, politely inviting them either to model the works attributed to them, works which are actually signed by them, or, should circumstances arise which compel them to call to their aid the skilful hand of a "ghost"—"confrère," M. Nocquet puts it—then he begs them to be courteous and honest enough to allow the ghost's signature to appear with their own as joint producers of the work of art. The requests are reasonable and perhaps timely; but if, as the circular alleges, "many sculptors do not make the works they are commissioned to make, although they sign their own names to them," we fear that only a few will "honor our [his] movement with your [their] moral support." To a reporter M. Nocquet reveals the seriousness of his crusade by declaring that "those who do not answer will stand convicted by their silence." The allegation, in the case of such a personal art as the sculptor's, is a pretty serious one, and all will agree that M. Nocquet has done a real good, if his crusade can "determine clearly who among those that claim the appellation of sculptors are real and sincere artists and who are merely business men."

**B**UT sculptors are not the only artists who employ ghosts. The architects' offices are full of capable and unknown draughtsmen who know, if no one else does, that it is they and not their employers who are the "real and sincere artists," and that their employers, known to the social world as eminent architects, are in actuality "merely business men"—men with the tact that enables them to land the job, men with a shrewd judgment in ghosts, but none the less men who could not even land a second job if they should actually undertake to do the first one without ghostly aid. Even in offices where the heads of the firm are really artists there is many a clever assistant or draughtsman who feels it is an unjust hardship that the clear results of his own artistic cleverness, although acknowledged and appreciated by his employer, cannot be equally recognized by the public. But, because architects as yet do not generally sign their work, they are spared the more poignant grief of the sculptor's ghost who sees his master's name permanently where his own ought to be.

**A**T the same time with M. Nocquet's unofficial and private appeal appears an official pronouncement in the matter of employing architectural ghosts. The report of the Committee on Competitions presented at the late convention of the American Institute of Architects reprehends a practice "which becomes more and more popular in some cities," and this practice appears to be that of "employing skilled men only for and during competitions for the special purpose of designing and preparing plans to win." The committee assert that they have heard—they do not say "known"—of instances "where competition-experts were employed to take charge of the office, evolve the plan, make the design and superintend the preparation of all drawings, while *the architect knew little of what was going on*!" It seems to us that of the long and wordy report in question the portion

here referred to is the most significant; and yet, although the convention's time was mainly consumed with discussing the inexhaustible matter of the proper conduct of competitions, no speaker brought this phase of "honorable" practice into the discussion.

**E**VERY one knows that architectural exhibitions have very little attraction for the general public, and even do not succeed over well in securing the attendance of members of the profession most interested in them. But there is one sort of architectural exhibition that, so far as we know, has never been tried, one which we believe would call out a good attendance from the profession at least, and to them would be more than usually amusing, if not instructive. Each of the eight or nine hundred architects practising in Greater New York knows the work of, say, that ten per cent. of their number into whose hands have, somehow, fallen the largest and most important undertakings, but he knows practically nothing of the work done by, and consequently nothing of the artistic capacities of, the other ninety per cent. of the membership, who are to him nothing more than so many names printed alphabetically in a directory. An exhibition which should hang, in alphabetical order, a single design prepared during the past year by each of the architects practising in the metropolis would, we think, attract more visitors than an exhibition gathered on the ordinary lines. If, further, in the following year each architect could be induced to prepare an exhibition design after the terms of a stated programme, we believe the result would be still more interesting, and that it would prove conclusively the truth of the common contention that there are, now practically unknown, anywhere from thirty to fifty per cent. of architects practising in the city who can produce as meritorious designs as those turned out by the accepted "leaders" of the profession. They only lack the opportunity, and a comparative exhibition of this kind might afford them an introduction to such opportunities. Such an exhibition would be for the less well-known a good business venture.

**W**HETHER by its recent suits the Dominion Government will have succeeded in breaking up the plumbers'-supply trust, to which we recently referred, remains to be proved by the passage of time. For the moment it is doubtless very well satisfied that it has achieved a very notable triumph, and one, moreover, that has turned into the public treasury a considerable sum of money. Not only has the combination as a whole been adjudged guilty and sentenced to pay a fine of twelve thousand dollars, but in answer to the suits brought against members as individuals one hundred and thirty-four men, or firms, have already pleaded guilty, and from only forty of these the sum of ten thousand dollars in the way of fines has been collected, the exacting of similar fines from their fellow-members being for the present held in suspense over their heads. Apparently Canadian methods of dealing with ways that are in "restraint of trade" are at once more drastic and more successful than ours on this side of the border.

## ANNUAL ADDRESS OF PRESIDENT A. I. A.

**A**FTER attending a protracted meeting of the Board of Directors, consuming the entire time yesterday at the Octagon, with a full discussion among its members of the affairs of the Institute, it seems almost unnecessary for me to occupy the time of this convention with a lengthy address.

The report of the Board of Directors will make you acquainted with all the vital issues that affect the status of the Institute as an organization, and the interests of its members with relation to the parent organization. It deals with the reports of Chapters, the subject of competitions, municipal improvements, and all other matters of general interest towards which the Institute has exerted its interest and exercised its efforts for the past several years; and it is to be hoped that the committee to be appointed on the recommendations contained in the report of the Board of Directors will specifically refer to each of the subjects mentioned.

The reports contain a reference to the VII International Congress of Architects to be held in London, July, 1906, and the Executive Committee has been directed to appoint delegates of the Institute in accordance with the rules of the organization that have been adopted for this Congress, the first held under the auspices of an English-speaking nation.

It is to be hoped that a large and general interest will be taken by the Institute and the profession in America in this meeting of the most eminent architects of foreign nations, and that it may tend to establish closer relations for the expression of our art than has hitherto existed.

The coming year, 1907, will mark the semi-centennial anniversary of the existence of the American Institute of Architects, and this should justify an annual meeting of unusual importance, and on the most extended scale; and I think it will be generally conceded that this meeting should be held in the City of Washington, and should bring together not only the Fellows and Associates of the Institute, but a notable representation of the allied arts: painters, sculptors and decorators, educators and the literary world, and all others having an interest in the advancement of the art of architecture.

It would be especially a fitting occasion for the completion of the fund for the purchase of "the Octagon," so that at the expiration of an existence of fifty years, it might be said that our society is possessed in its own right of this distinctive and individual home.

On the occasion of this next annual meeting there would be a particular significance and propriety in inviting a number of the most distinguished architects, painters and sculptors from foreign countries to be our guests, and participate in our proceedings, and I would advise that the new Board of Directors, or the Executive Committee, carry out this suggestion.

The Royal Institute of Great Britain annually awards a gold medal to the practitioner in our profession who, in the opinion of that body, has achieved the greatest distinction in his professional work, and has annually, on appropriate occasions, bestowed this medal upon one of its members, or upon a distinguished member of a foreign nation. It was to the honor of the American Institute that its last medal was presented to Mr. Charles F. McKim. I am prompted to hope that our society may deem it wise to follow this excellent example set by our English fellow architects, and each year distribute a gold medal to that practitioner who, in the opinion of the Institute, may seem most deserving of such an honor; and I trust that this convention will authorize the new Board of Directors to adopt this suggestion.

We may heartily congratulate ourselves upon the the cordial, steady and healthful advancement that has been made by the profession during the past year in this country, and upon the improved relations that we enjoy in the public notice and appreciation of the value of our work.

In concluding, I wish to express my deep appreciation of the cordial, prompt and efficient aid given me in this my last year of administration by the Executive Committee, the Board of Directors, and all other Fellows and Associates of the Institute whose assistance has been necessary at critical moments.

I thank you all for your cordial co-operation.

## REPORT OF THE COMMITTEE ON EDUCATION A. I. A.

**T**HE reports which have been received by the Committee on Education from the different schools of architecture throughout the country show, in several important instances, a tendency toward reorganization which shall develop the advanced courses, and which shall make use of the services

of practising architects in conducting the advanced work in design. At Columbia University, in New York, this tendency has taken the form of the "atelier system," following as closely as possible the familiar plan of the *École des-Beaux Arts* in Paris. At Harvard University, and in the recently established courses for special students at the University in Washington, D. C., the plan has been to appoint practising architects to have charge in turn of the advanced problems in design. It seems worth while to call special attention to this development, of which details are given in the several reports.

The Massachusetts Institute of Technology reports a prosperous condition of affairs, but has made no changes in its scheme of work. Your committee has received no statement with regard to numbers enrolled.

For the University of Illinois, Professor Ricker, who is in future to devote his entire time and strength to the charge of the Department of Architecture, reports as follows:

"There was last year a total of 93 students in the department, in the two courses of Architecture and Architectural Engineering. There are already this year 80 in Architecture, and 29 in Architectural Engineering, a total of 109, showing a gain of 16—a gain of more than 1-6. The equipment has been improved by the addition of books to the Architectural Library since June last, amounting to about \$1,400, making this library now worth some \$10,000. It is considered the best working library west of New York City. Some changes in the faculty of the department have been made. Mr. J. W. Case, Rotch Traveling Scholar in 1892-4, is now Assistant Professor of Architectural Design. Mr. J. W. Vawter is instructor in Architectural Construction."

Professor Martin, of the College of Architecture of Cornell University, reports that no important changes have taken place in the College of Architecture at Cornell University during the last year, except that the two-year course in painting, which was tried somewhat experimentally, has been discontinued. In spite, however, of the discontinuance of this course, the number of students in the College has been steadily increasing, the rate of increase during the last three years being about 15 per cent. a year. The number of students registered in the College and doing all of their work in architecture this year is 92, while a considerable number of students from other Colleges of this University are electing in architecture such courses as freehand drawing, history of architecture, history of art, etc.

Columbia University reports the total enrollment of students in its School of Architecture up to Nov. 11 as 102, of whom 28 are special students (non-matriculated), and the remainder regular students. Of these, 15 are candidates for the Certificate in Architecture, and three are resident graduate students. Of the 102 registered students, 42 are newly registered this year, of which number 12 are candidates for the Bachelor's Degree, 12 for the Certificate in Architecture, and the remainder non-matriculated or special students. The number of new students, candidates for a degree or a certificate, is about twice that for last year. The registration of candidates for the Certificate in Architecture is a new feature in the administration of the school. It is intended by this course to offer opportunities to men of distinctly artistic qualifications, who, without having had an extensive mathematical education, may yet be qualified in a practical way for all the requirements of average practice. Quite a number of those registered for the certificate course will, no doubt, before graduation qualify themselves for admission to the more advanced course for the degree.

A number of new measures have been put into operation this year. In the first place the instruction in design has been broadened by the establishment of two draughting-rooms or ateliers down town, near the offices, respectively, of Messrs. Carrère & Hastings and Messrs. McKim, Mead & White, which will be under the direction of Mr. Thomas Hastings and Mr. C. F. McKim, assisted respectively by Mr. John V. Van Pelt, and Mr. John Russell Pope, Jr. The Columbia draughting-room will also be maintained as heretofore under the direction of Messrs. W. A. Delano and A. H. Gumaer. The preparation of the programmes for the several grades of design and the general administration of the entire work in design are in the hands of the administrative committees of three of the six instructors. The designs are judged by a jury, consisting of one representative from each of the three ateliers, and a number of practitioners selected from an approved jury-list, the executive head of the school being *ex-officio* a member of each jury. Proficiency in design is certified by the award of "passes" counting two points each, "mentions" counting three points, and "special mentions" counting four points. The requirements in design for gradua-

tion are specified in points. Under this new arrangement, Messrs. Hastings and McKim have been appointed professors in the School of Architecture. There have been no other changes to report in the staff of the school except the promotion of Adjunct-professor A. D. F. Hamlin, formerly acting head of the school, to a full professorship, with the title of Professor of the History of Architecture and Executive Head of the School of Architecture. The advanced work in drawing from the antique and from life continues to be administered in a special class at the National Academy of Design. The Trustees of the University have formally approved the plans looking to the establishment of a Faculty of Fine Arts in Columbia University, of which the School of Architecture shall be one of the constituent schools, and for the establishment of definite measures of affiliation between this proposed faculty and the Metropolitan Museum of Fine Arts, on the one hand, and the National Academy of Design on the other. The consummation of this plan will doubtless require two or three more years, but the first steps toward the definite organization of the University Faculty of Fine Arts will in all probability be taken during the current year.

The School of Architecture at Pennsylvania reports continued vigorous growth, advance in entrance requirements and in subjects of study and material enlargement of equipment. The year's attendance numbers 127, which is double that at the corresponding date four years ago, an increase which has been uniform from year to year, and has been obtained largely in the four-year course. Some twenty States are represented and two students are in attendance from Japan. To the requirements for admission to the four-year course has been added elementary physics, while the work of the course has been strengthened by advancing the instruction in descriptive geometry, in mathematics and the application of physics. Foreign language study has been reduced to three hours per week through two years, and time thus released given to technical work. Lectures on materials and methods of construction are to be set forward one year, looking to a betterment of the higher work of the course. The Architectural Engineering Option, open in the fourth year of the regular course, is now in its second year and is receiving encouraging support. The course opened to practising architects two years ago, wherein design could be studied under the criticism of Professor Cret, yet apart from the current of student work, is in continued operation. But, although the architects praise its provisions for their completeness, it is not well supported because of the difficulty of finding time for work of this character. A fund of \$5,000 has been placed at the disposal of the Department for improvement of equipment and instruction, and for the publication of a book illustrative of the students' work. As an outgrowth of the lectures on Fine Arts in the Arts Course of the College, given for several years past by members of the Architectural staff, the University has established a full Fine Arts Group, with instruction in the several fields of painting, sculpture, architecture, aesthetics, literature, music, etc. Professor Everett, of the corps of instruction in architecture, for some years past the lecturer on the history of painting and kindred subjects, has been promoted to be Professor of the History of Art in the new course which will go into operation next fall. Professor Everett is absent on leave for the current year, as Fellow in Medieval and Renaissance Archaeology in the American School at Rome. An increase in staff has been made by the appointment of Mr. Huger Elliott, formerly instructor in the school, who returns after several years of practice and of study in the Beaux-Arts to assist Professor Cret in the courses in design.

As already mentioned, the Department of Architecture at Harvard University has introduced a change in the method of conducting its advanced work in design. Mr. R. S. Peabody, Mr. E. M. Wheelwright, Mr. R. C. Sturgis and Mr. F. M. Day have been appointed with the title of Lecturers on Architectural Design, to take charge in turn of problems in the advanced courses in design, at the same time delivering lectures on the special topics involved. The plan has worked admirably and has proved of great interest to the students and is likely to be continued. Mr. W. L. Mowll, formerly Instructor in Architecture, and Mr. J. S. Pray, formerly Instructor in Landscape Architecture, have both been promoted to assistant professorships. Mr. H. E. Warren has been appointed to the Appleton Fellowship founded by Mr. McKim in honor of his wife, and is now at the American Academy at Rome. At the instance of the Architectural League of America, the President and Fellows of Harvard College have established in the department three scholarships in architecture open to members of the League, and known as the Architectural

League Scholarships. These scholarships are equivalent to free tuition for the successful candidates. Two of these scholarships are for advanced special students and are awarded on the results of a competition in design conducted by the League. One is for a regular student, and is awarded on the results of the examination for admission. The two special scholarships are now held by Mr. E. L. Plietsch and Mr. F. N. Dillard, both of St. Louis.

The regular scholarship has not been awarded this year.

The total number of students in the department this year is 153 as against 122 last year. Of these 92 are doing full professional work, of whom 70 are registered in Architecture, and 22 in Landscape Architecture.

The first class graduated from the Department of Architecture at Harvard in 1896. Since then there have been 43 graduates. Of these eleven are now in independent practice. Of the twenty-six who graduated five or more years ago, ten are now in practice, or 38 per cent.

The department continues to receive important additions to its collections of casts, photographs, books and drawings.

Professor Revels reports that the School of Architecture at Syracuse University is increasing in numbers and improving in equipment. There were four seniors in the class of last year, all of whom graduated. One of these graduated, Mr. F. R. Lear, was appointed as an instructor in mathematics, descriptive geometry, perspective, etc. There are 18 new students this fall, 14 regular and 4 special students. There are 45 in all this year against 34 last year. Considerable addition has been made to the working library in the way of books and plates. The present accommodations are crowded to their limit, but the new buildings which are being erected on the campus under the supervision of the department will make it possible for the department to be in new and enlarged quarters next year.

Professor F. M. Mann, of Washington University, St. Louis, reports for the Department of Architecture, of which he has charge, that there are twelve students regularly enrolled. In the evening class for draughtsmen, there are between twenty and twenty-five men in attendance. The students in the evening classes take part in the competitions instituted by the Society of Beaux-Arts Architects. The most important event of the year for the department was its removal into new quarters in the building designed by Messrs. Cope & Stewardson, which greatly adds to the facilities of the department.

With regard to the Architectural Department in the University at Washington, D. C., it may be worth while to call attention to the change in the name of the University. This was formerly known as the Columbian University, but the name was changed by act of Congress, approved Jan. 23, 1904, to the George Washington University. The committee cannot help expressing regret that the University in changing its name from Columbian, which was easily confused with the Columbia University in New York, should have chosen a name which equally leads to confusion with the Washington University at St. Louis. The architectural department of this University has, during the past year, been entirely reorganized, and has been made a separate division of the group of Arts and Sciences. It is now housed in a separate building devoted to architecture. In January, 1905, Professor Percy Ash was appointed professor in charge. Last June Mr. A. Burnley Bibb was appointed Professor of Architecture. Mr. Charles Mason Remey (of the École des-Beaux Arts) is acting as instructor, and Mr. F. L. Molby is instructor in freehand drawing. Mr. Hornblower retired from active work in this department one year ago. The degrees of B. S. in Architecture are given for satisfactory completion of the four years' course, and M. S. for one additional year's work along special lines approved by the chairman of the committee of higher degrees and the professor in charge. The special course in design, or Beaux-Arts course, will include the regular problems issued by the Beaux-Arts Society of New York. The problems will be criticized before the class, and the work of each student individually will also be criticised by the following architects, who will assist the regular professor of architecture, and who will each have charge of a different problem, from the making of the preliminary sketch to the completion of the final drawings. These artists are: Mr. Nathan C. Wyeth (Diplômé par le Gouvernement Français), Mr. E. Frere Champney, Mr. Charles Mason Remey, Mr. E. W. Donn, Jr., and Professor A. B. Bibb. There are 38 students enrolled this year, an advance of 30 per cent.

Professor John Galen Howard reports for the University of California as follows: At the beginning of the year 1904-5 13 students were enrolled in architecture, of whom seven completed the year. This term, the first half of 1905-6, there are 20 students

enrolled in the various courses offered. These students are divided up among four grades of problems. In addition to the classes in design, Professor Howard is giving courses in the history of architecture and the theory of architecture. A splendid set of lantern-slides for use in these courses is being rapidly acquired. The library is also gradually increasing by the addition of books as well as by subscriptions to representative periodicals. Ground has just been broken for the erection of a temporary structure for the department of architecture, to serve until such time as the authorities can see their way clear to erecting the permanent Fine Arts Building as a part of the great scheme. The present building will be admirably adapted to the accommodation of the department of architecture.

The Secretary of the Drexel Institute of Philadelphia reports, through Professor Lorch, that 35 students are now enrolled in the day classes in architecture, and 78 in the evening classes. The regular day course extends through two years, but four students have remained for a third year. The work has been expanded in several directions, and a course of lectures in architectural history for the benefit of the evening students has been added.

The University of Michigan is contemplating the establishment of a department of architecture.

The Society of Beaux-Arts Architects, of New York, has made a very notable move in proposing the foundation of a so-called national school of architecture in the city of New York. So far as the plan contemplates the enlargement and establishment on a permanent foundation of the useful work which the Society of Beaux-Arts Architects has heretofore been undertaking for the education of draughtsmen in offices, it is surely to be commended. The more ambitious proposal to take under its wing all existing schools of architecture in America is hardly likely generally to commend itself. The numbers taking part in the competitions of the Society have greatly increased. 339 students have this year submitted work, 231 of whom have rendered finished drawings. The Society now offers a "Paris Prize," which gives to the winner \$250 quarterly for two years and a half for study at the *École des Beaux-Arts*. The French Government has honored the Society by agreeing to admit the successful competitor to the first class in the school when endorsed by the Society as having completed the equivalent of the work of the second class. But such a student is not entitled to receive the diploma of Architect.

The American Academy in Rome, under the able direction of Mr. Breck, is proving most attractive to American students of architecture working in Italy. Since the last report of your committee, the Academy has been incorporated under the laws of the United States, which gives it national standing.

Splendid advance has been made with the endowment fund for the Academy, intended to be one million. At the time of the last meeting of the Convention, \$200,000 had been promised; this has been raised to \$800,000.

Respectfully submitted for the Committee,  
H. LANGFORD WARREN, *Chairman*.

#### THE SAFEGUARDING OF LIFE IN THEATRES—I.

HOW can we transfer the care and the precautions of the modern factory to the modern theatre? How can we bring the manager, the architect and the official guardians of public safety—the fire-chiefs and the public inspectors of buildings—to understand and introduce the well-proved safeguards and to be critical about that perfection of detail on which safety depends? How can we bring the public to demand these things?

I first became actively interested in this question by the burning of the Iroquois Theatre at Chicago, a little less than two years ago. I examined the structure before any of the wreckage had been moved, listened to evidence before the coroner's inquest, counseled with the mayor and committee of the board of aldermen, questioned eye-witnesses and inspected many other theatres in the effort to reach a clearer understanding of their special hazards.

This fire occurred at a Wednesday afternoon *matinée* in the midst of the holiday season when the theatre was crowded largely with pleasure parties of women and children. With admirable promptness the chief of the public fire-department and an efficient force of firemen were on the ground within little more than five minutes from the first alarm, but even in that short

time most of the victims had already become suffocated. Some of the cooler headed, who apparently followed the maxim for safety, "Remain in your seat and avoid crushing at the exit," were suffocated in the gallery, where they sat.

What has been called the irony of fate is found in the fact that the scene of this appalling disaster was the newest of Chicago's theatres, a building of fireproof construction that justified the name so far as the building itself was concerned. Little except scenery, decorations and upholstery was damaged. It is true that there had been shameful neglect in important details of fitting up, the fire-hose on the stage had been delayed, that fire-pails and soda-water fire-extinguishers were absent, and that the ventilating skylights over the stage were blocked so they could not slide open, and that exits were poorly marked, but I have come to believe that had these all been in the condition commonly found in American theatres the result of the fire might still have been appalling, and it is because I am sure the great lessons of this and the other great theatre catastrophes have not been properly heeded that I speak on this topic to-night.

The great lesson of the Iroquois fire was only a repetition of a lesson that has been given several times before and each time forgotten. The recurring formula is:

- (1) A stage crowded with scenery.
- (2) The sudden spread of the flames over this scenery.
- (3) The opening of a door in the rear of the stage, an inrush of air.
- (4) Scant smoke-vents over the stage, an outburst of smoke under the proscenium-arch.
- (5) Death to those in the galleries.

In 1876, at Conway's Theatre, Brooklyn, N. Y., the stage was crowded with scenery; a border caught fire; the blast of suffocating smoke was increased by the opening of large doors in the rear of stage; about 300 were killed, all in the upper gallery.

In 1881, at the Ring Theatre disaster in Vienna, with about 1,800 in the audience, careless lighting ignited a "hanging border," a large door in the rear of stage was opened, letting in a blast of air that drove the smoke through the proscenium-arch; the iron curtain could not be lowered; special exit-doors were found locked; 450 were killed, mostly in the upper gallery.

In 1887, at Exeter, England, fire caught on a stage crowded within scenery. Within about 5 minutes from the outbreak of the fire 200 were killed, mostly in the upper gallery.

Note the suddenness, the suffocation, and the fact that the fatalities are nearly all in the galleries!

The amount of combustible material on the stage in a great spectacular piece is surprisingly large. On the Iroquois stage at the time of the fire there was more than 10,000 sq. yds. of canvas, or  $2\frac{1}{2}$  acres, and in addition about 3,000 sq. yds. or half an acre of gauze. To hang this required more than 10 miles in length of  $\frac{5}{8}$ -in. Manila rope, and in the frames, battens, braces, profiles and set-pieces the stage-carpenter estimates there was about 8,000 sq. ft. of white-pine lumber. The total weight of this fuel was more than 10 tons, all dry as tinder and all set or hung in a way to give the quickest possible exposure and spread to the flames. The paints used by the scene-painter are not dangerous. They are almost entirely put on with water and glue, and they tend to make the fabric a little less readily combustible.

It is a very rare case that so much scenery is found upon a stage, but if as is more common it were only one-fourth part as much, it is plain that the fuel supply is sufficient to send out an enormous volume of suffocating gas. Indeed, I have computed that merely the quick burning of this 160 lbs. of gauze that hung over the Iroquois stage would heat a volume of air equal to that contained in the space above the proscenium-arch to 1,000° Fahrenheit. There is good testimony to the effect that only about two minutes' time elapsed after the first spark until all the upper scenery was in flames. Only from three to four minutes' time elapsed before the large space of the hanging loft was so filled with fire that the flames and smoke rolled out beneath the proscenium-arch into the top of the auditorium; then came suffocation and death.

The main problem is to give prompt and certain vent to this smoke and suffocating gas, elsewhere than through the proscenium-arch.

The ordinary construction with a high spacious chamber for the hanging-loft above the level of the proscenium-arch makes it a simple matter structurally to keep this fire and smoke out of the auditorium, and no matter how great the mass of flaming scenery a smoke-vent of one-eighth or one-tenth the area of the stage, if instantly opened, would probably have saved all of this terrible suffocation at Chicago, at Exeter, at Brooklyn and at Vienna.

<sup>1</sup>Extracts from the annual address of Mr. John R. Freeman, President of the American Society of Mechanical Engineers.

Figure 1 shows a cross section of the Iroquois, through auditorium and stage. The form is typical and about the same in all first-class theatres. To one who has not been behind the scenes and up to the gridiron, the surprising thing is the great head-room, commonly 70 ft. from stage to gridiron and 80 or sometimes 90 ft. from floor to roof, and necessarily more than

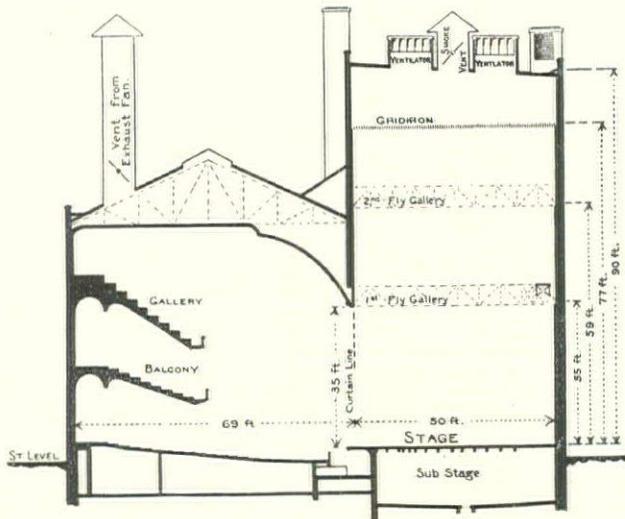


FIG. 1.—SECTION OF THE IROQUOIS THEATRE, CHICAGO.

double the height of the proscenium-arch, into which are hoisted the great sheets of canvas on which the scenes are painted.

The conditions are plainly similar to that of the fireplace in our living room magnified ten or twenty diameters. Note how admirably the high space over the stage screened by the arch is adapted to give the best of chimney draught, and not give us a smoky fireplace. The roaring fire on our hearth sends 95 per cent. of its heat up the chimney and gives out no smoke into the room, if only the chimney be properly designed and the damper open. An ordinary rule is to make the throat of the chimney at least one-tenth the area of the fireplace opening, or it may be stated that the space through the damper should be one-eighth the area of the hearth, and when we simply provide an adequate chimney area and a damper that will surely open we shall have adopted a safeguard that would have saved four-fifths of those who perished at the Iroquois Theatre fire, regardless of defective curtain, defective exits and absence of fire-hose on the stage.

In a way it has long been recognized that there should be a large ventilator over the stage, and one city has copied from another the building law that, in the case of New York City, reads as follows:

"There shall be provided over the stage metal skylights of a combined area of at least one-eighth the area of the stage fitted with sliding sash and glazed with double-thick sheet glass . . . the whole of which skylight shall be so constructed as to open instantly on the cutting or burning of a hempen cord. . . . Immediately underneath the glass of said skylight there shall be wire netting . . . etc."

The evident purpose of the thin glass is to cover the opening with something that will break out under heat if the mechanism for sliding the cover off fails. The wire netting is to catch any piece of broken glass from falling to the stage.

The building law of the London County Council reads much the same, save that its ratio is one-tenth, and perhaps that is where the rule began. Some of the leading American cities make the proportion one-tenth. In the revised Chicago ordinance, notwithstanding their fearful lesson, they are content with ventilators one-twentieth the net area of the stage, because, as one of the Aldermanic Committee gravely assured me, "If the area was made too large, it might cause a down-draught."

The idea of a large ventilator expressed in these rules is all right, but the execution is commonly all wrong, and needs some good engineering to provide a design of damper with careful details that will be sure to work. Note the antiquated suggestion of the burning of a hempen cord when fusible links have been used on the fire-doors in your factories for twenty years! There is no good reason to expect that the hempen cord in this position, in smoky atmosphere from which oxygen had been largely removed, would burn off until a majority of those in the gallery had been suffocated.

In one of the newest and best of the New York theatres I

found the ventilator had a broad sheet of heavy canvas laced tightly across its opening with marline, because, as the stage-carpenter told me, the cracks around the ventilator let in too much cold air. No building-inspector had objected, and the carpenter could not be made to see any danger. "It would burn off in any bad fire," he said. So it might, but not until those in the gallery were mostly dead. The requirement of thin glass in the building law is well meant, but it would be too slow in breaking out. Remember how quickly unconsciousness of suffocation comes in an atmosphere of smoke. The wire netting called for is a positive danger as often applied.

One of the most experienced theatre-managers in America told me frankly that he knew the smoke-vents on the theatre which he then occupied would probably not open in winter, unless a man should first pry them loose with an iron bar, but, said he, "I have not heretofore seen anything better," and so, after the Iroquois, he had set his stage-carpenter at work to invent something.

Doubtless there are many good smoke-vents here and there that have been designed and built with skill and conscience, for the problem is not so very difficult; but I have not yet seen one of these vitally important pieces of apparatus in which the design had been worked out with reasonable degree of perfection of detail. "Something good enough to pass the building-inspector" appears to have been the current specification, instead of the proper specification of "Something of ample area that will be sure to open wide instantly, without human intervention, and that cannot be stopped by warping, settlement, obstruction, frost, snow, rust, dirt or ordinary neglect."

I do not know who first fixed this ratio of one-tenth for size of ventilator, the same figure that appears in the rule of the London County Council. Its author may have built wiser than he knew, or may have taken it from the well-proved ratio of the fireplace chimney. It works out as safe when computed mathematically on theoretic grounds from the uncertain data. The material is so favorably disposed for ignition that the rapidity of combustion is largely a question of the air-supply. I am led by computation and precedent and the need of some factor-of-safety to concur in the wisdom of the ratio of one-eighth or one-tenth as already specified by the building laws of the great majority of our American cities, and believe it wise to base it upon the gross area of the stage floor rather than upon proscenium-opening, or cubical contents of the stage.

I have seen here in New York, in a recent theatre, a case where the inspector had, perhaps temporarily, forgotten the wording of the law and figured it on the area directly behind the curtain, omitting much of the floor-space at the side. This is wrong, because, given a large stage, there is a well-proved tendency to permit an unnecessarily large amount of combustible material upon it, and it not infrequently happens that the scenery of next week's new attraction may be found stored at the side and rear during the Saturday-night performance.

Following the great theatre fire in Vienna, a committee of the Austrian Society of Engineers (Vereines Techiner, in Ober Osterreich) built a model of the Ring Theatre on one-tenth of its linear scale, which thus contained only one one-thousandth of the cubic contents of the original, and made many tests and experiments.

The experiments were divided into two groups, the first comprising those in which no ventilators were opened over the stage, while in each of the experiments of the second group two ventilators were opened, having a combined area which according to the scale of their drawing was very nearly one-tenth of the area of the stage. In the first series of tests made by igniting sheets of paper hung to represent the scenery, but containing proportionately far less combustible material than is often hung on a theatre stage, they found that the expansion of the air caused by the heat quickly forced the curtain outward from the proscenium-arch, and within about twenty seconds from lighting the fire, this heating of the air produced an excess of atmospheric pressure, much greater than that of the ordinary pressure of city gas, thereby explaining why it was that the lights in the Ring Theatre became so quickly extinguished after the outburst of the fire.

In the second series of these Austrian experiments the openings of the ventilating-shafts were closed by sheets of paper, and as soon as these burned open all excess of air pressure disappeared from the auditorium, and, indeed, the updraught drew the proscenium-curtain inward over the stage. During these experiments an unexpected warning was given against covering smoke-vents by wire screens, for it was found the flying bits of charred

paper carried by the draught almost completely closed them. To show how little this warning of the Austrian Society of Engineers has become incorporated in current practice, I may call attention to the building law of New York City, which requires that underneath all of these skylight openings designed as smoke-vents wire netting must be stretched, the law apparently never considering how quickly this will become so clogged as to destroy in large part the utility of the smoke-vent. At my visit to the remodeled Iroquois I found the openings in their new ventilating-shafts screened by wire netting in a way that would probably within a minute's time put them into a condition of uselessness because of the fragments of burning cloth and embers with which they would be immediately covered under the strong updraught.

The Committee of the Austrian Society of Engineers concluded that the outburst of flame and smoke into the upper part of the auditorium and the extinguishment of gas-lights in a theatre could all be prevented by providing adequate smoke-vents over the stage, and places these smoke-vents as the feature of first import in safeguarding life in theatres, and says that without them emergency-exits and fire-curtains will be of no avail, and in this conclusion I most heartily concur. Regarding the mechanical construction of these smoke-vents the Committee says:

"It is necessary that these be opened instantly upon the outbreak of the fire; mechanical contrivances of iron to be operated by human means will certainly fail, for according to all experiences in theatre fires thus far, fright on the part of the employes prevents the use of such arrangements."

They warned against automatic contrivances whose action may be interfered with in consequence of rust or expansion by heat and against sheet-iron valves falling inward by their own weight, which might be restrained from falling open by the excess of pressure due to updraught, and, finally, recommended that these shafts be closed by a quickly combustible tissue of hemp or jute covered with varnish or celluloid and with a hole about 1½ ins. in diameter in the centre to invite quicker ignition. Our Austrian friends were unfamiliar with the American fusible-solder link, which is certainly quicker and safer and more practical than any such tissue of varnished hemp.

These fusible links have been in common use on automatic fire-shutters in our factories for nearly twenty years. Three types of these links are shown in Fig. 2. It is strange almost beyond belief how slowly and scantily these have found their way into the fire-protection of theatres.

These links melt open at about 162° F., and thus will open long before flame reaches them. Their cost is trifling. Links like

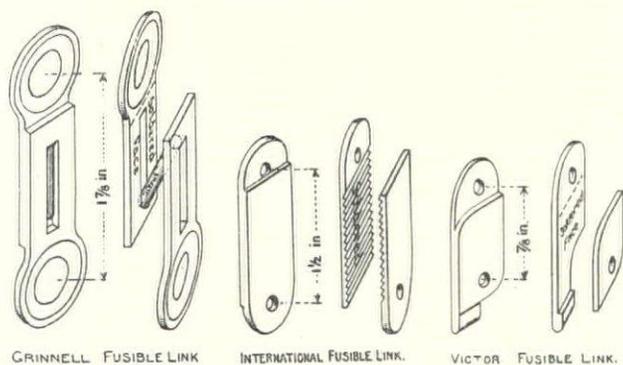


FIG. 2.—TYPES OF FUSIBLE LINKS.

these shown in Fig. 2 tested to immediate rupture will break under a load of about 200 to 500 lbs., but can be trusted to sustain continuously a load of only about 50 to 100 lbs. All of the known solders that fuse at low temperature are subject to stretching or "cold flow" under long continued loads, unless these loads are made extremely small, and one of the most important features in the design of any such link is to make the direct stress upon the solder small and in tension over a large area, rather than by shear. The links shown will open with about the same promptness as an automatic-sprinkler. At the top of a rigging-loft over a fire like that on the Iroquois stage they probably would open within twenty to forty seconds after the blaze got a good start.

The sensitiveness of the link or quickness of action under moderate degrees of heat depends on the thinness of the mass of metal to be warmed up and therefore on the rapidity with which it absorbs heat enough to melt the solder. These two characteristics, the weakness of the fusible solder under long continued

strain and the necessity for rapid absorption of heat, limit the strength of fusible link that can be employed. In many situations a link is desired of such form and size that when inserted in a rope it can run over the ordinary pulley.

(To be continued.)

## BOOKS AND PAPERS.

THE intelligence, patience and discrimination required to conceive, and still more to maintain, such a vademecum as Miss Florence N. Levy, for the fifth time, places within the reach of those interested in art and workers in art are not possessed by every one, and her labors have produced such really useful results that they ought to yield a return which will enable her to maintain the publication of the "Annual" in unbroken sequence. Even with the aid of cheapened printing processes, a book of five hundred pages, illustrated with a score of full-page plates, cannot be produced except at a very considerable cost and consequent risk to the undertakers, and in this case the result is surely deserving of support.

In addition to the brief biographical "directories" of painters, sculptors, illustrators and architects, which take up some hundred and twenty pages, there is this year added a short list of "writers and lecturers on art" which has its usefulness.

In addition to these directories, which have a permanent usefulness and need only to be revised annually, the greater part of the "Annual" is taken up with the record of the proceedings of the art clubs and societies, the record of exhibitions, the list of important pictures sold at auction, with the sale price attached, a list of new books on art, a judiciously small necrology and a tabulated statement giving particulars concerning all the institutions that undertake to give instruction in any form of art. Altogether the book contains a large amount of useful information which cannot be found elsewhere save in very scattered form.

## ILLUSTRATIONS.

ARMORY FOR SQUADRON C, N. G. N., BROOKLYN, N. Y. MESSRS. PILCHER & TACHAU, ARCHITECTS, NEW YORK, N. Y.

Further illustrations and description of this building may be sought in our last issue.

THE TOWER OF THE SAME.

TRANSVERSE SECTIONS OF THE SAME: TWO PLATES.

THE RIDING-HALL OF THE SAME.

THE RIDING-HALL ROOF OF THE SAME.

### Additional Illustrations in the International Edition.

MONUMENT TO PAILLERON, PARIS.

This graceful monument to the author of "Le Monde où l'on s'Ennuie," and other brilliant though less well-known comedies, here reproduced from the pages of *The Builder*, is to be erected in the Parc Monceau at Paris. It is the work of M. L.-Bernard Bernstamm, a pupil of M. Mercié, and was exhibited in the sculpture hall at the Salon last year. The architectural details are by M. Rives.

SPIRE AND TOWER, ST. GEORGE'S CHURCH, BICKLEY.

This view of the spire and upper part of the tower of St. George's Church, Bickley (Kent), which has been rebuilt from the design and under the superintendence of Mr. Ernest Newton, is here reproduced from *The Architect*.

The church was built about forty years ago. The spire was built of Caen stone, which had perished so completely that it was necessary to pull the whole down. Advantage has been taken of this to heighten the tower, put in new belfry windows, and to build a spire of a different design from the old one. The "chequer board" pattern marks the addition to the tower, and is intended, besides doing this, to make the transition from the rubble-work of the tower to the dressed stone of the parapet and spire less abrupt.

CEMETERY CHAPEL, ROTHENBURG-ON-THE-TAUBER, BAVARIA.

This and the following plate are copied from *Zeitschrift für Bauwesen*.

DETAILS OF THE SAME.

<sup>1</sup>"American Art Annual," 1905-6. Vol. V. Florence N. Levy, Editor. New York: American Art Annual (Inc.), 1905.

TOMB OF THE FRANZ CLOUTH FAMILY, MELATEN-KÖLN, PRUSSIA.  
HERREN ZIESEL & FRIEDERICH, ARCHITECTS; HERR RUDOLF  
BOSELDT, SCULPTOR.

This subject is copied from *Arkitektonische Rundschau*.

GERMAN "L'ART NOUVEAU" DOORWAYS IN BERLIN AND LEIPSCIG.  
These subjects are copied from *Blätter für Architektur*.

DESIGN FOR MUNICIPAL BUILDINGS, LAW COURTS AND TOWN-HALL,  
BOURNEMOUTH, ENG. MR. C. E. MALLOWES, ARCHITECT.

PLANS AND SECTIONS OF THE SAME.

While this plate is copied from *Building News*, the perspective view is actually reproduced from an illustration appearing at the same time in *The Builder*.

## NOTES AND CLIPPINGS.

PORTLAND CEMENT AND THE CORROSION OF STEELWORK.—Mr. Edwin O. Sachs writes to the *Times* as follows: "While in full agreement with Mr. Jackson, R.A., as to the dangerous manner in which steel is all too frequently being applied to buildings without suitable protection against corrosion, I consider that the rumors he refers to, namely, that cement does not afford protection against rust, require some reply, the more so as the deductions he would appear to have based partly on these rumors might be detrimental to the advancement of architectural engineering as necessitated by modern requirements and land values. My reply to these rumors is that they can only be due to instances where unsuitable cement has been improperly applied, and that it is an actual fact, based both on experience and reliable investigation, that Portland cement, if of good quality and fineness, properly applied to clean steel constructional work, affords an absolutely anti-corrosive covering. Unfortunately, of course, owing to there being no such enactment as the Food and Drugs Act applicable to building materials, inferior foreign 'Portland' (sic) cement or natural cement finds its way on to buildings under fictitious labels where there is either lack of supervision or where the buildings are carried out by speculators who have no interest in having their work done well, and, further, insufficient attention has so far been accorded to the proper application of such protective coverings. Again, if the cement be applied in the form of concrete, unsuitable aggregates are frequently used. Given a neat standard British Portland cement properly applied, even in thin layers, there need be no fear of corrosion, while if a good Portland-cement concrete is applied thoroughly wet so as to form a dense covering free from voids, there need also be no fear in this direction; but in both cases it is of importance that the steel should be clean before the coating is applied. What is required for the development of good construction in the metropolis is not the abolition of steel or the reduction of its use to a *minimum*, but the compulsory application of protective coverings wherever such steel constructional work is used; and this it is to be hoped may be a feature of the Building Act Amendment Bill in preparation for 1907, the more so as cement concrete of suitable aggregate, properly applied, is also of the utmost value in modern steel constructional work as a fire-resistant."

MINARETS.—The minarets give more character to the mosques and to the whole city of Constantinople than any other single feature. No mosque was virtually complete without a minaret, but the desire for increased magnificence soon multiplied their number. Their primary use was to elevate the "muezzin" who summoned the faithful to prayer, so that his voice might be heard above the surrounding roofs, but the minarets grew quickly beyond this first necessity, and if the "muezzin" were to chant his call from the upper balconies of later minarets, his voice would be almost lost in the clouds. The minarets are also used for illumination, and on the nights of the great religious festivals their balconies glitter with thousands of lamps all over the city. The minarets of the Yeni Valideh Mosque rise to about 240 feet above the ground, but several in Constantinople must be considerably over 300 feet in height. The roofs are steeply conical, framed with wood and covered with lead, and terminated with a finial bearing the crescent. The smaller minarets have two balconies, and none have more than three. The design of all the minarets is practically identical, the shafts being polygonal and slightly reduced in diameter above each balcony. It has been said that Turkish minarets are the ugliest form of a singularly beautiful feature; but they may claim to have that

relative fitness which is the greater part of beauty. Although in themselves they may lack the rich outline of Cairene minarets, yet Cairene mosques have not that complexity of cupola and dome to which the severer elegance of the Turkish minaret acts as a necessary foil.—*E. F. Reynolds before the A. A.*

THE ACIDS OF SMOKE.—Dr. Samuel Rideal, in a paper on this subject, read before the Royal Sanitary Institute, discussed the evil effects arising from the acid gases associated with all kinds of coal-smoke. He pointed out their injurious action on exposed fabrics and on building stones, and drew attention to dolomite limestone in particular, of which Westminster Palace was built, as a stone which appeared to be most affected, owing to the solubility of the magnesium sulphate formed. Oolitic and Portland limestones, of which St. Paul is built, he found contained little or no magnesium carbonate, and were far more durable in acid town air. A baryta wash seemed to be one of the best antidotes. With regard to iron, as in the case of Charing Cross station, also they found that it rusted in the presence of sulphuric acid at a far greater rate than iron in a country railway station. As they came nearer to London the sulphur in the iron increased. Twelve miles from London it amounted to about 3 per cent. of the sulphate of iron in the oxide of iron, while in London itself the iron rust had a quantity of sulphate which was about 10 per cent. of the oxide of iron. The agitation within recent years in Parliament for the removal of the sulphur clauses from coal-gas Acts elicited the fact that the amount of sulphur given from coal was a thousand times greater than from gas, which, in the opinion of the author, was a thousand times more important. He referred to the possibility of the elimination of the free sulphur from coke, which would remove the chief objection to its extended use, and pointed out that coke, being free from black, sooty and oily particles, the gases contained therein were more diffusible, quickly become dissipated into the greater volume of air, and when condensed by rain, or by contact with cold surfaces, were more dilute and less harmful than the corresponding amount of acid produced from coal consumption.

THE SULEIMANIYEH.—"In 1550, Sinan," said Mr. E. F. Reynolds in a paper lately read before the Architectural Association, "began the building of the third great mosque of Suleiman I., which is called the Suleimaniyeh after him, and which, in point of size and natural position, dominates almost all Constantinople. This mosque is 227 feet in width and 203 feet in length, and with the forecourt, makes up a total length of 359 feet. It is interesting to compare the size of this, the largest of the Turkish mosques, with the church of Santa Sophia, its prototype. The church is 237 feet wide and 291 feet long, its total length, including the original forecourt, being about 444 feet. Thus, while appreciably smaller than the church, the mosque is, nevertheless, on a most magnificent scale. The diameter of the dome is 85 feet 4 inches, as compared with 10 feet 8 inches in Santa Sophia. The mosque itself in some degree indicates a reversion to an earlier type, for only the east and west sides of the dome have semi-domes applied to them, while the north and south sides are filled with arcades bearing tympanum walls. Mr. Reynolds said he could find no reason for this reversion in the mosque itself, and was inclined to surmise that some reactionary influence may have been brought to bear on the architect. Sinan, similar to that which compelled Wren to build St. Paul's Cathedral on the Gothic plan. The arrangement of the dome and the east and west semi-domes, with the lesser semi-domes, is similar to that of the Mosque Shah-Zadeh. The north and south aisles under the dome are divided into three bays, and these are grouped in a novel and somewhat curious manner, the central bay being larger than the other two. This setting out has the result of putting several of the arches out of centre with the cupolas which they carry, and the effect is not altogether satisfactory. Externally the grouping is less compact than in the previous mosques. The great arches beneath the dome had always been sustained by internal buttresses passing over the aisles; but here, probably on account of the great scale, they project above the roofs and add a further complication to the already complex formation of cupolas and domes. A novelty is introduced in the great pent-roof which projects over the external galleries. Its purpose is to shelter the faithful while performing their ablutions at the series of fountains below, and it was generally adopted afterwards. For the first time, also, four minarets were erected—two in their usual position at the juncture of the mosque and forecourt, and the other two, of less height, at the western angles of the forecourt."

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THE method of the "compound" competition, to which we referred last week, has one very material advantage which, of itself alone, is sufficient to commend it to at least two of the three interested parties—the owner and the public: to both it gives assurance of a fair probability of getting a really satisfactory result in return for the money invested in the actual building. The compound competition secures to the owner the inestimable benefit of a chance to amend and improve his programme in consonance with advice secured to him by the preliminary competition. Essentially, this primary competition may be considered not as one to select a design, nor yet as one to secure an architect, but rather as one to disclose the proper terms in which the conditions of the final competition shall be stated. The first programme is assumed to be prepared by the expert adviser who, presumably, has blocked out some sort of a solution that would satisfy the conditions as imperfectly stated by the owner. For such aid the owner pays his adviser a stipulated fee. He next receives further professional advice in the guise of the answers to his conundrum submitted in the form of designs by architects who have entered the open competition. For this aid he pays, as agreed, by selecting a fixed number of competitors to take part in the final competition with an equal number of specially invited architects selected from the "leaders of the profession." As the expert adviser has had his personal conception of the proper solution affected by his own original study, and by his consideration of the first set of designs, it is quite likely that it would be well to dispense with his services after he has prepared the amended programme for the final competition, and in his stead to employ a new expert adviser, who would be in a position to weigh the solutions against the conditions as actually stated, not as they were intended to be and believed to be by the owner. For this final service the owner pays by awarding the job to the successful competitor, by paying a honorarium to his second adviser, and by paying each of the final competitors that modest sum agreed upon, which shall in part compensate them

for their outlay of time and money. The transaction, that is, is from start to finish businesslike and justifiable.

THE profession, which resolutely takes a one-sided view of this matter of competitions, has always looked with disfavor upon the "double" competition as ordinarily conducted, and rightfully, since the double competition amounts merely to a competition, upon the same programme, between a few men who have already competed with one another. The incentive of a new (or amended) programme and fresh and superior competitors being lacking, the double competition ordinarily results merely in the resubmission of the original designs so little changed by the restudying they are supposed to have had that the owner is disposed to think they have not been restudied, and because of this turns to their reconsideration in a discontented frame of mind. No objection of this kind can be laid against the "compound" competition. All that can be fairly alleged against it is that it, possibly, promises to consume too much time, and perhaps call for a needless amount of money for fees and prizes. But this need not be so. Considering the real purpose of the preliminary competition—the acquirement by the owner of fuller information—the programme, while precise, need not be elaborate in its requirements and the scale of the drawings as well as their number may be small: drawings at a sixteenth—or, at most, an eighth—scale, and rendered in pencil, should be enough for the purpose, as such drawings should certainly reveal to the trained eye of the expert all that new and as yet undiscovered talent which it is the owner's right to avail himself of, if he can but come in contact with it.

THERE are several things about competitions that architects would do well to remember constantly. First, no one is constrained to take part in a competition: the action is purely elective; but, having elected to take part in one, it is unmanly to whimper over the manner in which it has been carried out. Secondly, every competition is a success—to the winner and generally to the promoter. Thirdly, there is no single solution, no supreme excellent. There are innumerable solutions of every problem, and the selection of one of them is a mere matter of personal preference, either on the part of the owner or his adviser. It follows, then, that different advisers would be fairly certain to make varying decisions, and hence the storm of abuse that disappointed competitors visit upon the adviser is thoroughly unreasonable. Fourthly, the decision of a competition ought to, and must in certain cases, rest absolutely with the owner and not with the adviser. This must always be so in the case where the owner is represented by a committee or commission, since, being merely a delegate body itself, it is powerless to delegate its own powers to any one else. Hence it is that complaints made against an adviser because in his report he recognizes this fact, and so merely "recommends" the adoption of one or another, or a combination of one and another, design are merely a proof of ignorance on the part of the complainants.

THE *Builders' Journal* publishes a list which gives certain particulars concerning the "competitions of 1905," as the heading has it, and yet the four-score or so of competitions here listed can be but a small portion of those actually held in Great Britain during the past year. Only one enterprise of prime importance is entered in the list and that the rebuilding of King's College Hospital at Camberwell, at a cost of two million dollars. In this case six architects were invited to compete with one another, each of them presumably being paid "a little something" for his trouble. But in the next most important affair, the very interesting competition for the Wesleyan Connexional Hall, at Westminster, one hundred and thirty-two designs were submitted, each of which, judging from the character of the many we have seen published in the English periodicals, could not have cost its author less than five hundred dollars for draughtsman's work alone. The one hundred and thirty-one disappointed competitors contributed upwards of sixty-five thousand dollars' worth of unrecompensed labor to solve a problem which would have been satisfactorily solved by any one of the twenty best designs submitted, but not so satisfactorily as by any one of twenty others which might have been sent in, but were not. The sponsors of the affair doubtless feel they only got their rights; while the defeated competitors only half perceive that they got something less than theirs. The trivial character of some of these competitions is very surprising. Amongst them we find a cottage-hospital costing \$7,000; another one costing \$5,500—this one drew out forty-one designs! a Carnegie library costing \$7,500, and eight cottages, each to cost \$900; while for a \$35,000 Carnegie library two hundred and seven designs were submitted! All of which seems to show that there are a great many British architects in search of even very small jobs.

THE terms of competition for a new *École des Beaux-Arts* at Nancy have one or two points that deserve mention. In the first place, it is a double competition that is to be held, the first one being only to determine the selection of the five contestants who are to take part in the final competition. Next, the execution of the design ranked first in the final competition is to be placed in the hands of its author, as should be the case, while to the design placed second is assigned a prize of four hundred dollars, equal prizes of one hundred dollars each being given to the three other designs, as to the comparative merits of which the jury declines to express an opinion. The most interesting point covers the compensation of the architect of the actual building, which is expected to cost eighty thousand dollars, upon which sum a normal five per cent. commission would yield four thousand dollars. Accordingly the programme assures competitors that the fee paid the architect of the building shall be four thousand dollars; and, further, that this sum shall be paid to him "*même si la dépense réelle n'atteint pas 400,000 francs*"! But as no promise of a commission on any excess of actual over intended cost is made, the idea seems to be to encourage the architect to keep well within the limit of cost, so that he may, if he can, enjoy the agreeable sensation of having been paid something more than standard rates,

RECENTLY the New York Board of Education issued an order to the effect that the school-teachers should no longer undertake to ventilate their classrooms by opening windows when conditions seemed to require it, the reason for the order being that the schools were now ventilated by some mechanical apparatus, and, moreover, the opening of the windows was wasteful of heat and caused an increase in the coal-bills! Naturally the teachers, who know what the conditions actually are, protest vigorously, and if the facts are as stated the ventilating device, whatever it is, is certainly not properly installed. In one case the inlet-shaft, which has its opening only four feet above the pavement! is placed in a reentrant angle of a court where, the school being near a market-house, dust and orange-wrappers are seen constantly eddying about as high as the fourth-story windows. Here, though the rooms are dusted twice a day, one can at twelve o'clock write one's name in the dust upon a desk that was dusted at ten. In this building is the Training School for Teachers, and the record of deaths from quick consumption among these well-grown pupils is said to be startling. The engineer in charge of the apparatus says that "the quantity of dust is so enormous it would clog cotton-filters in an hour and stop the fans, and one man would have to spend his whole time changing them." Probably a man's time could not be better employed—that is, if the inlet must be just where it is and only four feet from the pavement.

PRESUMABLY such a blunder as this will be corrected, for if there is any one thing that people are willing to have public money expended on it is the care and education of their children, a fact that is borne out by the report for last year just issued by the New York Commissioner of Education. From this report it appears that, in maintaining the elementary schools of that State, there was expended the enormous sum of more than forty-one millions of dollars, at a cost per pupil of \$33.45. Of this total, rather more than one-quarter was spent upon buildings, new and old, sites, furniture and, we suppose, ventilating apparatus. On the other hand, the State of Ohio spends but seventeen million dollars in the support of its schools, or at the rate of \$13.54 per pupil.

THE Commissioners of Luzerne County, Pa., have at length determined that the county is likely to lose less by defending a suit for breach of contract than it would be certain to lose if the late deadlock over the building of the County Court-house should be allowed to endure longer. They have therefore dismissed the architect of the building, Mr. F. J. Osterling, of Pittsburgh, holding him to be, because of his alleged dilatoriness and devious methods, more responsible for the deadlock than the building contractor. It would seem as if Mr. Osterling might have a good deal of trouble in maintaining his status as an aggrieved party to whom damages are due, seeing that two independent Grand Juries, after full investigation, have formally recommended his dismissal, and that a public indignation-meeting was called and held to protest against his obstructiveness.

## REPORT OF COMMITTEE ON COMPETITIONS, A. I. A.

WHILE the committee do not consider competition the best method of securing an architect, at the same time they recognize the fact that, in a large number of cases, it is apparently the only feasible method to adopt. The qualifications of an architect to produce successful results in the completed building comprehend artistic skill in designing, mechanical knowledge in construction and executive ability in management; want of strength in any of these qualifications may be the prime cause of unhappy results in the completed structure. The question of design is the only question usually considered in a competition, while the three necessary qualifications are carefully weighed before an architect is secured by direct selection.

We wish to call the attention of the profession to the urgent need of a more thorough understanding and united action among architects on this subject for the protection of the architect, his client and the community, with the view of securing the most successful, artistic and utilitarian results in the future architectural development of our country. While it must be acknowledged that the awards in a majority of competitions are open to criticism, if we are candid, we must appreciate the fact that members of the profession are solely to blame for this condition. Unjust competitions are due to the faulty proposals accepted by the architect who is not legally compelled to be a party to the conditions.

Initiators of competitions rarely impose improper conditions wilfully, but ignorantly, and most frequently because they find members of the profession, well educated men of reputation, eager to make and present drawings with or without conditions. The character of the programme, no matter how faulty, is no bar to the zeal with which members of our profession work day and night, expending energy and brain power, on elaborate drawings without any reason to expect, or even to hope, that the best scheme or the most artistic building will be the result of their labors. Architects are so eager to present plans that clients feel they are complimenting and honoring the profession by giving its members an opportunity to display their wares. Clients and committees when informed as to just and reasonable regulations rarely fail to conform to such suggestions. In that minority of cases where improper conditions are insisted upon, architects who respect themselves and honor their profession should decline to present drawings. Clients unable to secure competitors of standing will of necessity come to terms and have a higher respect for the individual practitioner and the profession as a body.

While many competitors can be secured in competitions, no matter how faulty the programme, it is a pleasure to state that a number of the most capable and honorable members of our profession positively decline to consider a scheme unless the provisions are such as to offer a guaranty of intelligent and unbiased selection and the employment of the author of the selected plan at a reasonable compensation. By improper competition it must be admitted and regretted that to-day the public loses an opportunity of securing the finished work of a large number of the most skilled men in the country. As the profession and the community lose by hasty, ill-advised, or venal competition, it is important to agree on the fundamental terms of a just programme and decline positively to enter unless such terms are fulfilled. The Institute adopted a "Code" for the conduct of competitions at the Cleveland convention. This code covers the salient features and is issued as a guide to juries in the formation of a programme. Although this code has been the means of materially improving the tone of competitions, it does not appear to have barred members and other practitioners from accepting conditions notably humiliating.

The most costly buildings awarded by competitions are for Federal and Municipal governments, therefore a short review of the methods adopted by various governments will be interesting.

Securing the passage of the Tarsney Act was an important work done by our society. Under this law the Federal Government has secured for public works the services of some of the most skilled designers, able constructors and efficient executives of our day. The programmes have been drawn by Mr. James Knox Taylor, Supervising Architect. The competitors were at first selected from a list in which half of the names chosen were because of proved fitness and half for political or local reasons. In the later competitions the names have been selected only because of their proved skill, experience having shown the futility of admitting competitors for other reasons. The awards have been made by a jury of experts and the drawings have been submitted without marks of identification. The successful com-

petitors have in each case been from among the men whose names were selected because of proved capacity.

The programmes having been drawn by an architectural expert have fulfilled the various conditions necessary to make the preparation of drawings the least burdensome and so as to secure a selection purely upon the merits of the scheme presented. One fundamental feature has been eliminated by the secretaries of the Treasury from the programmes, *i. e.*, the payment of each competitor for the actual expense of making the sketches. The work has in every case been awarded to the successful competitor, and he has made a contract with the Government to receive for his services 5 per cent., except in one instance, on the cost of the building. The competitions held under the Tarsney Act have proved very successful, the awards of the juries have met with the unanimous approval of the profession and, with few exceptions, of the unsuccessful competitors; twenty-three buildings have been awarded under this law.

The Tarsney Act has been the precedent for other important Federal competitions, among which may be mentioned the Municipal Building for Washington, and the new Agricultural Building. While the programmes for these buildings were in the main satisfactory, the officers in charge interpreted a clause in the programme unjustly to the successful competitors. This interpretation may lead to monetary loss by the Government in one instance and loss of artistic expression in both cases. In the Agricultural Building, in the clause that the architect was to be paid according to the Schedule of Charges of the American Institute of Architects, it was ruled that the schedule allowed the privilege of paying for the plans at the rate of 3½ per cent. and then placing the supervision under an Engineer officer. Messrs. Lord & Hewlett contended, with justice and right, that the programme called for their supervision of the work and a 5 per cent. commission. The architects, because of insistence upon their rights, were summarily discharged and another firm was given charge of the work without supervision, except when called in consultation by the Engineer officer. Messrs. Lord & Hewlett have brought suit against the Government for their fees. The same interpretation was placed upon the Municipal Building programme, but the architects, Cope & Stewardson, accepted the conditions imposed.

All architects and men of business insight will understand that the Federal Government cannot get the best artistic results without the constant supervision of the original designer and that without it the people will lose the value of a proper art expression in the finished product.

While these competitions were satisfactory in their programme, the interpretation placed upon the programme was unfair, and shows the necessity of a clear understanding between the interested parties before entering a competition.

While the work under the Tarsney Act has proved such a marked benefit in our architectural development, it is to be regretted that this act only applies to buildings controlled by one Department of the Federal Government. Building operations are instituted and conducted by other branches of the Government: The House and Senate; the War Department; the Department of Justice; the Interior Department; the Agricultural Department; the Marine Hospital Service; the Lighthouse Board; the District Government and the Smithsonian Institution may be mentioned as Departments to which the Tarsney Act does not apply. While officers of some of the departments named have been wise in the selection of architects, the large majority have shown great lack of artistic perception, and numerous buildings have been erected by which we must all feel humiliated.

There should be a commission or bureau composed in the majority of architects of known capacity (similar to the Council in France), who will conduct all competitions for Government work and in this way control design in grouping and individual buildings, the landscape, statuary, and decorations so as to produce harmony, not discord, in the composition. The committee feel that no better commission of this character could be made as a permanent branch of the Government than the Commission whom the President has directed the Executive Departments in Washington to consult before erecting buildings in this city. This Commission is consulted only in reference to the character and location of buildings, they are not consulted as to park treatment. They should be given a legal standing and have veto powers on the parts which go to make up the whole composition as well as similar power in all Government Art matters, as exemplified in building, landscape, statuary, bridges and decorations; in this way our future art de-

velopment would progress on harmonious and artistic lines.

In France, where art and economy have been most thoroughly studied and where they have had the advantage of long accumulated experience, architects are selected on definite and well considered lines.

The French Government has a technical body of experienced men in which architects predominate called a building council, to whom all questions relating to Government buildings are referred. This council employs as auditors and examining experts the architects who have won the Prix de Rome and have had four years' sojourn and study in Rome. After testing their capacity the Government selects, as vacancies occur, from these highly educated and capable artists the architects for municipal, national and historic buildings.

The council may select an architect for special qualifications adapted to the work, or the Secretary of a Department may appoint an architect on the approval of the council. The Secretary by this veto-power of the council is protected from outside pressure and political intrigue. Before the work commences the plans must be approved by the council. This council also conducts and selects architects by competition. The men who have won the Prix de Rome have almost without exception proved successful in the competitions for large Government Buildings.

In England the Office of Works, one of the recognized ministries of the country, is in charge of all Government buildings, except military barracks, local admiralty buildings and police-stations. The great Government buildings in England have been designed and supervised by architects who have no connection with the Government. The architect for the New Admiralty Buildings was selected by an open competition. The architect for the Queen Victoria Memorial was selected through an invited competition, the Royal Institute of British Architects being asked to nominate the competitors. The New War Offices and the extension of the British Museum were awarded in competition by means of known works from a number of architects, nominated by the Royal Institute of British Architects.

Each Russian Ministry has its technical council, who are entrusted with questions of building and who must approve all designs. They select for their ordinary buildings architects who have passed a course of study in a Government school of architecture and are known as Court or Palace Architects. The technical committee conduct competitions and select designs or make direct selection according to the fitness of the architect for the work to be undertaken.

The method of conducting competitions, except under the Tarsney Act in the United States, has been as varied as is the character of its people. They are instituted for many reasons: To give personal friends an opportunity to win a commission; to give the local architects a chance and through them secure business affiliations or advancement; to throw a sop to placate business elements, thus giving an apparently fair opportunity to all competitors with the real intention of covering the appointment of a previously selected man; to secure the most artistic design and the most suitable arrangement of plan for the future building.

It would seem hardly necessary to advise the profession to carefully avoid all competitions which have not clearly in view the selection of the best scheme and the most skilled architect.

We wish to call attention to clauses usually found in faulty programmes:

*First*, it is improper when a programme calls for a building of fixed dimensions, character of construction and material and at the same time states a price for which the building is to be erected wholly inadequate for the character and dimensions of the structure demanded. There have been instances where the conditions were fixed and still the award was made, the committee knowing that the executed work would cost double or treble the amount stated in the programme; among notable cases of this kind may be mentioned the Soldiers' and Sailors' Monument in Indianapolis; the City Hall in Richmond; the Harrisburg State Capitol, first competition, and the Municipal Building in Washington, D. C. Such awards place the architect who is honest and attempts to make a plan for the building within the appropriation and in conformity with other requirements at the mercy of the man who ignores the question of cost. When the building is completed and the cost known, the people feel cheated. They lose their faith in the profession, feeling that its members have shown a want of practical knowledge, inefficiency in business methods, or a still more serious lack of strict integrity. In this way one member of our profession may temporarily,

and we believe only temporarily, gain a monetary advantage.

*Second*, no programme should be drawn up without expert advice; through this advice a committee will be able to appreciate the various requirements that should be introduced in a programme, both for the protection of the client, the members of the profession, and, most important, the rights of the public in the artistic expression of the completed building.

*Third*, avoid programmes which only require the services of the architect to prepare the plans and specifications. We are aiming for the most artistic results and no building can attain its best final expression unless the original designer has charge during the execution of the work. Changes are constantly being made by a designer, zealous and sympathetic, while the building is in progress, to better the character of detail and make the completed structure a work of fine art.

*Fourth*, another faulty clause of many programmes is to call for the architect's services at less than the minimum rate. It has been clearly demonstrated by statements from about fifty of the men who have done the monumental work of the country that their actual outlay for making plans runs from 2½ to 3 per cent. of the value of the building. It must be clear to a business man that to reduce the architect's remuneration to a point where he cannot perform his services in a proper manner without loss, will at least offer an inducement to him to curtail his services to the detriment of his client, the finished building and the rights of the people to the best art expression.

*Fifth*, another fault in many competitions is the requirement of elaborate drawings and specifications instead of simply sketch-drawings, from which the client may decide upon a scheme or select an architect; this elaboration of drawings simply increases the labor of the architect without giving any advantage to the committee or judges in the competition.

*Sixth*, another faulty clause which should be omitted in many Government and Municipal competitions is the statement that the committee will select an architect who, in their judgment, submits the most acceptable scheme and then use their best endeavors to get the State Legislature or the United States Congress to authorize his appointment as architect. This plan has worked disastrously in several instances: the Muricinal Hospital in Washington was settled several years ago, the architect who received the first award did not even receive one of the monetary prizes, although he performed the work in a preliminary and a second competition. He has the satisfaction of knowing that he will be appointed architect of the building when Congress makes an appropriation, provided Congress does not call for another competition or name some other architect in his place. A similar clause was in the late Wisconsin Capitol competition, in which the commission, acting under the authority of the Governor in the emergency created by the destruction of a large part of the old Capitol building by fire, in the interim between sessions of the Legislature, though acting in entire good faith, were overruled by political pressure, and the matter still remains unsettled.

*Seventh*, it hardly seems necessary to call attention to the impropriety of communicating directly with individual competitors in the way of advice or instruction, although there have been cases where this was done.

The committee believe that an important step will be gained when all competitors meet with the commission, discuss and agree among themselves and with the commission as to the conditions of the final programme. They further believe that, in a limited competition, it is the duty of each invited architect to consult with the whole group before accepting the invitation to compete.

We think it desirable to call attention of competitors to a practice, which becomes more and more popular and in some cities is almost an established custom, that is a form of injustice to the client of which we should attempt to prevent a further growth. This is the practice of architects of employing skilled men only for and during competitions for the special purpose of designing and preparing plans to win. These competitive plans do not represent the taste and skill of the competitor or his office. We have heard of instances where competition-experts were employed to take charge of the office, evolve the plan, make the design and superintend the preparation of all drawings while the architect knew little of what was going on. Competitions are supposed to represent either the individual capacity of the architect or his office. The prime idea in instituting competitions is to secure the man who shows the greatest ability in plan and design; by the system mentioned the client does not attain what he has a right to expect. Work has been awarded

in this way in which the successful competitor had neither the education nor experience to see the work properly executed. If these experts in design who win the competitions would remain in charge of the execution, probably there could be no complaint. Their interest in the matter and power over the design cease as soon as the competition is won, leaving the actual working-drawings in the hands of men who are sometimes not capable of carrying out the design in conformity with the original scheme and the client thereby loses what he had a full right to expect. We do not know what remedy to suggest for this undoubted injustice to the client and to the community. It has been suggested that architects who enter competitions should be required to make their preliminary sketches for the scheme *en loge*; these sketches being retained by the owners and the architects being required to work up their competitive drawings in conformity with such sketches.

Competition programmes are drawn in three forms:

"Limited," where a number of architects are selected and the competition limited to them.

"Mixed," where a number of competitors are selected and then open to any number of architects who wish to try their hand.

"Open," where all may enter who desire.

Uninvited competitors are very often confined by broad limitations, such as location in a city or having practised a certain number of years.

In the limited competition the owner or client selects the names of a number of architects, having sufficient confidence in their skill as designers, constructors and managers to entrust the work to any one of them; making the decision only a question of who presents the best scheme. The committee do not feel that there should be any mixed competitions; we feel that a competition should be either open or limited, although mixed competitions are authorized in our Code for the Conduct of Competitions. Mixed competitions seem to be illogical. The reasons for having a limited competition is the known character of the men from whom the client expects to get ideas. This strong feature is lost in a mixed competition, as an inexperienced man, a good draughtsman or an incompetent architect, with the assistance of a competition-expert, may win and the client so lose the qualities he hoped to attain.

The committee feel that owners who have large interests at stake would find it desirable to entrust such interests only to men of known qualifications. Those who desire to secure the services of some possibly unknown but brilliant man should have an open competition and run the risk of failure or trouble in the finished structure. This latter form of competition may be the means of introducing to the world some brilliant ideas or men, or it may be the cause of financial or other difficulties, and is to be commended only to those who wish to take the risk.

The method of selecting an architect which has been adopted in several instances in England in the past few years has much to commend it. There was instituted a competition in which the architects were requested to present drawings and photographs of their actual work, together with proof of their executive ability, and by aid of the data furnished the commission selected the architect whose capacity and skill in design and execution best fitted him for the work under consideration.

The committee have had quite a number of letters on the subject of the desirability of employing only practising architects as expert advisers to committees. In this way committees may obtain men who know the difficulties of practice and who are familiar with questions of cost and other matters relating to economics as well as judgment in design.

The cost of producing competition drawings is a matter in which the community have little or no interest. The public is apparently willing to accept the services of those who freely tender services without compensation. When compensation is required the public will value the service. The value you place upon your skill will be the standard at which the public fixes your worth. The cost of competitions is enormous. For the Cathedral of St. John the Divine, seventy sets of drawings were prepared. These drawings could not have cost each of the architects less than about \$2,000, and all the drawings submitted meant an expenditure of money amounting to \$140,000. The only compensation the architects received for their services was that the successful competitors had premiums paid for the four designs which were considered best. In the competition for the Phebe Hearst foundation, California, the drawings were most elaborate and from statements made by each competitor must have averaged at least \$5,000 a set. One hundred and five sets

of drawings were submitted, making the total cost about \$500,000. The only competitor who was probably compensated for the cost of this preliminary work was the successful architect, M. E. Bénard, of Paris, who won the first prize. In the West Point competition there were ten selected competitors who were paid \$2,000 each; the drawings cost each competitor about \$3,000, so that these competitors did the work at an actual loss. The Government received the services of these men and only remunerated them for two-thirds of the actual outlay. It hardly seems just, but I suppose no one should think of criticising the Government, if the architect himself is willing to give freely his money, labor and time.

After consideration of the subject, the committee present the following suggestions, which they consider fundamental and without which no architect should enter a competition:

1st. The object of the competition should be to secure the most skilled architect, as shown by the scheme which he presents.

2d. An architectural adviser should draw up the programme and advise the owner in relation to technical questions in making the programme, selecting the scheme and the architect.

3d. The amount to be expended on the work should be sufficient, within a reasonable margin, to erect a structure of the character and size indicated in the programme or there should be no cost-price stipulated.

4th. The programme should be in the form of a contract which guarantees the employment of the successful competitor to make the drawings for, and supervise the work of, the proposed structure at a proper remuneration.

5th. All competitors who have notified the owners of their entering the competition should meet and after discussion with the owner agree upon conditions which will be binding upon the owner and the competitors.

6th. Payment sufficient to cover the preparation of the drawings demanded of competitors in a limited competition and prizes or premiums in open competitions to cover such expense for at least the five best schemes should be guaranteed.

7th. The minimum amount of drawings to express the design and arrangement should be required.

#### THE LIMITED COMPETITION.<sup>1</sup>

THIS paper deals exclusively with limited competitions. I should like to have it understood at the outset that I am not arguing for or against limited competitions, or any other form of competitions in the abstract. They exist like any fact of nature. All we may do is to decide how we shall conduct ourselves in reference to them, as we would in reference to sea-bathing, or cigarette-smoking, or the use of postum.

Abstractly considered, competitions can be neither good nor bad. It is only when we come to particular instances and classes that these terms have any real significance. Things are accounted good or bad, according as they accomplish what they were intended to accomplish. Competitions are failures when the purpose of the competition is defeated. A competition is a failure, in which the winner of the competition does not become the architect of the building. It is a failure when, as a result of a competition, an unworthy selection is made. Anything that breaks down the competition and prevents its harmonious fulfilment tends to mark the competition a failure.

The causes which lead to the failure of competitions are numerous. Among them may be mentioned the lack of authorization on the part of those instituting the competition to carry out what they imply. Committees who have special powers delegated to them cannot delegate those powers to others, and this has often proved a stumbling-block. Another familiar cause of failure is a contradiction in the terms of competition, as in the matter of cost and accommodation. Every one, probably, has had the experience of a competition in which all the drawings were rejected because none of the designs presented could be executed for the cost stated.

Another defect in competitions, which is recognized particularly by architects, is their failure to adequately compensate the services of competing architects. This feature results in the frequent refusal of the best men to compete, and the failure of the competition from an ideal point of view.

It must be granted, I think, that the majority of competitions are entered upon by owners in a spirit which merits approbation. The owner, as a rule, wants to get what is best for his purpose, and it seems to him that by competition he will have certain ad-

<sup>1</sup>A paper by Mr. Robert D. Andrews, F.A.I.A., read at the 39th Annual Convention of the American Institute of Architects.

vantages for judging what is best that do not present themselves if he employs an architect outright.

It is unnecessary at this time to enumerate the different reasons which lead an owner intending building to resort to competition. It is sufficient simply to remind ourselves that in the larger number of instances his intention is good. What we have to do is to find out what there is in the procedure of competitions, as they are now generally conducted, which is hostile to the good purposes of the owner. The occasional instances when competitions are held as a means of cloaking a sinister intent need not be considered.

Any one of experience, who views the question impartially, will, I think, arrive at the conclusion that a large part of the features which have rendered competitions useless, or worse than useless, were due to a lack of sympathetic co-operation between the architects employed and the employer, before the terms of competition were decided upon. The most successful competitions in which I have been concerned have been those in which the competing architects have had an opportunity to talk over with the owner (generally a committee) the terms and conditions of competition before these were definitely put into shape. In one case in Boston, three architects (ourselves among the number) were selected to compete for a building to be erected upon a certain lot of land and to serve a certain purpose. Having access to the members of the committee before the matter came to a head, we suggested that the best way to have a competition was to get the architects who were to compete before the committee and discuss the whole situation informally. In this case this was done. The question of the amount of money to be appropriated for the building came up: the suggestion of the architects was that they be allowed a few days to prepare in consultation a sketch of the building, and get actual estimates for it from a contractor, together with the cost per cubic foot of recent buildings of like character. This information was reported to the committee and enabled them to intelligently state the cost of the building, which, however, was not made an obligatory condition in the terms of competition. The other details of the programme were discussed, and when all was arranged in a satisfactory manner, the terms as a whole were put into formal shape, with the assistance of an independent architect acting as adviser to the committee, and the competition proceeded to the utmost satisfaction of all concerned. The competition was adjudged by the expert adviser and his recommendations were carried out by the committee. Wherever this procedure has been followed, in my experience, the competition has been brought to a successful issue.

The essential principle which is illustrated by the instance I have quoted is that all the architects concerned in a limited competition have an equal right to assist in the determination of the terms and conditions of competition. They constitute a group to whom a certain specific proposition is made, and as a group it is their privilege and their duty to consider and arrange these terms. Any action on the part of any individual member of the group which militates against a free discussion of all the issues involved is injurious, not only to the interests of the individual architects, but to the interests of the owner as well.

The success of a competition depends upon arranging what is virtually a contract between the architects on the one side and the employer on the other, in such way that no difficulties will arise in the carrying out of the contract; and as a matter of fact it is only when we begin to consider how a definite, legal contract between the owner and the architects in competition *may* be made that we come to have a realizing sense of what the situation implies.

It would be a great advantage, owing to the complex relations of competitions, to have a contract habitually signed by the group of architects on the one hand and the employer on the other. If the signing of such a contract were an habitual thing, the owner would be obliged to consider whether he were authorized to do the things which the arrangement implies that he will do, and the architects would have a right to demand that he have such authorization. At the same time it would be necessary for the architects to recognize the rights of their fellows in the competition as to the terms, the amount of compensation and the technical provisions of the programme. In a word, the employment of a contract between the owner and the architects in cases of competition would make it necessary for all parties to think out with greater clearness the nature of the obligations which they are incurring. In order to make this clear let me state what would occur in case this idea were generally recognized by the profession:

An architect comes to his desk in the morning and finds an invitation to enter a competition for a certain building. The invitation contains perhaps an outline of the terms. Instead of sitting down and writing a note expressing his gratification at the great honor of being invited to compete, and his immediate acceptance of the invitation, he writes, acknowledging the receipt of the invitation and says: "I will confer with the other invited competitors in regard to the matter and will let you know in a few days my decision." This same answer to the proposition is made by all the architects invited, whom we may suppose to be five in number, and having their offices in the same city. The invited competitors then get together and discuss the situation, the amount of money to be paid for sending in drawings, the attitude of the committee regarding the employment of the successful competitor and the technical terms of the programme. Having threshed out the whole subject, they write their conclusions to the committee, possibly recommending a conference, or possibly, if the terms are in all respects satisfactory, saying that they are ready to accept them; and then comes up the very important question as to the form in which the acceptance of the owner's proposition is to be made, whether the proposition in question be his original proposition or one reached after conference. However informal the proposal or the acceptance of it may be, they together constitute a contract. The question, therefore, is not whether a contract shall be made, but whether the contract shall formally be drawn, whether it shall be precise in its wording or loose, whether it shall be legally binding or only morally binding.

It is very important, in my opinion, to consider carefully the point which I am now making, that the question is not of making a contract, for a contract is made in any case; but as to the kind of contract which is made, whether it shall be a good contract or a bad contract, whether it shall be a contract whose terms the courts will enforce, or a contract whose terms the courts will refuse to entertain for technical legal reasons.

Let us consider for a moment the relations involved in a limited competition. Let us call the owner or party issuing the competition proposal X and imagine that the proposal is made to the architects A, B, C, D and E. The proposal made to A is that he compete with B, C, D and E. The proposal made to B is that he compete with A, C, D and E. It is obvious that if the number of the competitors is changed, or if N is substituted for E, the proposal itself is changed. If A accepts the proposal as made, his acceptance means nothing until B, C, D and E have also accepted. The same thing holds good in regard to the terms and conditions of the proposal. The modification of any one of these terms changes the proposal as a whole, and to the modification of any one of these terms each one of the competitors has a right to object. The agreement, therefore, is an agreement not only between the several competitors and X, the owner, but an agreement between the competitors themselves. A contract registering the competition-agreement as a whole must, therefore, be so drawn as to register both the agreement between the architects themselves and their several agreements with the owners. The owner on his part must agree with each and all the architects, and not simply with the architects in their individual capacities. When the owner says that, as the result of a competition, he will employ one of the competitors as architect of the building, he is making a promise to the architects in their collective sense, a promise which cannot be made to any one specifically. There are cases of competition, of course, in which this promise is not made or implied, and in which the owner holds himself free from the obligation to employ an architect, but when this is done the distinctive feature of competition disappears. If there is no professional prize to be struggled for, there is no competition in the usual sense of the word.

The opportunity to erect an important building, with all the advantages of money and distinction coming from it, is what an architect strives for in competition. This chance is worth a great deal, and the owner avails himself of the value that architects attach to it by proposing to them that they shall make sketches for this work, with a chance of obtaining it, at a lower rate of payment than is usual and customary in non-competitive practice. In other words, the owner pays the competing architects, in part, with a chance of getting an important commission. Because he pays them in part with this chance, they agree to lessen the amount of their specific individual payment. It is interesting to observe the value which architects place upon this chance.

Let us take as an example an instance in which a \$1,000,000

building is to be erected. Nothing is more firmly established than the justice of a 5 per cent. commission to architects for their full services. These services are classed under three heads: 1st, the preparing of preliminary sketches; 2d, the making of working-drawings and specifications; 3d, the making of detail-drawings, supervision and the care of accounts. For preliminary sketches the charge of 1 per cent. is established; for working-drawings and specifications 2 per cent., and for the balance of the work 2 per cent., making the total of 5 per cent. While the amount of draughting involved in the preparation of preliminary sketches is proportionately much less in evidence than in the preparation of working-drawings, this fact is due to the rejection by the architect of innumerable studies made by him as a preliminary to the final and presented sketches. It is further to be borne in mind that the sketch of a building, as here considered, contains the germ of the entire structure. It includes what is most significant and original and vital in the architect's work. A fifth part of the whole commission is none too large a charge for this creative work. The main idea of the building is there.

The justice of this sub-division of charges is generally recognized, an instance of its official recognition being that of the city of Boston, whose School-house Department specifies as follows in its agreement with architects:

"When preliminary studies are completed the value of the architect's services to date shall be reckoned one-fifth of the estimated total commission. When working-drawings and specifications are ready for contract the value of his services to date shall be reckoned as three-fifths of said commission. If the Board discontinues the services of the architect at any intermediate stage, the value of his services shall be reckoned proportionately."

Assuming, then, that this subdivision of the total commission is justifiable and officially recognized, it would appear that the value of preliminary sketches for a \$1,000,000 building is \$10,000. Now suppose a competition were to be instituted for a \$1,000,000 building and the proposal were to ask five architects to compete and to give the four rejected competitors \$1,000 apiece for their drawings and the successful competitor the award of the work. In any large city of the country five of the best men of the profession would stand ready to accept this offer. In other words, the discount which each makes for the chance of getting the \$1,000,000 commission is a discount of \$9,000 from a service whose value is \$10,000. As there are four men in the competition who make this discount from their services, it is apparent that the persons instituting the competition receive \$36,000 worth of services in exchange for the business chances they control.

Now \$36,000 is a pretty large sum, and no business-man or group of business-men would be content to give out services or goods of that amount without some pretty definite assurance that payment was to be made in return. If there were any reason to doubt that the papers recording the transaction were invalid as legal evidence of the obligation, business-men would have these papers put in shape by a lawyer. Of this there is not the slightest question. But architects have never safeguarded the award of a commission for a building in this way, because the interest at stake is a common and mutual stake, and we are as yet too individualistic and uncivilized as a profession to have learned the advantages of professional comity.

It is worth while asking why the architects of a community care to pay so royally for business chances which are virtually already theirs. For if the five men invited are the "leaders of the profession" in the community where the building is to be erected, it is in the highest degree probable that the commission would come to one of them if no competition were held. Why, then, should they pay out so large a sum to change from one mode of arbitrament between their respective claims to another? Instead of being judged on the broad and stable ground of past achievement and general professional standing, they prefer, at great cost to themselves, to resort to the fickle court of anonymous competition. I think it would seem to any unprejudiced person that, in some way and by some means, the owner was getting the best of the architects in this bargain, and, if he is, does it not appear that he gets the power of persuading the architects to accept these terms by virtue of the fact that he approaches them as individuals. He says to one after another: "These are the terms. If you don't care to go into the competition I dare say we can find somebody who does," and when one has yielded, the rest are forced to go in on these terms or, withdrawing, suffering what is an apparent slight to their professional standing through their non-inclusion in the competition.

My contention is that the present attitude of architects in

regard to competitions of this sort is greatly lacking in dignity and self-respect. More than this, I hold that architects by their failure to co-operate and work together on occasions of this sort are doing a great injury to the interests of the community in which they live. My objection is not based upon the loss of dollars, but upon the loss of efficiency. We do not behave like intelligent beings in permitting ourselves to be taken thus single-handed. Our individual interests suffer, obviously, if we enter competitions on such ridiculously absurd terms; but if it were only these interests which suffered it would be sufficient for us simply to stay out of competitions. It is, I think, in spite of the fact that our individual interests suffer that we enter competitions which are unremunerative. We do it partly in the spirit of professional emulation, partly from the desire to do all we can in any capacity to promote the convenience and beauty of the life about us. It is not, I believe, the monetary issue that is the most important question for us in competitions. It is the question of efficiency of public service, of the establishment of disinterested standards and measures of value. We are the distinctive class who know these things from the professional standpoint. If there are defects in the system by which our cities, States and corporations secure the great buildings whose aspect does so much to make or mar the pleasure of living, it is our business to take the lead in the correction of those defects.

The upshot of my thinking upon this subject is, that we have never adequately realized what I might call the social obligations of competition, obligations which we owe to each other, to the owner and to the world at large. As we come to realize these fully we come to see that it is not sufficient for us to simply hold these ideals as ethical ideals, ideals which the good will follow and the bad will depart from, as they choose; we must go farther and insist that the ethical standards be given legal recognition and enforcement. We must claim not only that the architect *should* do right, but that in competition he *must* do right, and that the owner shall play his part in this work. The owner must be compelled to keep faith with the architect if the free spirit of artistic emulation, upon which this country depends for its architectural advancement, is not to be checked.

And now I would like to speak particularly of what may be done practically in this connection. I assume in the first place, that we recognize that every architect is entitled to charge as he chooses for his work, and by an extension of this principle that every *group* of architects are entitled to charge for their work what they choose. In other words, I assume that the question of competition-charges is primarily a local question, affecting in each instance only those who are concerned. This conclusion, of course, covers the idea that any group of competitors may establish the amount of work and the terms and conditions on which shall be done this work which is rendered for these charges. It seems, therefore, unwise that we should attempt to make a schedule of competition-charges which shall obtain all over the country, but that it is better, in fact, that we must, to leave the question to be decided by each group of architects in each instance. My proposal would be that the architects in each Chapter of the American Institute agree with each other that they will not enter any limited competition, to which any of the subscribers to that agreement are invited, without first conferring with such invited subscribers as to the propriety of the terms and conditions of competition. This achieved, they will then and there decide upon the form of contract which shall be made between themselves and the parties inviting the competition. But, inasmuch as the principles involved in a limited competition are the same wherever the competition is held, however the details are varied, I would suggest that the Institute itself, as representing all the Chapters, secure the advice of counsel upon a typical form of contract to be employed in cases of limited competitions. I have talked at length upon this subject with able lawyers and received their suggestions, and I am fully convinced that it is not a difficult matter to draw a form which can be universally employed, one whose use will materially safeguard the interests at stake, one, for instance, adopting the following lines:

#### DRAFT OF CONTRACT.

"X intends the erection of a certain building and requires the services of an architect therefor. A, B, C, D and E are architects. They agree, with each other and with X, to each prepare and submit to X preliminary sketches for the building, and in return for this service X agrees with them each and all to employ, and does hereby so employ, the author of one set of sketches as architect for the building at the usual percentage commission and to pay the four other architects each the sum of ..... dollars, whereby their several interests in this con-

tract shall be eliminated and it shall remain a contract between X and the architect employed as architect of the building."

In closing I would like again to insist that the interests which I am considering are not those of the architects alone. They are the interests of our clients as well, and beyond these the interests of the communities in which we live.

I would like also to read the following note I have received from Mr. J. M. Donaldson, of Detroit:

MY DEAR ANDREWS: The principles fundamental to your position on the subject of limited organized competitions I feel to be broadly right, and if a code with their substance as basis could receive the sanction and indorsement of the Institute, it would seem that much good would be accomplished thereby.

However, I cannot but feel that after all has been said and done in the way of resolutions and codes, the bringing about of decent competition conditions comes back to the simple "Golden Rule," and that without its application all other things are of little avail.

We are wont to cry out about the ills and evils of competition, but we fail to apply the cure, which is in our own hands, and it seems to me useless to storm.

Whereas, In every limited competition the owner's proposal affects each invited competitor equally and gives every such invited competitor an equal right to assist in the determination of the terms of that proposal; and

Whereas, The acceptance of specific terms by any one invited competitor operates to restrict the power of the others to modify and finally determine the terms under which the competition shall be conducted and thus constitutes a virtual abridgment of their professional rights; therefore, be it

Resolved, That it is unprofessional for a member of the Institute to accept unconditionally a proposal to compete in a limited competition until he has conferred with the other invited competitors as to the acceptability of the terms of competition.

## ILLUSTRATIONS.

EXTERIOR VIEWS: PUBLIC LIBRARY, CLINTON, MASS. MESSRS. WINSLOW & BIGELOW, ARCHITECTS, BOSTON, MASS.

INTERIOR VIEWS IN THE SAME.

ROMAN CATHOLIC CATHEDRAL, RICHMOND, VA. MR. J. H. M'GUIRE, ARCHITECT, NEW YORK, N. Y.

This building is being erected at the cost of Mr. and Mrs. T. F. Ryan, of New York, whose interest in the welfare of the Catholic Church is well known, and to whom, amongst other benefactions of a similar kind, is due the new Lady Chapel for St. Patrick's Cathedral, New York, now nearly finished.

CHOIR ORGAN FOR THE SAME.

HOME OF GEORGE LEE, ESQ., BEVERLY FARMS, MASS. MR. W. G. RANTOUL, ARCHITECT, BOSTON, MASS.

ENTRANCE GATE TO THE SAME.

THE OLD ESSEX COUNTY COURT-HOUSE, NEWARK, N. J.

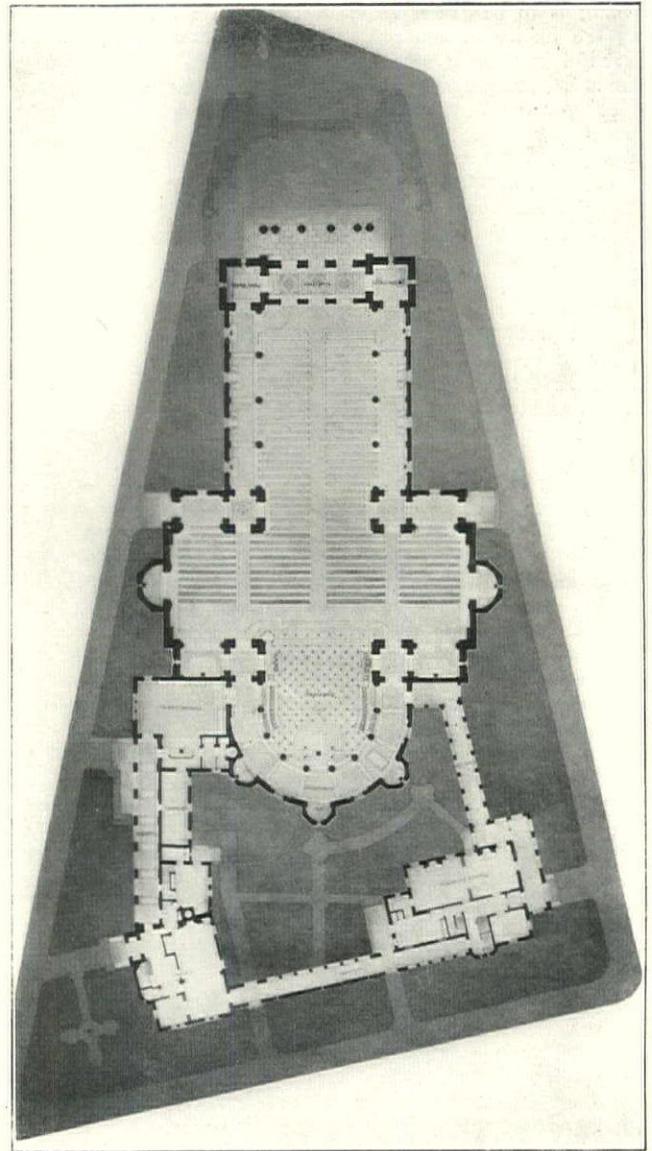
We have been unable to discover the name of the architect of this interesting old building, but, considering that, as shown by the date of the cornerstone, Aug. 23, 1836, it was built about the same time with the now vanished "Tombs" prison of New York, the external evidence is that it was probably designed by John Haviland, who about that time affected the Egyptian styles. The old building, in red sandstone, is about to be torn down so as to uncover the façade of the new white marble court-house, by Mr. Cass Gilbert, of which the pediment can be faintly seen rising above the roof of the old building.

### Additional Illustrations in the International Edition.

DETAIL OF HOUSE OF GEORGE LEE, ESQ., BEVERLY FARMS, MASS. MR. W. G. RANTOUL, ARCHITECT, BOSTON, MASS.

## NOTES AND CLIPPINGS.

THE CHARING CROSS INQUEST.—By the evidence given by Sir Benjamin Baker and Sir John Wolfe Barry, at the adjourned coroner's inquest, held on Monday last, it is made quite clear that the cause of the recent disaster at Charing Cross was simply the failure of the main tie-rod in the first roof-truss from the southern end of the station. The facts recorded in our recent article as to the condition of this rod are amply confirmed by the statements of these experts. It is now evident that the bar had



PLAN OF ROMAN CATHOLIC CATHEDRAL, RICHMOND, VA.

an original defect at the centre of a weld, although, so far as could be judged after the accident, the metal had originally been continuous at the outer surface. The examination made by Sir John Wolfe Barry showed that the flaw in the tie-rod extended over two-thirds the area of the rod, and was in itself an ample reason for the failure. In his opinion nothing but a laboratory experiment could have revealed the presence of the flaw, and it is very satisfactory to find in this evidence proof of the fact that the railway company's inspectors are not to be blamed for not having discovered the flaw in the course of their periodical examinations. All the expert witnesses examined were positive on the point that the mishap was in no way due to deterioration of the ironwork generally, and the estimate made by Sir Benjamin Baker was that, in its forty years of existence, the roof had lost only about 6 per cent. of its original strength. This computation may be open to question, but it is no doubt the case that the strength of the ironwork had not been seriously diminished by corrosion. The evidence of Mr. Percy Tempest and his assistant shows that a good deal of attention has been devoted to the cleaning, painting and repairing of the Charing Cross roof during the last few years, and we are glad to find that in returning the verdict of accidental death the coroner's jury attached no blame of any kind to the officials of the railway company. The most important lesson to be drawn directly from the accident is that a roof like this ought not to depend for safety upon a single tie-rod. Sir Benjamin Baker said that in modern practice there would be two tie-rods "so that if there were an invisible flaw they would have another to fall back upon." No doubt really practical and careful engineers actually employ two tie-rods in roof trusses, but we are sorry to say that the practice is by no means so general as it ought to be, even in the present day.—*The Builder*.

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WE entirely agree with those who, at Washington, taking part in the discussion of the conduct of competitions, expressed the belief that too many words by far are expended, when action would be more fruitful. Upon one point there seems to be fairly general accord, and that is that, in the majority of cases, those who institute competitions commit their sins against the profession in ignorance and not in malice. The cure for the condition of things complained of, then, evidently is to extinguish ignorance. No phrase is more trite and commonplace than this: "a campaign of education," and yet those who use it so glibly rarely do anything further about it: no one is ready and willing to enlist as campaigner, and so nothing is done. In the case of competitions, a campaign of education, and an effective one, can readily be mapped out, and, moreover, can be carried into execution without excessive cost or burdensome labor. Indeed, if it were our fortune to have a controlling influence in the conduct of the affairs of the American Institute of Architects during the next ten years, we would exert all of that influence in carrying on a campaign of education on about these lines:

A MOMENT'S reflection discloses the fact that the great majority of competitions are held, in the main, for three distinctly different classes of buildings: first, public buildings—State, county and municipal; second, ecclesiastical buildings, and third, educational buildings. It is necessary, then, to undertake merely the education of the comparatively few persons who have the charge of the erection of such buildings. It can readily be ascertained with the aid of a map and gazetteer how many States, counties and large cities there are in the country, and the names of the responsible officials can almost as readily be ascertained. It is a matter of common knowledge that State and municipal governments

are inaugurated with the first of the calendar year, while the affairs of counties and small townships are usually adjusted at "March meetings." Educational tracts and exhortations should, therefore, reach official hands during the first two months of each year, and if we could have our way, there should reach such officials a *brief* circular, dignified with the Institute's seal, addressed "to any public official about to build," setting forth that "the officers of the American Institute of Architects, a body which, though large and fully organized, is *in no sense a trades union*," would be glad to aid them, without charge, with counsel and suggestions as to the manner of arranging the programme and terms for whatever architectural competition they may intend to hold during the current year. To send more than this brief suggestion would be sheer waste. Few officials would read the Institute's "code" or "tract on competitions" with its discursive reasonings, though once their attention has been caught the code, the tract and other argumentations will be more readily accepted and perhaps read and digested. The first thing is to inform these officials that there is a definite source of wisdom to which they can turn in their perplexities with fair prospect of relief.

TO send even a single circular—much more to follow it up with others—to all the State, county and municipal authorities—to say nothing of all the school-committees and parish committees—in this country would take a good deal of time and money. But it is not obligatory to educate every one at the same time; they can be dealt with in turn, by States or groups of States, for an effective campaign of education must last more than a single year, and the annual expenditure of time and money can easily be kept under a wise control. If the "competition evil" is ever to be reduced to a minimum, it can only be through the application of intelligent and properly directed educational effort. Nothing real can be effected by arguments between architects in their conventions; little can be accomplished by discussions in their professional journals and not much more by letters in the daily press. Education must be applied before and not after the event; it must reach the intelligence of the actual promoter of a competition before his own crude impressions have taken solid form in his own mind. Reach public officialdom every year just after inauguration and before March meeting and something real will have been accomplished.

THE discussion at Washington was very curious, for in a sub-conscious way it all turned about the attempt to censure those who took part in the Cook County Court-house competition. Although there were several heads of grievance alleged, most of them were for declared wrongs committed not by the competitors, but by the promoters. The competitors were held by those who advocated censure to be censurable solely because they elected to accept the proffered sliding scale of compensation in place of a straight five per cent. on the cost of the building. And yet, in the report on competition, the Institute's own committee speaks repeatedly of a "reason-

able compensation" or a "proper remuneration" as being satisfactory, but nowhere does it dare to declare that that remuneration must be five per cent. when circumstances show that it would not be proper or reasonable. Moreover, Mr. Andrews, in his paper on limited competitions, declared that the competitors should meet to discuss and agree upon the terms of competition and amongst these the rate of compensation, thereby clearly admitting that the reasonable and proper remuneration is a variable, not a constant. It is curious that, with these admissions yet echoing in their ears, no one thought to ask those who were urgent for censure whether their own books could prove that they had invariably charged full schedule rates for their work. The question would doubtless have been impertinent, but it might have been enormously relevant.

FOR one thing at least the building fraternity of this country must always be grateful to the turn of the wheel of Fortune that fixed the city of Chicago just where it is. Necessity is the mother of invention in building matters, as surely as in anything else, and the necessity of experimenting so as to secure satisfactory foundations on the unstable soil that underlies the Western metropolis has, more than anything else perhaps, caused American architects and builders to study profoundly, and seemingly to master, the all-important matter of foundations. If the builders of the State-house at Albany, N. Y., had known as much about foundations as all architects now know, we believe the building would now have a completed dome as originally designed, and that it would not have been necessary, as it was last week, to close to the public and the occupants of the building the grand staircase leading to the Assembly Chamber. Ever since the building was begun there has been trouble because of unequal settling of the foundations, which resulted first in omitting the dome, next in taking down the vaulted ceiling of the Assembly Chamber, and later caused a strengthening of the foundations of the very staircase-hall which once more are causing trouble.

THE most interesting possibility now before the engineering world—one to which we have more than once referred—is that of filling the East River throughout a part of its length so as to connect the island of Manhattan and Long Island by a neck or isthmus of substantial length, so as to encourage the free expansion of New York City over the territory of Long Island. Besides being an interesting possibility, it would of course be a magnificently expensive one to undertake; but we believe that the ultimate returns would far more than justify the municipality in assuming the burden. Curiously enough, there has just been brought forward a wholly independent engineering proposition which, if carried out, evidently would make the East River scheme more feasible, and so more justifiable; for one of the first obstacles to be removed would be the opposition of the War Department to the closing of a "navigable stream" of such importance—an opposition that would be fostered by the owners of the "Sound steamers" and the other navigators of Long Island Sound. This second and unrelated scheme is nothing less than the cutting of a three-million-dollar ship-canal from Tarrytown on the

Hudson to Port Chester on Long Island Sound. As this would make a new and safer inside-passage to the Sound, commerce could better afford to lose the excitement of navigating Hell Gate. Besides, if the two operations could go on synchronously, the spoil from the canal would come in very handily for filling the East River, and the carry would really be no longer than that encountered in filling Boston's Back Bay.

THE East River scheme has its fascinations, and one cannot help wondering how one of Jules Verne's heroes would set about the job. For instance, we fancy such hero would decide to make dead water of it at a single operation, constructing his dam complete during the slack-water of a single ebb-tide, and that he would balance the advantages of these three schemes, at least: First, the sinking, at each end and on both sides of Blackwell's Island, of great steel caissons, designed on the general principal of the great dry-dock now voyaging to Manila. Second, the construction of a powerful movable-sidewalk upon which to erect countless prisms of concrete, each of the height of the span of the river's arm at the point selected; so that, when enough prisms had been built, the sidewalk could be set in motion and the procession of prisms would move up to the river's edge and there topple over into the river between guide piles, just as was lately done at Niagara. Or, third, the first dam could be built beneath the Blackwell's Island bridge and dead-water could be secured by quickly drawing across the river, from gigantic spools on each side, web after web of wire-cloth of ever-increasing fineness of mesh, and, once fairly still water secured in the vertical interspaces between the webs, filling these by pouring from the bridge above the fresh-made Portland-cement concrete standing ready in mile upon mile of dumping cars on the railroad passing over the bridge.

THE bill now before the Senate Committee on Forest Reservations seems well devised to secure enactment, and those of us who don't go in for the strenuous shooting of big game feel that the three million dollars required to establish the Appalachian Mountain Forest Reserve and the White Mountains Forest Reserve is but a reasonable offset for the sums that have been spent on similar reservations in less accessible parts of the country. The lumbermen and paper-pulp men are no respecters either of sentiment or of agricultural needs, and unless Congress takes speedy action an almost irremedial wrong to the Eastern seaboard will have been done, through the further and complete demolition of its present small forest area.

IT is impossible to measure the real importance of the step taken last week by the National Association of Erectors of Structural Steel and Iron Work, which is said to do ninety-five per cent. of the structural iron-work in the country, in declaring for the "open shop." The Housesmith and Bridgemen's Union may perceive it has met its master or may decide to lock horns and endeavor to inaugurate and maintain a great building strike. The indications, fortunately, are that the Union will decide not to fight.

REPORT OF COMMITTEE ON COMPETITIONS,  
A. I. A.—II.

## DISCUSSION:

MR. CASS GILBERT, OF NEW YORK:—Mr. President, I have no formal paper prepared, and hesitate to speak at all after the able discussion in which Mr. Brown has presented so calm, clear and intelligent a report, with which all of us must agree in part and some of us as a whole, and wherein Mr. Andrews has presented in such a fine, ideal way a condition which we all would like to fill, dignified and above reproach. If the suggestions conveyed in these papers could be put into effect they would make this Institute a great force, as it should be (and it is now a great force). That the competition must continue to exist—we all conceive that it does exist. Let us see if it *must* or ought to exist.

Some ten years ago, I remember asking the Secretary of the Institute if I might read a paper on competitions. He dissuaded me from it. To-day he asked me to do so. And now I am conscious that I am not able to do it, because I do not understand the subject well enough. I warn you that whatever position I take you will be disappointed in it, because it will be utterly inconsistent. But I comfort myself when I remember that in the language of Emerson, consistency is the vice of little minds and what we may think to-day we may not think to-morrow and what we do to-day we may not do to-morrow. Whatever position I take, I am sure of lots of company.

My fundamental proposition deals, as Mr. Andrews's does, with an ideal situation and not with conditions which obtain at the present time. My ideal is distinctly opposed to Mr. Andrews's as stated in his discussion. It rests fundamentally upon this, and I warn you upon the inconsistency of it: my idea is—*no competition at all*. The system is essentially wrong. It exists, but because it exists is no evidence that it is right. From my standpoint, competition is largely a gamble. The owner is the banker, we the players; disguise it as you will, it is a game of chance, and those engaged in it have themselves to blame if they lose. The ethical situation is clearly defined in the Golden Rule, but let us not put upon the Golden Rule all of the burdens of professional life, for we have not yet learned to guide our private lives by the Golden Rule, much as we prize it. How much less can we hope to guide competitions, when self-interest is so apparent, whether that self-interest is, as Mr. Andrews suggests, born of the desire for reputation or just pride in making more beautiful our cities or public works, or for the desire of money. It is *all* vanity in the last analysis.

I contend that better work is done without the competition system than with it. The ideal condition under which work should be designed is that condition which permits the owner or committee to consult with the architect during that period when the work is in its earliest stages, and to consult not only once, twice, and many times, but continuously.

Remember that you are taking up a new problem with a new man or committee. He does not understand the problem; he has but a rough idea. And you do not understand it as a whole, because there are new conditions, personal or individual, to the situation which must be successfully met and can be successfully met only through careful disinterested discussion, where you have no A, B, C, and D who are, after all is said and done, essentially your rivals for the commission. We must deal with that as a very practical question. When I enter upon a competition (and I have been in one or two small ones) I am not a gambler, I scorn to bet on a horse or play cards for money, but my stake is *my time, my money, my skill*, and the duty which I owe to other clients who have a right to my attention which I am diverting to speculative work.

The ideal conditions may come, and I hope they will—but not in our time, when you will so far forget your stake as to completely rise above the conditions that exist. At present, however, I fear you will insensibly try to ascertain what will win the competition, and that is not the worst of it. You don't present your best work, because you fear the result, doubt how the committee will receive it. There comes up in your mind the recollection that So-and-so won such-and-such a competition of a similar character by doing this or the other thing. The temptation is always present to try to win by presenting a design which you think will meet the approval of the owner and his expert advisor, rather than the plan which in yourself you know to be best but which is too original or unusual to risk. And then you stifle your own thought, pervert your own ideals, compromise with materialism and leave the world to miss the best that is in you.

Why do you go into competitions? To win the favor of those who have the award. You make no detail of the façade, no arrangement of plan, however small or large and no grand scheme which is not in competition, competition with the past. So life has established a competition in the larger sense. It has been said that competition is the life of trade, but that is not true; *co-operation* is the life of trade, co-operation benefits trade, competition kills trade more often than it helps it. Competition, if beneficial to any one, is to the benefit of the buyer, while co-operation is to the benefit of the seller. We, in this instance, are sellers. Mr. Brown shows by his report a few examples of what competition costs. I think he could cite many more examples. I have known, from personal experience, of cases where the expenses of the competitors were twice as large as the gross receipts of the successful competitor, and Mr. Brown has quoted a case in England where the cost to the competitors was *greater than the cost of the building itself*. What business condition can long exist like that, if it is not frankly and intelligently met? We have tried for years to make the competition system endurable. I recognize the value of the excellent suggestions that have been put forward. I have no well-worked-out method that is going to revolutionize, and make humanity perfect (as we ourselves are perfect) and which will run by itself and make us all sit sweetly on the sunny side of the plum-tree while the ripe and luscious fruit drops into our open mouths. When you have your competitors agreeing to these things, I say that by the time you have got to the committee—I don't mean the ideal committee, but the only committee that really exists—you will probably receive word that the committee has decided one of two things: (A) to invite some other competitors, or (B) to award the work by direct selection, which is what they should have done in the first place.

Among the ideal conditions which many think should be incorporated in the competition-programme is that we should have only limited competition. If we must have competition, this is a right step, because it lessens the loss to the profession and increases the merit of the work done. The owner had better have two good designs to choose from than a hundred bad ones. It has been suggested that competitions should only be held for very important work. In one community a hundred thousand dollars is an important commission; in another, a million-dollar building is comparatively unimportant. But the principle is the same. It should, and actually is, just as easy and just as right to have even the most important buildings, public or private, assigned by direct selection as by competition. The public authorities usually take the ground that competition prevents favoritism. Experience has taught just the opposite, for fraud is often cloaked under the guise of fair competition. A man who wants his work done and done well will select some able architect who he knows will do it successfully. A committee for public work can do the same. We consider the *limited* competition the proper thing because the owner wants that sort of man to do the work. He, therefore, selects several able architects to waste a certain amount of time guessing at his wishes, instead of employing some *one* of the aforesaid able architects to ascertain what the problem really is, and how it should be solved. Perhaps you will answer, "The expert adviser is for this purpose." Very well, if he is and can do it successfully give *him* the job in the first place. Do you get your expert adviser by competition? I understand that they were nearly up to this point in Boston several years ago. Perhaps the competition system is fully applied to "expert advisers" elsewhere by this time—I do not know. But what becomes of the opportunities of the other men, if he does you the favor to select you? Are they to be excluded from competing? I say that no man does me "a favor" by selecting me to compete. No man does me "a favor" when he gives me an opportunity to place my work in his hands. If there is any "favor" it is quite an equal one on both sides. When we receive more than our services are worth, we are doing a dishonest act, and when we receive less we are doing an uneconomic act, and the relation between architects and owners is absolutely reciprocal. The owner does you no favor. He owes it to the community to build well, and the relation is entirely reciprocal. I do not want to have to take my hat in my hand. I decline to ask for the *privilege* of competing. When the Institute takes that stand, the competition-system will cease. It will cease just as soon as this Institute wants it to cease and not one bit before. The owner likes the competition-system (unless he is an experienced owner). He likes the idea of evading the responsibility of a direct selection while he still keeps the idea that he will get the man he wants. He thinks if one design is worth some-

thing, that two designs must be worth twice and three times as much, and that at least he is getting an opportunity to choose, for which he does not have to pay. He says to himself: "Here, why should I have a limited competition? There are twenty men eager and anxious to make the design for this structure, why should I limit it?"

The distinguished director of the Carnegie Institute in Pittsburgh a few years ago came, with the best of intentions, to the architects in New York, Boston, Washington and elsewhere to ask them the proper method to establish his great institution and how best he could obtain the services of architects. He was told by direct selection. His committee would not approve it. He was next advised to limit the competition, and he persuaded his committee to do so in part, compromising on a mixed competition; there were, I think, six invited competitors. He worked with all the earnestness he was capable of—and he is an able, forceful man. He tried faithfully to do the best he could for his institution and believed, and rightly, that no better step could be taken than to pursue the most approved method of obtaining designs for the new buildings. I think forty-one designs were received. The director shortly afterwards said to me: "I am perfectly amazed at the attitude of your profession. I would never have had the courage to proclaim the principles which you stood for, had I realized that forty-one men of sufficient prominence were willing to submit designs in such a scramble as this." What a reflection on us! What a condition! Are we charging our clients too much money that we can afford to do this thing? If so, let us cut down our fees. The profession has only what it has from its clientèle. The profession has no "rich uncle" to pay the bills. We ought not to pay the bills. The owner doesn't want to pay the bill—what is the solution? It is very simple. Eliminate the condition that creates this cost. We must look to ourselves for the righting of such a condition, and until we are ready to say that "competitions are wrong, we are going to stay out altogether," you or someone else must pay the bill. Let us reduce it to its last analysis. *Competition is war, and war is hell.* Co-operation is peace. Peace and war cannot successfully exist together. As long as we try to make peace and war, and war with peace, and peace out of war and war out of peace, swaying this way and that way, uncertain of ourselves, untrue to the real economic conditions and qualifying or evading a frank, manly settlement of it, we will continue to have that internal strife which takes up four-fifths of the time of the Board of Directors.

MR. W. B. MUNDIE, OF CHICAGO:—You have heard all about the disease, but I will confine myself for a few moments to its cure. Everybody fights shy of the cure; they don't like the prescription. I have written the following prescription during the last two hours:

The American Institute of Architects has a code for the Conduct of Competitions. What we need most is a "Code for the Conduct of Competitors."

I have attended every Institute convention for the past ten years and every meeting but one of the Board of Directors for the past three years, and I believe I speak correctly, when I state that the sins of omission and commission of competitors and competitions has come up in some form or other at every meeting. It is time to stop theorizing and criticising.

Condemnatory resolutions are of little value when we ourselves have been the real sinners. This business of competitions is going to get worse instead of better, unless we organize on an entirely different basis.

We must consider the varying types of mankind. Many cannot hold back from temptation for the sake of the good of all. Many are selfish, others are ambitious and there are others who approve of the competition scramble under the guise of advance of art; and so on through the whole gamut of dissimilarity of men.

Now we march up the hill and now we march down again, and the young architect of to-day, who is to be the Institute man of to-morrow, asks the question, What do we stand for? And is it any wonder, when we see the pitiful finish of the late competition for the new Court-house for Cook County in Chicago, the programme for which was commented on in the report of the Board of Directors this morning? To many here who do not know the outcome of that competition, I will make it as brief as possible. The competition was a mixed one, a type permitted under our present code, where several were invited and paid a certain stipulated sum, while any other architect who had been in practice for two years previous to entering the competition was invited to compete for prizes aggregating \$8,500—

\$5,000 to the first premiated design, \$2,500 to the second premiated design and \$1,000 to the third design, while the seven invited competitors not receiving a prize were paid \$1,000 each—which made \$3,000 more of the tax-payers' money paid out for what?—ostensibly for the purpose of awarding the commission to the winner of the competition.

The cost of the building was set forth in the programme not to exceed \$3,500,000. What a splendid opportunity for the tax-payers to secure a creditable building! The prizes were of ample inducement to attain good results but the programme was sadly at fault. To the credit of the profession, only thirteen designs were submitted in competition and many members of the profession, even after being invited, declined to compete. The committee of experts awarded the premium to a design submitted by one of the open competitors and their report closes as follows: "We therefore recommend that, inasmuch as the design No. 1 presents the most attractive exterior and the plans numbered 5 and 6 the most convenient interiors, the Commissioners intrust the work to the authors of one of these two designs conjointly with the author of No. 1 making such arrangements as to the share of each in the work as shall be acceptable to them and to the County Commissioners."

In other words, it was a "cold storage egg" and had to be scrambled.

Now, I do not wish to take up too much time with professional ethics and an essay on the soulful poetry of architecture. I leave that to others, confining myself strictly to the prescriptive cure to check this prevalent epidemic. I am tired of this everlasting journey uphill and down again and seeing the small fellow being compelled to take a full Alopatic dose and the big fellow getting off with a Homeopathic dose, much diluted and graded in accordance with his standing.

I will, therefore, come to the point where I present a new complete "code of competition" for the American Institute of Architects.

Our present code of competition is too comprehensive. It is filled with provisions that permit changes and alterations to be made so that its spirit and intention may be sadly at variance with its ethical meaning.

The code I present is based upon the idea that our present by-laws will be so amended that any unprofessional conduct on the part of competitors will be promptly dealt with by a vote of censure, after a fair trial, that is drastic enough to prove efficacious, as has been proved in one or two instances heretofore.

#### CODE.

The American Institute of Architects recommends that, wherever possible, an architect be employed without a competition. When a competition is deemed necessary the procedure must be in accordance with the following code:

*Form of Competition.*—(A.)—The competition must be limited to a certain number of architects, each of whom is invited to take part.

(B.)—Each competitor to receive a certain sum of money to reimburse him for the expense incurred, this sum to be agreed upon between competitors and prospective client, and this sum to be paid to each competitor other than the one awarded the commission, or a prize, if prizes are agreed upon.

(C.)—The author of the design receiving the first mention by the jury must be employed to design and superintend the erection of the building.

*Jury of Award.*—The jury of award must consist of not less than three members and a majority of the jury must be members in good standing in the American Institute of Architects and the entire jury of award is to be agreed upon between competitors and prospective client.

*Programme.*—The programme must be drawn so as to form a contract and be signed by all competitors and by the prospective client.

*Rules of Conduct.*—(A.)—All designs must be signed by the name of the competitors submitting designs.

(B.)—No member of the American Institute of Architects shall enter a second competition for the same building, unless he was a competitor in the first competition.

(C.)—No change or deviation from this code shall be permissible until such change shall receive the sanction of the Executive Committee of the Institute.

(D.)—It shall be deemed unprofessional for any member of the American Institute to violate any of the provisions of this code.

(E.)—It shall be deemed unprofessional for any member of

the American Institute to enter any competition based upon this code with any competitor who has once been censured for unprofessional conduct in competitions conducted under this code.

Remember that the members of the Institute are not to be governed by the actions of the Institute. It is purely a dice-box, black-and-red game, and not a gentleman's game. We do not say you shall never have competition. We say "That wherever possible an architect be employed without a competition." An owner does not want that.

"The competition must be limited to a certain number of architects, each of whom is invited to take part." A possible criticism of that is that a young man would never get a chance. But what he has to do is to wait a little longer. If he has it in him, he will get his chance; there is room at the top.

"Each competitor to receive a certain sum of money to reimburse him for the expense incurred, this sum to be agreed upon between competitors and prospective client, and this sum to be paid to each competitor other than the one awarded the commission, or a prize." That brings it down to a business basis. "The author of the design receiving the first-mention by the jury must be employed to design and superintend the erection of the building." Any owner who will not agree to that has a sinister motive for wanting a competition.

"The jury of award must consist of not less than three members and a majority of the jury must be members in good standing in the American Institute of Architects, and the entire jury of award to be agreed upon between competitors and prospective client." No one will differ from that.

"The programme must be drawn so as to form a contract and be signed by all competitors and prospective clients"—that from a business standpoint nobody could object to.

"All designs must be signed by the name of the competitors submitting designs." You may say, why, then they will know who the competitors are! Certainly. Why should they not? It is an insult to an intelligent juror on the face of it, for it implies that they would have favor for their friends. At the Carnegie Institute, for example, the pictures are signed and the jury are mainly artists, but no one thinks that the jury is swayed by the knowledge of who the competitors are.

"No member of the American Institute of Architects shall enter a second competition for the same building unless he was a competitor in the first competition." That will prohibit the annulling of the competition where an award is made to someone whom the owner does not favor. He is then put into a position of picking the man. An owner under this code organizes the competition; if he is not satisfied, he can pick his man.

The rest of this is purely on unprofessional conduct. We have to arrange our laws so that the cure will apply and apply quickly and not appear in the convention proceedings two years afterwards when nobody knows anything about it.

MR. JOHN M. DONALDSON, OF DETROIT:—Competitions without the co-operation of the architect are impossible, and if there are in them evils, these may be charged, at least for the purposes of this discussion, to the architectural profession.

Admitting that competitions have a reasonable basis for being, among gentlemen it should surely be possible to have them honorably conducted.

Assuming at the outset that the competitions which we are considering are intended to be fair, it should not be difficult to have the conditions accompanying them made definite, as well as broad enough to express the best judgment of the profession, at least as represented by the Institute.

I shall not attempt to formulate conditions, but leave that for more experienced and capable men. Nor would I have it thought that I believe that any conditions or codes will prove adequate to meet the exigencies of every case.

However, I desire to give expression to my belief, that in Mr. Andrews's admirable address will be found the material, both definite and broad enough, to form the basis of a competition-code which, if applied in sincerity, would eliminate in a large measure the evils which we know to exist.

If the competition paths are cleared of the underbrush of uncertainties, it would seem less difficult than it often is in actual practice to place responsibility for the too-frequent miscarriages of justice.

Codes and resolutions, however, bearing even the sanction and indorsement of the Institute, will avail but little, so long as we continue to ignore the fundamental principles of the

"square deal." To every one of us there is but one solution, and that seems to me to be embodied in the term "fair play." When in competitions any one of us shall choose to ignore the conditions of "fair play," he should be made to feel the meanness of it, through the straightforward justice of his fellow-workers.

The cure for the diseases common to architectural competitions is in our own hands, and none but ourselves are to blame if they are not cured. The knife must be applied to them in manly fashion, if they are to be eradicated. If the Institute is to accomplish what is felt to be necessary to place this matter upon a clean, honorable working basis, we cannot, as responsible members of the body, continue to close our eyes to deliberate infractions of the rules of "fair play."

MR. GEORGE B. POST, OF NEW YORK:—I am sure we shall all agree, without a dissenting voice, that a far better result is obtained by the selection of an architect than by competition. But at the same time we must realize that from the time the boy goes to the architectural school until he goes to the office to practise as an assistant his entire life is one of daily and perpetual competition, until competition is so thoroughly inbred into his composition that we cannot eradicate it in practice. Therefore, I think we must accept competition as a necessary evil and then use our utmost exertions as individuals and as an Institute to see that competitions are properly inaugurated and conducted and that the awards are made with fairness and propriety.

I have listened to the various papers read and it seems to me that, in view of the experience we have all had, every one of the propositions contain one or more serious errors or matters absolutely impracticable. It has, unfortunately, been decided by the courts that the powers of a corporation cannot be delegated to trustees in such a way that the trustees can make a contract with architects, in case of a competition, so that they will make an award to the successful competitor. I think all that we can expect is an assurance from the committee representing the institution that it is their intention to make the award to the man whose solution of the problem is that which in their opinion is best, whose design is most adapted to their purposes.

Personally, and I speak with considerable experience in the matter of competitions, for I have during a rather long period of practice erected over fifty million dollars' worth of buildings and the greater part of it was gained in competition, I have not altogether a perfect reliance on the ordinary expert jury. Except in the matter of competition for a design like that of a great monument which is purely artistic in character, the expert should always be a practising architect or several practising architects who know the practical solutions possible and who can see, as the theorist cannot see, that the whole problem is controlled by practical considerations.

I don't know that I can say much more on the subject except to reiterate what I started with, that I believe competitions will continue to exist and that all we can do is to guide them. I should be very sorry indeed to see this Institute degenerate into a mere court for the trial and censure, or possible expulsion, of delinquents in competitions or of those who have been guilty of unprofessional practice. I fear that, if it is made easy that trials should occur, the whole time of the meeting of the Board of Directors and the Executive Committee and the Convention itself would be taken up in hearing arguments with regard to such questions.

MR. JOHN M. CARRÈRE, OF NEW YORK:—The remarks and papers given to-day have been very interesting and the points of view that have been brought out have been very varied. I want to start by pleading guilty. I have entered a great many competitions, I cannot tell you the exact number, but I think in my twenty-one years of practice I have entered over forty. What that means in time and labor and money you can judge from the statements made to-day. I have won five. I cannot say that it has been a profitable investment. Neither do I feel that I would not have arrived at the same end without going into these competitions.

The most interesting competition, to diverge for a minute, and the most successful one was one in which my fellow-competitors were Mr. Post, Mr. Cook, McKim, Mead & White, represented by Mr. Mead. One of us suggested that perhaps we might arrive at it in a novel way. So it was decided that we should have the best possible luncheon and then our names were placed in a hat. I drew the prize. Part of the agreement was that the winner

should pay for the luncheon. I paid for the luncheon. The building was never built!

I will cite another case which Mr. Post told me about where a number of competitors went out of town on an early train, got acquainted with each other and handed in their drawings and persuaded the County Commissioners to agree to the casting of a vote to select the winner. There was one "dark horse" and it was found that he had been given a unanimous vote. He got the job! Everybody voted for the man they thought had no chance—including himself. I think those were very successful competitions.

The spirit of competition, of friendly and legitimate competition, is born in us through the methods by which we work, and though there will always be competitions and rather discouraging competitions, we should try to make them fruitful.

There can be only a few reasons for a competition. First, the desire of the practitioner to increase his practice, and I think that is admittedly a failure. The same amount of effort, money and skill spent in other directions would produce better results. The other reason is to obtain the very best design, and I fail to see in this country or any country that the most noted competitions have brought about results which could not have been obtained by direct selection. When these results have taken place they did not repay us for the large percentage of failures. It is much better that all our work should be of a high standard than of a low standard with an occasional success. Another reason which is prevalent and which is natural is the desire to discover new talent. I do not sympathize with that at all. If a man has talent, his day will come and it should not come until he is prepared to make use of it. A man who has genius to express his original ideas should be entrusted with nothing more than the presentation of them on paper, but when it comes to the serious work of actual business, that requires not only the experience of the practical side of things, but the practical artistic experience, the experience to know that a thing that is on paper represents a thing that is going to look well in execution. And that refers to every detail of the plan, the very texture of the material. That requires practice and cannot be acquired by any man, no matter what a genius he may be, without practice.

If competitions are to be conducted, as has been stated to-night, the most important element lacking is the inability of the architect to get into touch with the problem through his client and to evolve a solution. A solution is not discovered, it is evolved. New and better things occur, as a thing is studied on its merits. When the conditions are so well understood, when all the practical side of a thing has been worked out and the architect is asked to solve a problem, as in the case of Government work done under the Supervising Architect, then the work promises to be more satisfactory. The danger with a system of competitions for the Government work is that it establishes an "official type" of architecture, which would not be the case if the men would start their design without the idea of winning the prize.

To particularize. I do not believe there is a successful example anywhere in the world of a monumental building in which an order is the main feature unless there are two stories. Now the Government type requires four, five and six stories, and our architects are obliged to crowd innumerable stories into that order. But if I were invited into any such competition I would put in more than two stories and I have myself decided that way because it seemed the best solution presented. A man may be in earnest when he enters a competition, but he does not express himself, as he can if he meets his client and can persuade him by daily contact.

As I look around me in this country and pick out the buildings which to me seem most successful I do not believe that the great majority of those buildings would have won the prize in any competition. For example, I need not tell you that I would be satisfied to have McKim, Mead & White build every building in the country. I am a great admirer of the University Club. But can you imagine a drawing like that presented in a competition and winning the prize? I cannot.

**THE HORSESHOE ARCH.**—A correspondent of the Boston *Transcript* writes: "I am looking up material on the horseshoe superstition, and have sometimes wondered whether Arabic doorways were built horseshoe shape for a superstitious reason, and whether that and the horseshoe superstition are of the same origin. Arabs, especially those of Morocco, are very superstitious, using the red hand outside the house to ward off evil, a custom similar to the 'sprinkling of blood on the lintel.'"

#### THE THIRTY-NINTH CONVENTION OF THE AMERICAN INSTITUTE OF ARCHITECTS.

**T**HE eloquent address of welcome to delegates and members of the Institute delivered in his usual admirable manner by Mr. Henry B. F. McFarland, President of the Board of Commissioners, of the District of Columbia, was full of pertinent matter and was received with enthusiasm.

The address of the President of the Institute, which followed, struck the keynote of this Convention—a strict attention to business and prompt despatch thereof through the medium of well-run administrative machinery.

The debate and action of the Convention followed, in the event, the suggestions of Mr. Eames.

The President's committee announcements followed, after which the business of electing officers for the ensuing year was taken up and the ticket, made up by the nominating committee, was finally elected as follows: *President*, Frank Miles Day, Philadelphia, Pa.; *1st Vice-President*, Cass Gilbert, New York, N. Y.; *2d Vice-President*, William B. Mundie, Chicago, Ill.; *Secretary-Treasurer*, Glenn Brown, Washington, D. C.; *Directors for 3 years*, Alfred Stone, Providence, R. I.; Irving K. Pond, Chicago, Ill.; Ralph Adams Cram, Boston, Mass.; *Director for 2 years*, Merritt J. Reid, San Francisco, Cal.; *Auditor*, James G. Hill, Washington, D. C.

The report of the Board of Directors announced the membership of the Institute as 759, or 339 Fellows and 420 Associates. Six names of Members were placed upon the death-roll since the last Convention, and three names of Honorary Members, among the latter that of Alfred Waterhouse, of London.

The election of eight Honorary Members was announced, among them, familiar to architects, the names of Bosco, of Madrid, Daumet, of Paris; von Seidl and von Thiersch, of Munich, and R. Phené Spiers, of London. Among the seven Corresponding Members elected are Deglane and Redon, of Paris, Lutyens, of London, and Olbrich, of Darmstadt.

On the question of Municipal Improvement, the Board was able to express gratification at the existence of a widespread movement to this end, largely due to the initiation of the Institute which led to the appointment of the Park Commission, the dissemination of whose report has had great influence in developing and increasing knowledge of this subject, one of such importance at this stage of the growth of our cities and of our national expansion.

A list of twenty-two cities which are actively considering the subject was given, and one of thirteen architectural schools which are evidencing, in their late work on the systematic grouping of buildings, the effect of this impulse. Good work of the Chapters in this cause is recognized. It is pointed out that the movement is not peculiar to America and that actual work of the sort is in progress in London, Paris, Berlin and Rome, and the attention of the Convention is invited to a paper by M. Eugène Hénard, of Paris, on the historic and future development of that city. It is mentioned that Mr. Tashima, Government Architect for the Island of Formosa, has been in this country nearly a year engaged upon studies of city planning, in furtherance of Japan's intention of building a new capital city for Formosa. Mr. Tashima's study of the old plan of Washington, in connection with the Park Commission's report, inclined him to recommend the essential principles of that plan. A paper is announced on Mr. Burnham's scheme for the development of Manila, prepared by him under authority of Government.

The Convention is informed that public buildings now building in Washington are conforming to the Park Commission's scheme for the Mall, and that a mistake in the emplacement of one of them, the new Department of Agriculture, was corrected at the instance of the Park Commission and members of the Institute and by direction of the President.

The President's appointment of the Park Commission and Mr. Bernard R. Green as a commission to be consulted by the Executive Departments as to location and design of public buildings is described as "a very important stand for good Art in the United States." As this advisory commission is at present without legal status and of merely moral force, it is suggested that the Board and members of the Institute may be called upon to make an appeal to Congress to give its findings force of law, and to increase its scope so as to cover "park treatment and art adornments" in relation to public buildings.

The American Academy in Rome has added to its first two donations of one hundred thousand dollars each, is incorporated by act of Congress, with main offices in Washington, and has accepted the tender of a room in "The Octagon," with thanks.

The International Congress of Architects will meet in London July 16 to 21, 1906. Their sessions are triennial. The first three meetings were in Paris, the fourth in Brussels, the fifth in Paris, the sixth in Madrid.

The Institute and the Government will send delegates to the seventh session, in London. It is hoped that America will be numerously and well represented at this meeting of "the only international organization of architects in the world," now a permanent and effective body.

"Any architect in the United States in good standing may become a member of the Congress by paying his fee of \$5."

Each Chapter of the Institute may elect a delegate.

Members desiring to attend will send in their names to the Secretary of the A. I. A., who, it is suggested, may arrange for them to go out on the same ship.

The Board has held four meetings during the year.

The "Proceedings" and *Quarterly Bulletin* have been published and sent to members of the Institute, to Honorary and Corresponding Members, and to foreign societies, with a resultant increase in the Institute's exchange-list, due to interest in the *Bulletin's* architectural index of the contents of various publications.

The Board's attention has been called to unfortunate conditions which "exist in the manner of conducting competitions," and the Board expresses its opinion that such conditions are "due largely to the profession itself," and that members of the Institute should refrain from entering improper competitions. The Board presents this question for discussion after the report of the Committee on Competitions.

The Board reports that the programme for the Cook County Court-house, Chicago, competition, was objectionable in many particulars.

The report of the Committee on Education, Mr. H. Langford Warren, Chairman, has already been published in full.

The report of the Committee on Competitions has also been published in full.

On Wednesday Mr. Zantzing read a paper, "Improvements of the Schuylkill River Banks," discussing the scheme of Mr. Borie and Professor Cret, of the University of Pennsylvania, which was heard with interest.

President Day's remarks upon this paper were of great pertinence: "The real significance of this paper lies in its practical application. The unsightly Schuylkill River is not an unusual feature. One of the important classes of undertakings that will occupy the civic minds in America during the next fifty years on the side of physical improvements of cities will be the re-deeming of their river banks, and in this connection I think the paper which we have just heard, as well as the following one by Mr. Litchfield, will be of great value."

Mr. Litchfield's article on "Municipal Improvements in the Borough of Brooklyn, New York City," was read with success.

Mr. Seeler then read the paper of Mr. Eugène Hénard on the "Artistic Development of Paris," which was the feature of the Convention in its way.

Mr. Seeler's reading was easy, and his French names delightfully rendered, while the English of Mr. Bedford Brown's translation of the paper flowed pleasantly.

It was resolved that delegates be appointed by the President and Board to the coming London Congress. It was determined to hold the next annual convention in Washington and to invite certain distinguished guests.

It was resolved that "the President and Directors arrange some signal honors, such as they judge best, to be offered at the next convention to such persons as the Directors decide have done most for the profession or the Institute during the fifty years of its existence." This motion was passed after some discussion.

A resolution was carried providing:

"That a special committee be appointed by the President (of the A. I. A.) to urge the creation of a permanent Bureau or Commission, to be appointed by the President of the United States, to control all works of art undertaken by the Government."

In a short speech Mr. Post nominated Sir Caspar Purdon Clark, formerly Director of the South Kensington Museum and the present Director of the Metropolitan Museum in New York, for honorary membership, saying: "His claims to recognition by a body of American architects are peculiarly and singularly strong. As a boy he received a gold medal for design; he performed various distinguished works as architect in various climes and also performed distinguished labors as an

archæologist, and when the Kensington Museum authorities were forced to find a director who should have the most varied possible knowledge of the arts, of archæology and of crafts, they were forced to select an architect for the office. I will state also that Sir Purdon announces his intention, and it was so stated in the newspapers, of immediately becoming an American citizen. The committee, therefore, nominate Sir Caspar Purdon Clark." Sir Caspar Purdon Clark was elected.

A motion to expunge a portion of the Board of Directors' report relating to the competition for the Cook County Court-house, amended to read, "for the reason that it is claimed that the information given in the report is incorrect," was passed after lengthy discussion.

An amendment to Article II. of the by-laws was:

#### ARTICLE II.

##### SECTION I. *Second Paragraph.*

"An architectural draughtsman, who is over thirty years of age, who shall have fulfilled all the other requirements of Associate Membership, may, in the discretion of the Board of Directors, be recommended for Associate Membership, and may be elected as provided in the case of candidates for Associate Membership."

This was passed by a unanimous vote, after discussion. The discussion was upon an amendment to the amendment which proposed to insert after the word "age," as follows: "Or an architect engaged in professional education or architectural or archæological research," and it was courteously developed that the Institute eagerly desired to have the gentlemen so described within its ranks as Honorary or Corresponding Members rather than as Associate Members.

A motion "that it be resolved by the A. I. A. to adopt the rules regarding competitions proposed by Mr. Mundie" was, after much illuminating discussion, unanimously re-committed.

A resolution inviting the Institute to co-operate with the Architectural League of America in the consideration of means for the providing of scholarships in the universities for technical education and in architectural schools, was referred to the Board of Directors with request to communicate with Chapters before reporting.

A resolution of the last convention, looking to the preservation of Richardson's Pittsburgh Court-house from contemplated changes calculated to destroy the proportion and unity of a building "of unusual dignity and merit," was renewed, and the convention was informed of steps taken on the previous resolution.

The President and Secretary were empowered to take all steps necessary to make felt this protest of the American Institute of Architects against the proposed changes, which look to the addition of three stories to the height of the building in question, one of the most important works of the late H. H. Richardson.

President Frank Miles Day called Mr. Gilbert to the chair and presented a motion looking toward the standardizing of specifications in classes of work which are more or less the same for all architects. He moved a standing-committee of five upon Specification, to report to the Board and Chapters and to the Convention of next January. Changed to a "special" committee, the motion was unanimously adopted.

After much other business of a miscellaneous character, the Secretary was instructed to send a telegram of greeting to Mr. W. L. B. Jenney, ill on the Pacific Coast; and President Day declared the Thirty-ninth Annual Convention of the American Institute of Architects adjourned, *sine die*.

#### CONCRETE BLOCKS IN ARCHITECTURE.

THE subject of building with concrete blocks received a large share of attention at the annual meeting of the National Association of Cement Users held at Milwaukee January 9 to 12, but it was very evident that the makers of these blocks do not comprehend the requirements of architectural design. A paper by Mr. Louis H. Gibson, architect, of Indianapolis, was presented, dealing with the subject of "Cement-Block Architecture." This outlined the requirements to be considered, the present limitations of concrete blocks, the deficiencies in their design, and especially the failure of the block-makers to understand their relation to architectural work. Instances were cited where the makers could not, or would not, conform to architects' plans, one reason being that the machines in some cases only turn out blocks of a few sizes, and if these do not happen to fit the dimensions as laid out on the plans, the plans must be disregarded or the blocks cut, this latter plan resulting usually

in a very unsightly appearance and arrangement of joints. The paper was not at all to the liking of the block-makers, but their failure to appreciate it only served to show more forcibly the accuracy of the position taken by the author, and by many other architects who have considered the matter.

A paper by Mr. C. E. Watson, of Toronto, described a number of banks and other buildings erected in Canada with the cast stone of which he is a manufacturer. Much of this stone is dressed by hand, just as if it were quarry-stone, and it is used more in large blocks than in the form of the ordinary building block. Some of the buildings are of very pleasing appearance, but they are not typical of ordinary block construction. It is a fact that as a whole, concrete-block buildings have not been architecturally pleasing, and several speakers paid their respects to the generally monotonous and unattractive appearance of the common "rock face" block, which is but a poor imitation of the cheapest kind of stone masonry. Professor Newberry classed it with the sheet-steel imitation-stone front sometimes used. One gentleman showed the rock-face block for the reason that it would not show hair-cracks, but it was explained to him that such cracks need not occur in properly made blocks.

In regard to the waterproofing of concrete blocks, about which so much is being said, it was shown that this is a very simple matter with well-made blocks; in fact, such blocks are practically no more absorbent than good quarry-stone, and an absolutely watertight block is undesirable. The fact that the industry has suffered seriously from careless and incompetent work and from the overdrawn statements of block-machine salesmen was made very evident by some of the speakers. Yet among the numerous exhibits of blocks and block-machines, samples were to be seen and statements heard which could not but adversely prejudice any technical or artistic visitor. The possibilities of concrete-block construction are very wide, and the concrete-block industry is undoubtedly destined to enjoy an important future, but it has not yet "arrived" from the architectural standpoint.

In the discussion, it was shown that art as well as mere "building" must enter into architectural construction, but that on the other hand the architect is the proper judge of what is art and beauty. He should, therefore, try to instruct the block-maker, and not hold aloof at the same time criticising the latter's faults and shortcomings. But it must be said that the average maker of blocks does not appear to be at all open to receive such instruction. All he wants is to put up a building, and of his ability and competence to do this he has no doubts whatever.

The fireproof properties of concrete blocks were dealt with by Mr. Edward T. Cairns in his report for the Committee on Fireproofing and Insurance. He pointed out that hollow blocks in walls or floors usually present only one surface to the direct attack of fire and the consequence is that that side or face of the block expands readily and irresistibly under the influence of the heat, while the other three sides receiving much less heat do not expand nearly as rapidly, with the result that the hottest side breaks away from the others. This has been demonstrated in actual fires and experimental tests for both concrete and tile. Failure from this cause would naturally occur soonest in blocks having a thin shell, inasmuch as the thinner the shell of the block towards the fire, the more quickly it will heat through and consequently expand. Therefore, if you would have a block stand a hot fire, make the webs thick.

This breaking by unequal expansion has sometimes been referred to as a bursting due to pressure of steam or gases generated in the large hollow space or cell of the block, but a very brief analysis of the conditions will easily disprove any such deduction. In the first place, there is generally no means of getting water into the interior of a block and no probability of gases from other sources being introduced therein, but if it were possible to get gas or steam into the interior space these cells are so continuous in a wall or floor and have so many vents to the atmosphere at the top of the wall or through mortar joints that the accumulation of pressure (estimated at 25 to 50 lbs.) necessary to burst an ordinary small block would be an impossibility under working conditions. In connection with blocks, as in the case of monolithic concrete, good materials, plenty of cement, careful curing, and above all intelligent workmanship, produce the most fireproof results.

The insurance companies are giving very liberal credit to so-called fireproof buildings of concrete construction, practically the same as allowed for other types, as a rule. They are not, however, recognizing concrete-blocks as the equivalent of good

brick, for the reason that such tests as these have had in laboratory and field do not warrant it. This is no doubt due partly, if not chiefly, to the fact that a large proportion of the blocks made, up to this time, have been of an inferior grade, made without due regard to the known requirements of a good product; and in the matter of insurance-rates, as in other respects, good material has been made to suffer for the failings of the too large proportion of poor material.

THE SAFEGUARDING OF LIFE IN THEATRES.<sup>1</sup>-II.

CONCERNING the design of smoke-vents, those I have seen in actual use have been, with hardly an exception, imperfect pieces of mechanical design. At certain of the most recent New York theatres I have found the type which appears to be the favorite for meeting the New York building law set with such a clearance as to give a very unnecessary degree of ventilation which tempts the theatre-hands to stop the draught by some

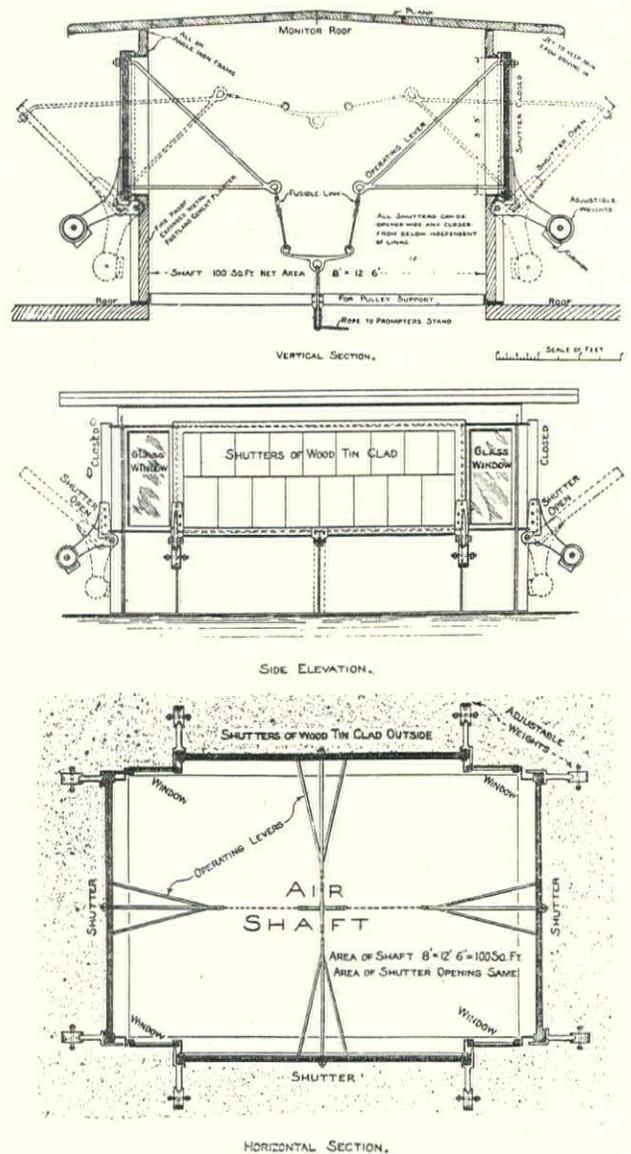


FIG. 3.—DESIGN FOR SMOKE-VENT, WITH HINGED SHUTTERS.

means that may prove dangerous. It is, moreover, so heavy and unwieldy that it cannot be frequently tested by opening and closing, and to wait for the burning of a hempen cord to open a device of this kind should be regarded as criminal negligence when it can be done so much better and quicker by the automatic fusible-link.

To meet the proper suggestion that one should not merely criticise without presenting a better device, and as a means of illustrating that the problem can be solved along various lines of design, I have worked out the two models shown in the

<sup>1</sup>Extracts from the annual address of Mr. John R. Freeman, President of the American Society of Mechanical Engineers,—Continued from page 23, No. 1569.

accompanying drawings, Figs. 3 to 7. I am certain that with experience, these designs could be improved upon.

It is best the total area of one-tenth the stage be sub-divided into four independent units. The fundamental requirements are as follows:

(1) Absolute certainty of opening by force of gravity, in spite of neglect, rust, dirt, frost, snow or expansion by heat, twisting or warping of the framework.

(2) Quickness of opening to be secured by automatic links of the thinnest metal practicable and also by controlling the doors by a cord run down to the prompter's stand and to the station of the stage fire-guard.

(3) The operative mechanism of the smoke-vent should be simple and massive, designed not as a watchmaker would build it, but more according to the standards of railroad service or rolling-mill practice. The counterpoise weights should be heavy and a constant tension on the release-cord of upward of 25 lbs., so that rust, cobwebs or temperature changes might not be of noticeable effect in the resistance to be overcome.

(4) The vent should be of such form that it can be tested daily or at least at the weekly inspection by partially opening it, preferably closing it again by means of the cord running to the prompter's stand. It may perhaps add to the safety if it is of such design that it can be used whenever needed for the ordinary ventilation of the stage, summer or winter, rain or shine, thereby keeping it under constant view and bringing into immediate notice any difficulty about its opening or lack of repair.

In the first of these designs, shown in Figs. 3 and 4, the 8 ft. x 12 ft. opening, of which four would be needed over the stage of ordinary size, has a roof for protection from rain and vertical sides that contain four small windows for admitting daylight to the rigging-loft, but which can be closed by ordinary window-shades for dark scenes. All necessity for the wire screen is avoided. The four shutters fall outward lest the pressure of the up-draught tend to hold them shut, and are pulled open by force of gravity, opening to the full area called for. The pull on the rope holds them against their seat which, if made with a thin edge pressing loosely against fibrous material, as shown, will be more tight against cold air draughts than a common window sash or house door. Fusi-

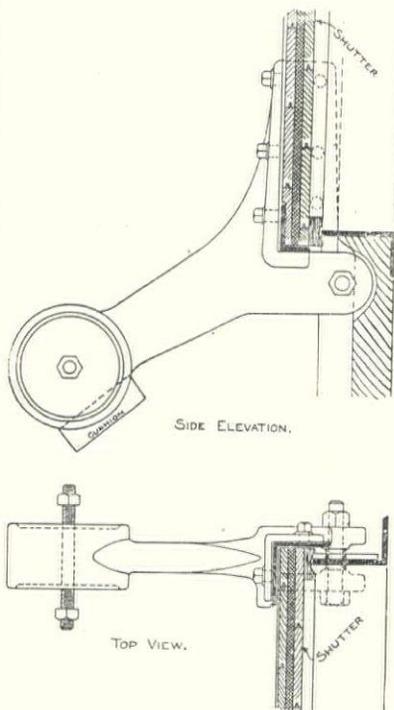


FIG. 4.—DETAIL OF COUNTERWEIGHT.

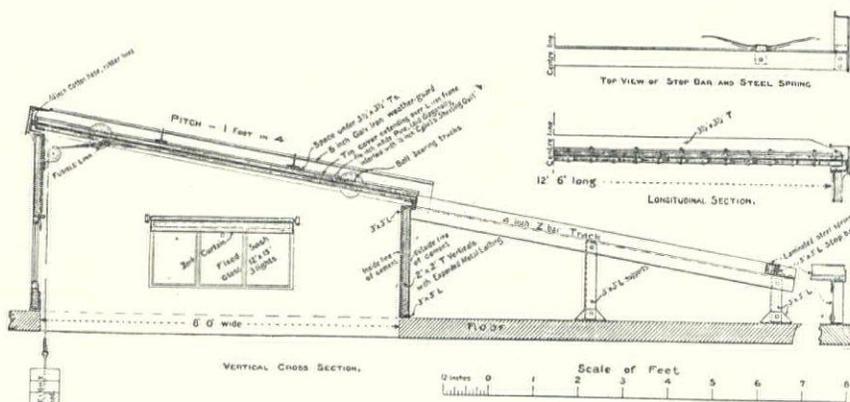


FIG. 5.—DESIGN FOR SMOKE-VENT, WITH SLIDING SHUTTER.

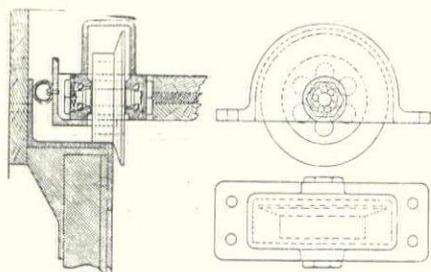


FIG. 6.—DETAIL OF SLIDING SHUTTER.

ble links are inserted in each of the four branches of the cord. No sprinkler should be placed up within the monitor containing these links, and care should be taken that the links are of a thin, quickly sensitive type.

In the second design, Figs. 5 and 6, the sliding type is used. This obviously cannot be used as an ordinary ventilator in rainy days. The special effort in remodeling this from the current New York type has been, first, to place the glass in the vertical side so that no necessity for a wire screen remains. Second, to provide a better track and trucks and arrange the joints so that the leakage of air through the clearance space would not tempt the janitor to close the space by something that may interfere with the sliding open.

A third sketch, Fig. 7, shows an arrangement of a safety ventilating shutter that sometimes can be conveniently placed in the brick wall near the top of the rigging-loft.

The second safeguard in order of importance is in my opinion a complete equipment of automatic sprinklers over the stage and throughout all rooms and nooks and corners, except in the auditorium. I unhesitatingly recommend them as the best of all known means for promptly controlling a fire that has once got good hold of the scenery upon the stage of a theatre.

It has been claimed that under the high rigging-loft of a theatre, sprinklers at a distance of 60 or perhaps 80 ft. above the floor of the stage would be so remote from the flames that they would not open with sufficient promptness to be of material service. I am confident that this is untrue. The hot air from a fire quickly travels over a vertical distance of 60 or 80 ft. Not more than five to ten seconds' time would be required for this,

and the conditions for pocketing and confining the heat in a small area in the top of the rigging-loft of a theatre are much more favorable than in many portions of factories where sprinklers are found to work successfully. One series should be placed below the gridiron and, preferably, another series above it, these not being vertically over one another. Those in the top series are as likely to open first, but it is well to be liberal and provide both series.

A line should also run along the lower outer edge of each fly-gallery. With care, a skilful sprinkler fitter can readily place and guard all the heads and pipes so that the danger of breakage need be no greater than in a factory. The 162-degree solder should be used.

Stage-scenery, while exposed to very rapid ignition, is equally well exposed to very rapid drenching, and the fact that we have so few actual records of what sprinklers can do in controlling a fire on the stage is due to the few instances where sprinklers have been installed in theatres, or have had an opportunity to demonstrate the work of which they are capable. At least there have been no failures, and we have one notable success to their credit, and this in a case where they had been put into a theatre because a factory manager who was one of the stockholders had been satisfied of their efficiency by fires that they had extinguished in his cotton mill. This was at a theatre in Woonsocket, R. I., in which a gauze piece took fire from the border-lights prior to the performance, and sprinklers opened under the gridiron 65 ft. above the floor while other sprinklers opened under the roof 80 ft. from the floor. At theatres in Philadelphia, New York City and Providence, R. I., there have been notable instances of fires, when the audience was absent, from spontaneous combustion and overturned lamps, where the sprinkler extinguished

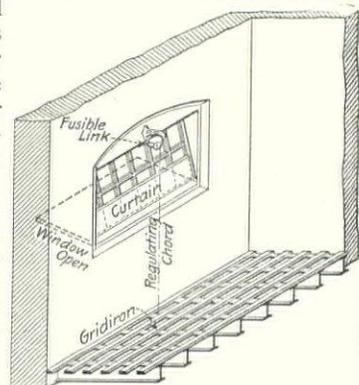


FIG. 7.—VENTILATING SHUTTER FOR A RIGGING-LOFT.

the flames; and from Manchester, England, a case is reported of a fire in a "gauze sky," between the acts, extinguished by four sprinklers 30 ft. above the flies, so promptly, that although the stage and scenery were wet, the performance went on without the audience knowing just what had been going on while the curtain was down.

A leading argument against automatic-sprinklers has been the possibility that they would break open when there was no fire and thus injure the scenery. We have statistics to show how extremely small this danger really is. The records when I last compiled them showed that out of a total of something over 3,000,000 sprinkler-heads, scattered through more than 2,000 different factories, losses from premature discharge were occurring at the rate of about 50 sprinkler-heads breaking open per year. This proportion of one sprinkler in each 60,000 springing a-leak per year, when applied to the conditions in a theatre that would commonly have less than 150 sprinkler-heads over the stage, although they were put in both under and over the gridiron and under the fly-galleries, would give a probability at any one particular theatre of a leak once in 400 years. Should we admit, what is not certain, that the danger of knocking one of these sprinklers open by a blow is greater in the theatre than in the factory with its moving machinery, it is plain that this danger of leakage is no just ground for excluding sprinklers from over a theatre stage. Our insurance companies do not hesitate to recommend them for a packing and storage room above a quarter-million dollars' worth of delicate silks or finest textiles, and so little do we fear the premature discharge that in the fire-insurance we guarantee against this water-damage with no additional charge.

The idea that the fine spray or rain of water from a single opened sprinkler-head, falling vertically and probably invisible to most of the audience, could produce a panic within the audience, however much it might disturb the chorus is too absurd for serious argument. Sprinklers, although not so generally used over the stage as they ought to be, have been introduced here and there, and in some cities quite generally. I now have the record of about 150 theatres that have been fitted with sprinklers. I have sent a circular letter to the managers of many of these theatres asking for their experience. In no case did I receive an adverse criticism, and, in the majority of cases, they speak in most appreciative terms of the value of this safeguard.

(To be continued.)

#### "THE GLAMOR OF CROOKED BUILDING."

THE laws of fair play require that we should reprint, as follows, the rejoinder that *The Builder* makes to Professor Goodyear's reply to its original sweeping condemnation of his theories: Professor Goodyear appears to be sending round among the architectural profession an elaborate pamphlet as a counterblast to our leading article of September 23, in the course of which he implies that our opinion on the subject is not worth consideration. In that case, it seems strange that he should have gone to so much trouble and expense in publishing a reply to it. We have no intention of entering into anything like a controversy on the subject, but we do not think this kind of document should be allowed to be sent round without a word or two from us in regard to its misrepresentations. The very first sentence conveys a completely wrong impression—that we declined to publish the first instalment of Professor Goodyear's reply to us in the course of his lectures at Edinburgh. A short report of the lecture was sent to us by the Hon. Secretary of the Edinburgh Association, but there was nothing about it to intimate that it was in any special sense a reply to us, and we declined to find space for it because we did not attach any value to Professor Goodyear's theories, and therefore did not think it necessary to occupy our space in reporting his lecture. As to the present "Reply," Professor Goodyear's method seems to be to ignore our actual argument and to find fault with us for not having said something else which had no bearing on it. As an example, Professor Goodyear asserts that the plan of the front wall of St. Mark's has a curve inward of 10 inches, and that this is an intentional refinement. We reproduced his plan in order to show that the plan of St. Mark's is most carelessly set out, with hardly a right angle or two parallel walls; and we said that it was preposterous to suppose that people who set out the whole building in so careless a manner should suddenly have been seized with a passion for minute refinements in setting out one wall, not to speak of the fact that to set it out hollow was, in respect of architectural effect, exactly the wrong thing to do. To this Professor Goodyear re-

plies that it is not his plan, but Signor Saccardo's, and that he said so. What has that to do with our argument? He also asserts that we misrepresented him as attaching any intention to the irregularities of the ground plan. We did nothing of the kind. We said:

"No one who looks at that plan can pretend, we think, to discern any guiding motive for the irregularity of the direction of the walls; nor, as far as we understand him, does Mr. Goodyear venture on any such suggestion in regard to it."

Our sole point was that as all the plan was carelessly set out, it was to be presumed that the curve (if it is a curve) in the front wall was carelessness also. The sentence about "the vagaries in plan which are included . . . as having some architectural intention" had no reference to the St. Mark's plan, as any one who read the article might have seen; it referred to the various irregular and oblique-lined plans which are included in the illustrated catalogue, we presume because they are supposed to illustrate his theories, or else why are they there?<sup>1</sup>

We fear we must deprive Professor Goodyear of his jubilation over another little point—viz., that he had called a certain diagram "Asymmetric scheme in arcades," while we called it "A Symmetric scheme." We wrote "A-Symmetric" with a hyphen, which we consider a better orthography; either by accident, or because the printer's reader misunderstood it, the hyphen was dropped out, and the mistake escaped the editor's notice till too late. In any case the sentence was merely a quotation of the title of the diagram, and there being a clerical error in it had nothing to do with the argument. We went on to say:

"It is not a scheme at all, there is no rule or purpose in it; if the spacing was wider in the middle and narrower at the ends or the reverse, there would be something in it; but the differences are quite irregular, and without any system at all, and we are convinced that they are simply carelessness, or a conviction that it was not worth while to divide them equally."

Now, in our opinion, Professor Goodyear must have known, or ought to have seen, that that mistake was a misprint of some kind; it was impossible that he could really have supposed that the editor of this journal did not know the meaning of "asymmetric," and to quote it in that way as a separate sentence, without the context, seems to us a piece of adroit misrepresentation.

In reference to this point, of irregular spacing, Professor Goodyear seems to think we are crushed by the fact that Penrose found irregular spacings in the Parthenon, and irregular widths of abacus, and believed that they were intentional. Professor Goodyear does not seem quite to understand that we do not take opinions ready-made from other people, however illustrious. We accept Penrose's evidence absolutely for facts, but we do not therefore accept his reasoning; we do our own reasoning. We consider that Penrose was mistaken in his view, and we have always thought so. Penrose noted that the abaci of the north flank of the Parthenon "are of various sizes and decrease from east to west, but not according to any fixed law"; we find that we had underlined the latter word in pencil in our copy many years ago. The principle is very simple. When you find variations in line or size made on a consistent system and which lead to a consistent result, it is reasonable to suppose that they were intentional. When they show no consistent system and lead to no consistent result, it is unreasonable to think so. That is the whole thing in a nutshell.

In regard to the west front of Peterborough, we question very much the suggestion, quoted by Professor Goodyear, that the front had gone over before the vault was put in. It is possible (if we may dare to make the suggestion!) that we know more about Peterborough than he does. A good many years ago, before the scare about the dangerous state of the front arose, we remember Mr. Irvine, the well-known clerk of works, who knew every stone of the building, taking us up on to the nave roof to see how the mass of the west front had separated bodily from the masonry behind it. Now, if that had happened when the front had just been finished, the mediæval builders would have made it good. As that was not the case, it is obvious that a great portion at least of the settlement must have taken place at a later time, so that we do not think there is very much in the assumption that the front had gone over from the first, at all events not to anything like its present condition.

<sup>1</sup>In regard to St. Mark's, it seems we are to believe that the bad nature of the ground, shown by the irregularity of the floor, only exists under the floor, where there is no weight on it; that where the walls rest it is an excellent foundation, and St. Mark's is in a perfectly sound condition! Yet we read not many weeks back in the *Times* that St. Mark's was structurally in so precarious a condition that the gravest anxiety was felt about it.

Professor Goodyear recites in his pamphlet some of the complimentary honors which have been conferred upon him, we suppose as an indication that we ought to treat his views with more respect. We also used to regard Professor Goodyear as a very clever man; we remember some investigations of his on the origin and history of the Ionic volute which struck us as most interesting and valuable. Our complaint is that he has become too clever. He has apparently been carried away with the idea that he has caught sight of a kind of new Promised Land in architectural investigation, and has become *lête montée* on the subject. Everything seems to show itself to him in the light of an architectural refinement, and in this faith he has made a collection of examples, which he calls "architectural refinements," of which we believe the majority arose from accidental causes or from dilapidations, and of which, if they did not so arise—if it could be proved beyond doubt that they were intentional—ought rather to be called "architectural blunders." We are told, for instance, that the lower story of Notre Dame leans outward 11 inches, the second story 4 inches, while the remainder is vertical; and we are asked to believe that this has been done deliberately. Will Mr. Goodyear, or will any one, tell us what possible advantage of architectural effect was to be served by such a lunatic method of building? And is not the probability merely that they found out that they had been careless in plumbing in the lower part, and were more careful afterwards? And on the evidence of Mr. Prior, whose work is reviewed in the previous article, and who understands the spirit of mediæval architecture better than most men, the idea of there being a constant search after "refinements" of this kind is quite contrary to the whole spirit and system of mediæval building. As to Professor Goodyear's rather sneering remark that the *Builder* is the only paper which has been entirely opposed to his views, we regard it as one of the best compliments that could have been paid to us, and Mr. Goodyear will perhaps be surprised (even shocked) to learn that the week our article was printed we received two communications from architects, both of whom are specially learned—one of them distinguished—in archaeological studies, expressing their great satisfaction at our having taken such a decided stand against these absurdities. And as to our title, "The Crooked Building," which has given Professor Goodyear such offense, we think it exactly expresses the situation. He has been carried away by a vision of architectural refinements pervading every twist and distortion in ancient buildings; he has spent in the measurement of them an unremitting diligence and in their attempted interpretation an almost pathetic ingenuity; but he has forgotten to take with him one sober companion whom neither architect nor architectural critic can afford to dispense with—viz., Common Sense.

## ILLUSTRATIONS.

MAUSOLEUM FOR JOHN D. ARCHBOLD, ESQ., SLEEPY HOLLOW CEMETERY, TARRYTOWN, N. Y. MESSRS. MORRIS, BUTLER & RODMAN, ARCHITECTS, NEW YORK, N. Y.

The Archbold Mausoleum is planned to contain 12 sarcophagi—three on each of four sides, the other two sides being occupied by the entrance door and a large stained-glass window. The core of the building consists of brick walls and Guastavino tile domes, the inner dome serving for the mosaic-work, while the outer tile dome was built principally as a centre for the granite work. There is an air-space carried entirely around the building, varying from three inches, in the walls and buttresses, to three feet, at the crown of the dome. Copper gutters at the base of the air-space, at the floor level, carry to drains the water-of-condensation, while ventilation is supplied to the air-space by openings above the tops of the buttresses.

The exterior is of Troy white granite, except for the carved panels on the buttresses, which are of pink Milford granite. The decoration of the interior consists of marble and glass-mosaic. The faces of the catacombs are of Montarride Sienna marble, while the shafts of the pilasters and the counter-pilasters are of green Connemara, the bases, caps and the framing of catacombs being of white marble slightly tinted. The marbles used in the walls are found in the mosaic floor, with a centre of "rouge antique." From the springing of the arches, the entire surface of the dome and pendentives is covered with glass-mosaic in the deep tones (blues and greens predominating) of the mosaics in St. Vitale, the Tomb of Galla Placidia, etc. This work is extremely rough in execution, from which it gains greatly in effect. Credit should be given for this work and for the stained-glass window to Mr. Heinigke, who made the

cartoons and executed the work from the architects' sketches and color studies.

The bronze grille at the entrance and the small grilles in the side windows are rather original in treatment. The contractors were, for mason work, etc., Norcross Bros.; mosaic-work, Heinigke & Bowen; bronze-work, John Williams.

INTERIOR DETAILS OF THE SAME.

PLANE AND ELEVATIONS OF THE SAME.

LIBRARY OF FURMAN UNIVERSITY, GREENVILLE, S. C. MR. FRANK E. PERKINS, ARCHITECT, NEW YORK, N. Y.

The Library of Furman University contains 99,400 cu. feet and the bids show a cost of 29 cents per cu. foot without stacks, as shown in the drawings. It is specified to be of red brick, Indiana limestone trimmings, granite steps, white oak finish, furnace heat, and a fireproof stack-room supplied with rolling steel shutters. A Librarian's-room will be included in the stack construction which will cost \$4,000 more.

ELEVATIONS OF THE SAME.

PLANS OF THE SAME.

THE MINOR CHÂTEAUX OF FRANCE—PLATES 9-14.

The typical plan of the smaller châteaux is seen in that of Martainville, illustrated in the first number of these "Minor Châteaux." Here the rooms form a rectangular or nearly square block with circular defensive towers at the four corners. The entrance is in the middle of the façade and emphasized by a bay which extends above the roof in the form of an octagonal tower. The second story of the bay is occupied by the apse of the chapel and enriched on the exterior so as to express the character of the room within. The staircase tower is in the middle of the rear façade and terminates the most prominent, or at least, the highest of the many turret roofs. The landings of this staircase give direct access to the principal rooms on each floor as well as affording communication between the stories, thus making the staircase serve as an embryo corridor or a kind of vertical hall. The defensive entrance—the gate protected by drawbridge and portcullis—was, in the example at Martainville, a portion of the defensive wall, while a moat surrounded the château and its dependencies. In many other examples these military features were incorporated in the main building, as in the Château de Maintenon.

Interesting examples remain of the independent fortified entrance-gateway of many Gothic châteaux, now freed, however, from the fortified wall. Of those remaining of the Renaissance period, the illustrations of St. Agil, Chaizé-sur-Loire and Roumay form interesting examples.

The persistency of defensive features as architectural or decorative elements might form an interesting topic for investigation by the archæologist. Certainly the Gothic machicolations finally merged into the shell cornice of the Renaissance and by the omission of the shell later in the Henris' time, the transition from a Gothic military feature to a Classical modillion cornice was complete. The towers of the Gothic châteaux, purely defensive in their origin and designed to meet the attacks of the weapons of their day, gradually grew impotent as means of defense according as the improvement in arms of offense outran their strength. As the general defense became entrusted to the State, the only protection needed for the smaller châteaux was that against surprises by marauders. Yet as late as the times of the Henris loop-holes for musketry or a casemate for a light gun are to be found protecting the entrance and approach.

Now that the corner tower was useless as a defense—it had already become square on the interior (see Martainville)—it was made in some instances square on the exterior, and in others reduced to a small corbelled corner tower as at Aguesseau and Lion-sur-Mer.

As a square tower it was still roofed independently and its projection from the body of the building varied considerably in different examples and at different periods: as the architectural veil covering them grew Classical, the independence of these features became less pronounced. In the work of to-day, can one not in the "end pavilion" see traces of the grim old Gothic tower?

In châteaux built on a  $\perp$  or  $\lrcorner$  plan the staircases were in the interior angle and, in this position, they gave direct access from the landings to the rooms. Halls and corridors had not become features in planning nor did they until late in the Renaissance.

Examples of this type of plan are found in the Château de Lion-sur-Mer (Plate 14) and in the so-called House of Leonardo da Vinci, and the Château d'Avisé illustrated in our issue for October 7, 1905.

As for material, brick and stone, in these examples of the early Renaissance of Francis I, run riot. The simple brick diaper is used in nearly every instance, or brick and square blocks of stone form a kind of checkerboard effect. Striking as these latter contrasts are, when half buried among the trees or softened by distance a sparkle, a vivacity is certainly given which is charming.

Two small hotels de ville are here added, for, although the attempt has been made to confine this subject of minor châteaux to buildings without the walls of cities, these buildings are well worth a glance. The example at Loiret is interesting in composition and in the diaper pattern of its brickwork. The Hôtel de Ville at Beaugency is an architectural jewel, so delicate and charming is its detail, and its unsymmetrical composition and traditional corner towers—here shrunk to oriels—justify it being included. The restorations proposed, perhaps now completed, are shown in the measured drawing.

W. T. P.

HÔTEL DE VILLE, BEAUGENCY, FRANCE.

HÔTEL DE VILLE, LOIRET, FRANCE—CHÂTEAU DE ST. GERMAIN DE LIVET, CALVADOS, FRANCE.

#### Additional Illustrations in the International Edition.

THE LOGGIA: PRUDENTIAL INSURANCE BUILDINGS, NEWARK, N. J.  
MR. GEORGE B. POST, ARCHITECT, NEW YORK, N. Y.

ROOF DETAIL OF THE SAME BUILDINGS.

## NOTES AND CLIPPINGS.

**IROQUOIS THEATRE OWNER TO BE TRIED.**—Judge Kavanaugh recently overruled the motion made by the attorney for William J. Davis to quash the indictments charging involuntary manslaughter in connection with the Iroquois Theatre fire. Under the decision, Mr. Davis will now be compelled to stand trial in the criminal court.

**OUR PRE-EMINENCE IN ART.**—A nation is known by the company it keeps. The nations which impose a tax on the importation of works of art are China, Turkey, Persia, New Zealand, Sierra Leone, the Bahamas, Fiji, the Gold Coast of Africa, and the United States of America. China taxes art importations 5 per cent.; Turkey, 8 per cent.; Sierra Leone, 10 per cent., and the United States 20 per cent. Even in bad company we are pre-eminent.—*Chicago Tribune.*

**LE MUSÉE GODEFROY, PARIS.**—The Godefroy Museum is the name by which Paris honors a notable private collection of documents and relics of the architectural history of the city. M. Godefroy has gathered in his home, near the Jardin des Plantes, a large number of photographs of Paris as it is to-day, old maps of the city and architectural fragments of demolished buildings. The Government has recently shown an interest in the collection, and some Parisians are now hoping that the Government may erect a public museum for a comprehensive collection of the same character. Such a collection would do much toward preserving a record of the picturesque Mediæval and Renaissance architecture that is now fast disappearing from the city.—*N. Y. Evening Post.*

**CHRISTIAN SYMBOLS IN EGYPT.**—Among all the traces which the hand of succeeding ages has left upon the sculptured walls and painted columns of the shrines at Philæ—traces of which few appear more vivid than the colors laid on in the Ptolemaic time—none have so deep and melancholy interest as the Christian symbols which give token before what power it was that the old Egyptian idolatry fell at last. It is true the Persian fire-worshipper had overturned, and rent, and shivered temples and images; but all in vain. He who shattered the Persian power, the Macedonian wild goat, was tamed by the cold, stony glare of the world-old colossal gods of Egypt, and the very horns upon his shaggy forehead, straight and sharp as a Macedonian sword-blade, curled and curved into the twisted ornaments of the sheepish countenance of a solemn criosphinx. Alexander became the son of Amun. Greek religion and Greek art alike, when, in company of Greek despotic dynasties, they had come back to their cradle again, did, as might do the sons of some prim, old-fashioned family, who, returning with new-fangled dress and notions from long foreign travel, should, for filial reverence, cramp thought, mince speech and cut their cloth to the fashion of the antiquated household rules once more. Rome did little else in turn, and though among Egyptian ruins a round arch of Roman span appears itself in places, and though upon the walls of a

certain building at Luxor, between the great portico and the Temple of Isis, paintings have been uncovered of Roman type, yet hawks, and rams, and owls, and ostrich feathers—the snake, the goose, the scarabee—come still together, in varied combinations, to form cartouches, which record the names of an Augustus, or an Antonine, a Tiberius or a Trajan, upon shrines where Kneph, and Pasht, and Horus still preside. Nay, as we have learned from the biting verse of the satirist soldier, Osiris and Iris had invaded the capital of their invaders, and the proud Roman matrons of the latter day had stooped to the foreign superstition that lustrations for which the yellow waters of the father Tiber were all too impure, must be performed with the not more limpid waters of the browner Nile. But on the pillars of deserted Philæ, as on those indeed of Karnak's more gigantic pile, the simple crosses carved upon the stone tell of a different tale. Those graven crosses on the pillars, as the mark of the forest lord upon the forest trees, told their doom; and, uncut as they still remain, those trees, we know, were felled. Egypt was Christian from Pelusium to Philæ; ay, and yet far beyond.—*The Architect.*

**INDIAN ARCHITECTURE.**—In an article in the *Manchester Guardian* under this heading, "F. M. S." [Professor Simpson] says:

"In Indian architecture the buildings of some races are all lintelled, whilst others are arched and domed. 'An arch never sleeps,' says the Hindu proverb, and the Hindu, therefore, doubts its stability and leaves it severely alone. He spans his openings by beams—by a single one if the space be narrow, by many if it be of considerable width. In the latter case the beams are placed one on top of another, and each in turn projects in front of the next below, like a bracket. He does not object to the shape of the arch, or at all events he did not in the past. On the contrary, he used the form frequently when building in stone. But his arch is not a true arch. He laid his stones, as he laid his beams, horizontally. In the north of India there are many Hindu domes, and one would have thought that these would have been built as the Byzantines built them, and as we build them now. But no: the same principle of beam on top of beam—in this case they cross one another, generally diagonally—is followed, until the opening at the top is sufficiently small to be closed by a single piece of stone. The Mahometans built quite differently. A mosque was not a mosque, a tomb not a tomb, unless it had an arch in it. For some time they were dependent on Hindu labor, and their arches, although of Saracenic form, are built in Hindu fashion. But about the middle of the fifteenth century they learned to build more correctly, and many of their subsequent arched openings are amongst the largest and finest in existence. Moreover, they built domes which can hold their own with any in Europe. The dome over the tomb of Mahmud at Bijapur is 135 ft. in diameter, practically the same width as the dome of Florence Cathedral. But the Florentine dome and the wall below it are the same in plan, octagonal, whereas the Indian dome is a circular one placed above a square. The difficulties of construction were thus increased enormously, and the manner in which they were overcome is both beautiful and ingenious."

**GEN. BINGHAM'S APPRECIATION OF THE WHITE HOUSE ALTERATIONS.**—Gen. Theodore A. Bingham was major-domo at the White House during President McKinley's term and for a few months after President Roosevelt came into office. He was Col. Bingham then, and his official title was Superintendent of Public Buildings and Grounds. As such he had entire charge of the White House, the various Department buildings and the Washington Monument. That is, he was in control of all buildings used by the Executive branch of the Government. The Capitol, which is the home of the legislative branch of the Government, has its own superintendent.

When Mr. Roosevelt came in and began agitating the remodeling of the White House he found in Col. Bingham a man who had decided ideas of his own as to what should and should not be done. Col. Bingham always maintained that the \$750,000 spent in remodeling the White House was wasted. After McKim, Mead & White had spent three-quarters of a million with no visible results except the removal of the fine cut-glass chandeliers in the East Room, the putting of a few heads of animals along the walls and the extensions or tunnels that lead to the entrance opposite the Treasury Building and the new Executive offices, Col. Bingham made a final survey of the work and said: "We have spent nearly a million and have added two bedrooms and some commodious cellars to the White House."—*New York World.*

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THE theory of the direct selection of an architect receives very acceptable application in the case of the new building for the Boston Museum of Fine Arts, and yet we feel quite certain that there is now in Boston more than one declared upholder of this theory who has more or less openly expressed the opinion that the architect for this particular building should have been selected by public competition, seeing how great an interest the public has in securing the most artistic result that known or unknown talent can produce. The conditions that preceded the selection of Mr. Guy Lowell are such that they make this a very interesting case. For over two years, two architects, one, Mr. R. Clipston Sturgis, who was himself the architect of one wing of the old Museum building, the other, Mr. E. M. Wheelwright, have been serving the trustees of the Museum in the character rather of consulting architects than as expert advisers preparing a competition programme. They have made studies, have visited European museums, and have had more or less to do with the very interesting experiments in gallery-lighting which have been carried on at a large scale in behalf of the Museum by one of the Professors at the Institute of Technology. It was quite generally expected that the final design would be entrusted to one or another of these equally able practitioners or, more probably still, that they would make a special partnership for the sake of doing this one important building together. In place of this, however, they are content to continue to aid as consulting architects, with the adjunction of Professor Despradelle, and we do not doubt advocated in all sincerity the selection of Mr. Lowell, whose appointment because of this becomes all the more flattering, well deserved as it is.

IT is agreeable to learn on good authority that the agitated and agitating discussion that has taken up so much space in the Boston papers of late, in which the propounders and assailants of the "æsthetic" and "didactic" theories of museum management have respectively aired their arguments, has been quite needless and uncalled for, entirely a work of supererogation on the part of those who have assumed that the Trustees of the Boston Museum of Fine Arts were contemplating some radical change in the arrangement and display of the collections in their charge. At the same time, we are not at all in sympathy with the half-veiled intimation that, after all, these controversialists and the public in general have been interesting themselves in something which really does not concern them, since, forsooth, the Museum is a private undertaking, and hence its trustees may do as seems to them good without having to heed public criticism or censure. It is true that the Museum is a private corporation and does not receive a dollar from the public treasury, but it is equally true that it makes each year a direct appeal for assistance to the public at large, an appeal made not only by private circular, but publicly in the daily newspapers. It is true that this appeal to the public produces only some fifteen thousand dollars annually, but it is practically enough for the purpose, and the Museum could ill afford to do without the public's aid. We do not believe the Trustees actually resent the discussion, but rather that they are grateful for it, as a sign of the real interest the public has in the work they are doing and the expression of a desire to let them know what effect their work is actually having.

THERE are nowadays so many American architects who have studied in Paris that we have felt that it would be of much interest to them, and perhaps to others, to place before them elsewhere in this issue the correspondence that has lately been interchanged between the Society of Beaux-Arts Architects and the patrons of those ateliers in which they secured the education in design which they now so highly value. It means really a good deal, when octogenarians, as is M. Daumet, and septuagenarians like MM. Vaudremer and Guadet, have preserved not only a general regard for their American pupils but can recall the names and identities of some of them. There is a good deal more than mere conventional politeness in the replies that the Society's corresponding secretary has called forth, and here and there we find in them bits of advice and wisdom with which we most heartily agree.

PERHAPS the constant tipping of the scales of justice bring a strain upon court-houses that other buildings do not have to endure: at all events, buildings of this class seem to be constantly in trouble. Only a week or two ago a floor of the Onondaga County court-house, at Syracuse, gave way partially under the load of books in the law-library above, and now the rather

serious settling of the foundations of the Criminal Courts building in New York is causing uneasiness in the minds of those who occupy and have to use it. The Criminal Courts building, which is only about a dozen years old and upon which some two millions of dollars were expended, has from the beginning been a source of trouble to those who designed and built it. Possibly, if it had been remembered that the site of the building was over what had once been "Collect Pond," fed and more or less drained by small streams, another site for so costly a building might have been selected. Too little is now known about the position and present condition of the pools, ponds, creeks, brooks and streams that existed in the unimproved island of Manhattan, and the New York Chapter could hardly do a greater service than to hunt up the topographical records which now exist buried in the archives of some public bureau or private commercial or scientific body, and from them prepare a reliable topographical chart. New fills are constantly being made in the Bronx and in the outskirts of Brooklyn, and these will occasion trouble to future builders, if a proper record, accessible to every one, be not kept.

IT is welcome news that the proposed coalition between Columbia University, the Metropolitan Museum of Art and the National Academy of Design for the maintaining of a School of Fine Arts has at last been effected, on paper at least, and that the alliance has not been made to depend on the securing of a considerable fund to enable the building of a proper home for the new school. What has been done is to agree upon the formation of a Faculty of Fine Arts which shall have general direction of and control over the Schools of Architecture and Music already in operation at Columbia and a School of Design made up of the classes in painting, sculpture and the minor arts now conducted by the National Academy upon its own premises. As it is the intention to bring all the schools to a parity of excellence, it would seem as if the National Academy had the more difficult task before it, since it is expected to provide "appropriate courses in preparation for a University degree or other credential." But this, we take it, cannot mean that all the students in the new School of Design must enter for a University degree, but merely that Columbia students, who desire to study some branch of design, other than architecture, must find that the Academy has provided courses of that particular character and quality which may properly count as points in winning a University degree. It is merely the first definite and decisive step that has been taken, not the final one.

WE regret to learn, and for reasons we have already stated, that the Regents of the Smithsonian Institution have at last decided to accept the gift of the Freer collections of Chinese, Japanese and Whistlerian art, in spite of the conditions under which the gift is made. Still, it is not quite so bad as if there had been a National Gallery actually in existence which found itself constrained to accept the gift and the conditions. As it is

more than likely that within a few years something will be done in the way of establishing a National Gallery of Art at Washington, and as it is quite unlikely that anything can be accomplished in the way of removing the existing obnoxious tax on imported works of art, would it not be well to abandon the attempt to secure a revision of the tariff and expend a corresponding amount of energy in securing the enactment by Congress of a bill setting aside the income from the tariff on imported works of art as a fund for the building and permanent endowment of a National Gallery of Art at Washington? Those in favor of the abolition of the tariff on art-works allege that it produces only four hundred thousand dollars, but we believe the actual sum collected is not far from one million dollars a year, and it would reconcile a good many people to the continuance of a needless and wrongful exaction, if it were known that the considerable income so secured actually was to be expended in promoting the artistic culture of the American citizen. It is the custom in a good many towns, in New England at least, that the returns from the dog-tax shall accrue to the benefit of the town library. By analogy, then, it might please the truly good American to believe his National Gallery was benefiting by a tax levied upon those other curs, Messieurs the foreign artists—alive and dead, for, of course, under the American theory of taxation it is the exporter, not the importer, who pays the duties!

A SCORE of years ago French architects and the world in general had the benefit of three excellent monthly journals, of which César Daly's admirable *Revue Générale de l'Architecture* was in some ways the most complete and satisfactory. Next in worth came the *Moniteur des Architectes* and finally, at a considerable distance, *l'Encyclopédie d'Architecture*. Shortly after Daly's death, publication of the *Revue* was suspended, to be followed very soon by the suspension of *La Semaine des Constructeurs*, a weekly journal which the Dalys, father and son, had been carrying on for half a dozen years or so. About the same time the *Encyclopédie*, long moribund, gave up the ghost, and a year or so later the publishers of the *Moniteur* put a stop to its issue in order that they might give more attention to the development of their new monthly, *Art et Décoration*. During the last ten years, then, architectural periodical publication in France has been represented only by the excellent but very inadequately illustrated weeklies *l'Architecture* and *La Construction Moderne*, and if one wanted to know more of the character of modern work he had to turn to the general illustrated weeklies, such as *Le Monde illustré*. Perceiving that this state of things was hardly desirable, La Société des Architectes diplômés par le Gouvernement has induced the quondam publishers of the *Moniteur* not to resurrect that publication but to issue a new monthly on similar but improved and perhaps more wide-awake lines. One result of their combined efforts is that we can most heartily recommend to our readers this new monthly journal, *L'Architecte*, published by the Librairie Centrale des Beaux-Arts, 13 Rue Lafayette, Paris, who will be glad to send sample copies on application.

## GREETINGS FROM THE ÉCOLE DES BEAUX-ARTS.

**A**LTHOUGH the following correspondence that has recently been interchanged between the Society of Beaux-Arts Architects and the present and former *patrons* of the official and semi-official *ateliers* of the École des Beaux-Arts at Paris has lost something of its proper savour through translation, we believe it will be found of interest by our readers generally:

**MONSIEUR, LE PROFESSEUR:**—In my quality of Corresponding Secretary of an association of architects, former pupils of the École des Beaux-Arts, I have the honor and the great pleasure of offering you the most respectful remembrance of your former pupils to-day established in New York. Because of the always increasing number of American students at the École, you can easily understand, Monsieur, le Professeur, that our association grows from day to day and that it is to-day the most important of the societies of architects in this country. We take particular credit to ourselves for the system of education established by us, as it recalls that of your Écoles Régionales des Beaux-Arts, and in consequence of which, from every part of the United States, young architectural students send in their *projets* to our monthly competitions. You must also have heard of our "Prix de Paris," and of the special concession by which the École authorizes its winner to enter the first class.

We have, habitually, three or four re-unions each year at which papers are read or the important affairs of the society discussed, and so on. To-day, Monsieur, le Professeur, permit me to express my great desire to be able to read at the next of these re-unions a word or two from you expressing your hope for our success. This indication of your good-will towards your former pupils would be so precious that I am emboldened to ask you to be good enough to write by return mail, even if only to give expression to a simple "bon jour."

With anticipating thanks for your kindness, Monsieur, le Professeur, receive the expression of our faithful homage and of my own feelings of the most devoted consideration.

WM. WELLES BOSWORTH,  
Corresponding Secretary.

28 Rue du Luxembourg, Paris.

**MONSIEUR AND CONFRÈRE:**—You draw my attention to the fact that certain American architects, former pupils of the École National des Beaux-Arts at Paris, have formed an association in New York that they may transmit to new generations the instruction that they received in the free ateliers of my country. I have taught in these for thirty years, and during the course of my teaching I have been able to appreciate with what understanding of the art and with what ardor your compatriots pursued their studies in our ateliers and at the School, and also what legitimate fame they acquired there.

I have preserved the happiest remembrance of the time when I had as fellow pupil Mr. Richard M. Hunt, before I went to Rome as *pensionnaire* of the Académie des Beaux-Arts, in 1856, fifty years ago. My own atelier, established on my return in 1862, has received several of the best of your fellow architects, Mr. McKim, the two sons of Mr. Hunt, Cary, of Chicago, Lloyd Warren, Friedlander, Thorp, Whitney Warren, who has remained my friend, and many others established in various cities of your great country. These names and others which escape my recollection show why my liveliest personal interest should go out to your association, of whose so broad scheme Mr. Warren has already informed me.

I also note that your association has founded the "Prix de Paris," a fact of which I am extremely proud for my country's sake, for I consider this foundation as homage paid to our scheme of instruction in art as carried on in France. Proof of your friendship and gratitude had already been given by the establishment of the special competition for the "Prix des Américains" which takes place every year and is judged by a jury over which I have the honor to preside. This competition, to which only Frenchmen are admitted, is the cause of a remarkable emulation amongst the ablest of our pupils. Finally, an important and very recent gift permits interested pupils to prolong their studies by traveling. These are benefits which, in the guise of an extremely rare reciprocity, testify to the remembrance that your compatriots preserve of that which we have been able to communicate to them as to our ideas of art and the contemplation of architectural beauties with which our country is so abundantly provided.

I send you, monsieur and confrère, the expression of my liveliest sympathy for your nation and for your association

whose aims are so elevated, and trust that you may develop and increase from this fair beginning as is proper in a country which enjoys true liberty—a liberty which is manifested by generous institutions, largely endowed and affording that which artists esteem above everything, the chance to study aesthetic beauty in all its forms. Of these architecture is one of the most tangible. It renders eternal the talent of those who consecrate to it the best of themselves and their science in the art of building. This is all that one of the deans of French architecture can say to you.

I do more than send you a simple "bon jour" as you ask. I address, monsieur and confrère, to you and to the members of your association the expressions of my devoted con-fraternal feelings.

C. DAUMET,  
Membre de l'Institut de France.

**MY DEAR CONFRÈRE:**—I thank you heartily for your courteous letter and am much touched by the affectionate remembrance of my former pupils. Their old master and their former comrades of the atelier have not forgotten them. They recall with pleasure their passage amongst them and the sentiments of sympathetic cordiality which unite them. Alas, those years are already far behind us.

I applaud the persistency with which your students turn to Paris. Your *ateliers régionaux* are, in fact, so many fields of rivalry, which one day shall multiply tenfold the original and artistic ingenuity which inhere in each province. You know the beautiful relics of our own Past which still remain in France. It is thus that you will write on your walls the history of your great country, its customs and its aspirations in the most noble language of architecture. So we, the elders, are particularly happy to see the chain of our old traditions continuing and allying these to yours in feelings of reciprocal esteem and attachment. May this confident solidarity of American and French students in the search after the ideal perpetuate itself under the auspices of the former pupils of the École des Beaux-Arts. Your native generosity has comprehended the sure cordiality of our schools which share with others our best thought.

Yes, union, labor, courage and sincerity, these form our common device. Work sturdily and you will be strong. Work loyally and you shall be fecund. Dear confrères, we have faith in your fair future, in your ardent aspiration towards truth, the source of life.

The old artist has been touched by your faithful remembrances. You will always be welcome here. Many thanks for the delicate interpretation of your good feeling. Your heart has not deceived you. I used to be with you, *mes enfants*, I still remain with you all, my friends.

E. VAUDREMER,  
Membre de l'Institut de France.

**MONSIEUR AND DEAR CONFRÈRE:**—I have just received your agreeable letter of the 25th of November. You are not mistaken in thinking that I should be most heartily with you at the re-union of the former pupils of our École des Beaux-Arts, where your compatriots always have been and still are numerous, yet ardent in their work and meriting all our felicitations for the success they have derived from the instruction which they acquired here. Believe me, we other French architects are very proud of the confidence which you repose in us by your eagerness to associate yourselves with us in our studies.

Between our two countries there are profound differences as to needs, habits, resources and material means of construction. But all of us here endeavor to give a sufficiently liberal course of instruction, so that, having regard always for the invariable principles which have always and everywhere been those of every architecture worthy of the name, it may not be an obstacle to any one, whatever may be the circumstances and the special conditions of its application.

Pupils of a French school, your mission is to create an American architecture and we should be troubled if you do not make it beautiful. For my part, I have never varied in this conception and I cannot do better than to recall to you a toast that I once proposed at a banquet of your Association of American Students in Paris. I renew it, therefore, in begging you and your comrades to drink to "the flowering of an American Art."

Your most devoted,

J. GUADET,  
Professor at the École des Beaux-Arts.

Boulevard St. Denis, 8.

**MONSIEUR AND HONORED CONFRÈRE:**—You have given me the pleasure of asking me to manifest some proof of sympathy with the undertakings of your association of Beaux-Arts architects,

and I make my response just after I have transmitted to Mr. Whitney Warren the announcement of his election as Corresponding Member of our Académie des Beaux-Arts. In addition to his personal worth, we have taken into consideration the desirability of rendering our homage to that one member of your society who has negotiated the admission of your "Grand Prix de Paris," without examination, into the first class of our École des Beaux-Arts (Mr. Licht is at the moment a pupil in my own atelier).

We believe also that we owe much to his initiative in the matter of the generous gift of Mr. Stillman to our school, in recognition of the liberal fashion in which it has opened its doors to foreigners and especially to Americans, who have come hither in large numbers for a long time back.

After having given testimony to this individual appreciation, I wish to tell you, in the name of all your French comrades, that I have been charged by the president of our Annual Banquet, just held, to transmit to you their New Year's greeting and their aspirations for the success of the school which you are thinking of founding in accordance with the principles of our own method of instruction, and we trust that you may not regret it.

We believe that our art should be taught by professionals, by practitioners, by artists (aided, naturally, by specialists who must furnish the scientific baggage which is indispensable to our profession), but above all by artists who are charged with this function, as we say, "*par dessus le marché.*"

It is necessary that they should preach by example; that they should be seen at their work and that they should be selected by their pupils, or by those who are empowered to make the selection in their name, to become *tutors*, the persuasive friends, that is, and not doctors affirming *ex cathedra*, as if it were a matter of the exact sciences where doubt is out of place.

We may have, perhaps, to endure regret that the success of your school may deprive us of the American *clientèle* which has been good enough to entrust itself to our generation; but your end is too noble; your desire to aid the humble and poor to rise in the practice of the art is too respectable for us to be anything else than proud that we have in some small degree traced out the way and to be desirous of seeing it followed out to most glorious success.

Be good enough to receive, monsieur and honored confrère, the expression of my most distinguished consideration.

J. L. PASCAL.

Cour de Cassation, Paris.

MR. SECRETARY:—I had the greatest pleasure in receiving your letter containing the cordial and confraternal "bon jour" of my former American architectural pupils now established in New York. I highly appreciate this delicate attention and I hasten to reciprocate it by offering my best and most sincere good wishes to you and all the old comrades who belong to your association.

The details which you give me, Mr. Secretary and dear confrère, of the development of your association, its organization, its system of education adapted to the instruction of the young, have interested me in the highest degree, and I know that the Conseil Supérieur de l'École des Beaux-Arts, taking into consideration the force of your educational undertakings, has voted to admit without competition to the first class in architecture the winner of your "Prix de Paris."

I can, in this letter, Mr. Secretary, recall the frank comradeship which from his entrance into the atelier united the American to his French fellow-student and the bonds of the good confraternity which ought to result both in the present and for the future between the architects of the two nations.

Personally and as professor, I have the highest esteem for the American student. I recall the passage through my atelier of all my American pupils with the greatest pleasure and they can always count on my feelings of unalterable friendship.

What can I, Mr. Secretary, wish for your association? I am not at all certain and advice might be superfluous, for you all have the desire of working in the interest of art and for the diffusion of artistic ideas throughout your country. I offer, Mr. Secretary, my best wishes for all your comrades and beg you to receive the expression of my feelings of the most perfect consideration.

V. LALOUX.

Palais de la Cour des Comptes, Paris.

DEAR AND HONORED COLLEAGUE:—I have received your letter with the most lively pleasure and have read it with emotion, for

nothing is more agreeable to a professor than to know that his pupils are succeeding and have not forgotten him; but of this I was already certain as regards your compatriots, since Americans are not ingrates. Vive l'Amérique!

We also have been establishing in France certain Écoles Régionales d'Architecture, but we are still asking ourselves what results we may expect from them; while with you, where things progress with such enthusiasm and conviction, you are already benefiting by the good results! For this I offer my felicitations. It is not quite the same in our old country, where we have much trouble in getting out of routine ways. Centralization here has such deep and strong roots that it is with the greatest difficulty that we obtain that which we desire, which, in opposition to your movement, is the decentralizing of our art, so that each country may be characterized by an architecture absolutely local, that is to say, one suited to the climate and the customs of the *milieu* where it must be developed, just as can best be seen in the cities of Italy. It is to be hoped, therefore, that we may not be deceived in the outcome of our Ecoles Régionales.

I repeat, dear and honored colleague, that your letter has given me the liveliest pleasure and I could not be more grateful for your having written it. In addressing to you my thanks and my aspirations for the prosperity of American architects, I beg you to recall me to the recollection of those of my former pupils whom you may chance to see, that they may receive the expression of my most cordially devoted sentiments.

C. MOYAUX,

Of the Institut de France.

41 Rue Boissy d'Anglas, Paris.

MONSIEUR AND DEAR CONFRÈRE:—I am assuredly very much touched by the letter which you have sent me in your quality as secretary of an association of former architectural pupils of the École des Beaux-Arts; but I am particularly moved by the remembrance of our hours of study preserved by those amongst you who have passed through my own atelier at the École. I beg you, therefore, to communicate to them, all, that it is my hope that they may succeed brilliantly in their so honored country and to inform them how happy I should be to once more clasp them by the hand, should they perchance return to France. I equally beg you to receive my aspirations for the success of your important association, which cannot but have the best of influence.

Receive, monsieur and dear confrère, the expression of my most particular and cordial sentiments.

ED. PAULIN.

33 Ave. MacMahon, Paris.

MONSIEUR AND HONORED CONFRÈRE:—During the thirty-five years that I have had the pleasure to be, either as comrade or as professor, in relation with the American architects who come to complete their studies at Paris, I have been able to appreciate at their proper worth the qualities of every kind possessed by your compatriots. I applaud most highly the growing success of your schools and also of the comrades or pupils, who have done us the honor to come and study in France and of whom I preserve personally the most lively and the most durable remembrance.

Receive, monsieur, with the most sincere wishes for the success of your association, the assurance of my most affectionate regard.

P. ESQUIÉ.

Grand Palais des Champs Elysées.

MONSIEUR AND DEAR COMRADE:—In the first place pardon me for being so dilatory in answering.

I was in the very midst of moving my quarters to my new charge as *architecte conservateur* of the Grand Palais at the time of receiving your amiable letter with its salutation from the association of American architects, former pupils of the École des Beaux-Arts, and especially from those who were once my own pupils.

I have been much touched by the remembrance and I beg you to offer my warmest thanks to your comrades.

If there is one thing which comforts the heart and recompenses one for having to fill the often thankless office of professor, it is the evidence that, in spite of time and distance, now and then there comes to one some proof that one's efforts have not been in vain; that, there where one has sown, the seed has borne a harvest, in the memory at least, and that sympathies that budded in the atelier have survived amid the fever of affairs and in despite of separation.

The great family of artists grows ceaselessly. Born at the

École it extends its branches over the ocean. I am happy to have contributed in my feeble measure to its prodigious expansion.

I applaud your efforts for the propagation of the special form of instruction whose elements you derived from us, and of which the "Prix de Paris" that you have founded is the annual crown. It is the highest proof of your esteem for the quality of instruction you have received that you could possibly give us. I, therefore, offer my very sincere wishes for the development of your association and for its success in the propagation of our art.

I send to all the members and in particular to my own old pupils—to-day my comrades—together with my warmest thanks for the fidelity of their recollection, my cordial salutations and best wishes.

H. DEGLANE.

#### THE SAFEGUARDING OF LIFE IN THEATRES.<sup>1</sup>—III.

THE third of the safeguards demanding investigation is the curtain for the proscenium-arch. With good smoke-vents and automatic-sprinkler protection over the stage and with ample stairways from galleries, it is probable that the audience could escape from a situation as bad as that in the Iroquois, even though there were a very poor fire-curtain, or perhaps no curtain at all; but in theatres, as in factories, it is wise to have a second and even a third line of defence, lest the first happen to be inoperative in the moment of need.

The fire-curtain for covering the opening under the proscenium-arch in nearly all American theatres outside Chicago at the present time is made from a heavy canvas woven from asbestos fiber; and in English theatres the asbestos curtain appears to have been steadily gaining in favor because of its less weight and smaller cost in comparison with a curtain of sheet-iron, stiffened by ribs. In Chicago with the failure of the Iroquois asbestos curtain and with the excellent corrugated-iron curtain of the auditorium both before them, the Aldermanic Committee has made the steel curtain the rule. Chicago to-day leads the country in the substantial quality of its proscenium curtains, and in the present state of the art they merit little criticism except the absence of a positive down-haul and better holding and guiding in iron channels at the edge.

Like nearly all steel-ribbed shutters they will warp and twist off their seats under ten to fifteen minutes of exposure to a severe fire unless securely held at edges, and should smoke-vents be closed and sprinklers be lacking and a back door open, their loose fit would let volumes of suffocating smoke and tongues of flame pass into the auditorium. With the smoke-vents open and the draught therefore inward, they will serve their purpose until the audience has escaped and the firemen have arrived.

Special attention was directed to the asbestos curtain in the Iroquois fire, from the fact that the curtain, although promptly let loose, failed to fall; because, as some say, it was blown outward from the stage by the strong current of air; or because, as others say, it caught on certain of the electric-light shields. The asbestos canvas soon fell as mere rubbish to the stage, but so little that resembled a piece of asbestos canvas could be found on the stage that it was for some time believed that the curtain had not been made of asbestos.

It is now certain beyond question that this Iroquois curtain actually was made of a good ordinary commercial quality of asbestos canvas, and it was doubtless true that this Iroquois curtain was just as good as those which hang to-day in the majority of our theatres. I personally found fragments of this asbestos cloth in my first examination of the stage while everything was just as the fire left it, and later I secured samples which, although brittle, "rotten," or without cohesion of fiber, are in all respects similar to what I obtained by exposing a sheet of new, thoroughly first-class asbestos cloth to a moderate flame temperature for the space of five minutes.

The asbestos curtain at the Iroquois Theatre was an utter failure in three different ways:

(1) As already stated, it could not be lowered, and stuck fast after descending a distance variously estimated at from one-quarter to one-half the height of the proscenium-arch.

(2) The Iroquois curtain was improperly hung, being supported at the top in part by being clamped between thin strips of pine wood about 4 ins. in width by  $\frac{3}{4}$  in. in thickness. So tolerant is the public and so easy are public building-inspectors, that I have myself seen more than one example of an asbestos curtain hung

from a batten of white pine, to which it was nailed across the top.

(3) The asbestos canvas of the Iroquois curtain when exposed to actual fire lost its strength and fibrous quality almost completely and became so brittle that it would crumble under a very slight pressure, and became utterly incapable of withstanding the pressure of a strong draught of air, and too weak to hang up under its own weight.

The word "asbestos" has become in the public mind a synonym for perfection in fireproof material, but the investigations now to be described have made me believe that a simple asbestos curtain of even the very best quality will not form a durable and certain fire-screen for the proscenium-arch when exposed to a bad fire.

Any asbestos curtain may be expected to resist the ridiculously inadequate test of the flame of a gasolene torch, and any well-hung asbestos curtain, if it can be pulled down, will probably endure longer than the brief period of 2 or 3 minutes, within which it should be possible to empty any theatre; and meanwhile it might serve a most useful purpose in screening the flames from direct view.

In opposition to the failure of the Iroquois curtain, we have an interesting test of the action of an asbestos curtain and smoke-vents combined, in the fire that destroyed the Girard Avenue Theatre in Philadelphia on Oct. 28, 1904, and which broke out about three hours after midnight on the stage when no one was present. On the arrival of the public fire-department, three minutes after the first alarm, the flames were coming out of the skylight ventilators over the stage of one-eighth of its area, which it is stated had opened automatically. The firemen at first found no fire or smoke in the auditorium and the curtain hung there, and probably with the aid of the cool in-draught toward the stage kept flames out of auditorium for a period said to be fifteen minutes. Shortly after this the fire somehow passed into the auditorium; doubtless around the edge of the curtain or by the curtain becoming ruptured by falling material.

While I regard this record as more of a triumph for the smoke-vent than for the curtain, it is of great interest to note that under existing conditions, whatever they were as to quantity of burning scenery, this curtain with the one-to-eight smoke-vents open, lasted much more than long enough to have covered the escape of an audience. In all probability this fire was much less fierce and rapid than the Iroquois and had far less scenery on the stage.

In order to learn what difference there might be between makes and grades of asbestos canvas, I obtained through various channels samples, each from 3 ft. to 6 ft. square, from all of the prominent American manufacturers of theatre-curtains and also from each of the American manufacturers of asbestos cloth. I also cabled to London and had an architect familiar with theatrical work collect samples of asbestos-curtain cloth from the leading English manufacturers and dealers, under instructions to use every effort to procure some canvas that was woven from French or Italian or other than Canadian fiber.

When pressed hard for the pedigree of their samples no one of these makers would furnish asbestos canvas under a guaranty that it was made from anything other than the Canadian fiber, and, on chemical analysis, all of our specimens of canvas obtained either at home or abroad were found to be of a chemical constitution similar to that of the Canadian fiber.

The Canadian mineral is not the kind to which the name asbestos was first applied and strictly speaking is not true asbestos. It is a fibrous crystalline variety of serpentine, and contains about 13 per cent. of water in chemical combination, plus a little hygroscopic water, whereas the form to which the name asbestos was first applied contains no combined water whatever.

There are two or three minerals of very different chemical constitution which go under the name of asbestos:

(1) Chrysotile, which contains about 15 per cent. of water, 12.9 per cent. chemically combined and about 2 per cent. hygroscopic. This is essentially a silicate of magnesia.

(2) Tremolite, which is anhydrous, and is a silicate of lime and magnesia, with sometimes a little iron.

There is a third mineral which is asbestiform in character, a silicate of iron and magnesia, known as anthophyllite.

The first named loses its strength at about 660° C., or just below redness, on the drawing off of its water; but the last two containing no combined water stand more heat, and are said not to fuse until about 1,300° C., equal to 2,400°, is reached. We did not measure this.

The Canadian fiber is chrysotile. This, now the common as-

<sup>1</sup>Extracts from the annual address of Mr. John R. Freeman, President of the American Society of Mechanical Engineers.—(Continued from page 42, No. 1571.)

bestos of commerce, and, possessing in greater degree than the others the properties required for spinning and weaving, has come to be the only kind used in the manufacture of asbestos canvas. The Georgia asbestos, although free from water in its chemical combination, and therefore not decomposing at low red heat, has for the most part a fiber too brittle for spinning and is used for purposes not requiring strength of fiber.

The anhydrous tremolite and amphibole asbestos are also found in Siberia and in South Africa, but all the anhydrous asbestos makes up an insignificant part of the asbestos of commerce, and although some of the cabinet specimens of anhydrous asbestos have long silky pliable fiber, we were unable to anywhere obtain cloth made from anhydrous asbestos.

Several kinds of asbestos canvas can be procured in the market. There is a distinction sometimes made in the trade between "absolutely pure" asbestos canvas, which contains no cotton, and "commercially pure" asbestos canvas which may contain from 5 per cent. to 15 per cent. of cotton carded in with the asbestos fiber. These can be distinguished by picking a piece of the yarn into fine feathery condition and touching a match to the ends of the fiber, and noting the flash and smell of burned cotton. Certain manufacturers claim that a small percentage of cotton besides facilitating the spinning and weaving into a strong pliable canvas, improves the cloth for the purpose of painting a picture upon it, as for a drop-curtain, and that this small amount of cotton does not impair the fire-resistance. Asbestos fibers are very slippery and difficult to card and spin, and by taking advantage of the spiral structure of the relatively few cotton fibers to bind the asbestos fibers together, the process of manufacturing a smooth canvas is greatly facilitated.

A third variety of cloth which has been highly recommended by fire-chiefs and architects for a theatre-curtain contains very fine brass yarn, 33 and 34 standard gage, woven in with the asbestos yarn. Our tests proved these fine wires to add nothing to its strength when hot. The wire used was found by analysis two-thirds copper, one-third zinc with a trace of lead, perhaps two per cent. Probably the extreme fineness of the wire used and the quick oxidation or volatilization of the zinc is a cause of its weakness when heated.

All of the alleged asbestos curtains that I have seen have really been of the ordinary "commercial" asbestos, and I regard the stories of painted burlap masquerading as asbestos in theatre curtains as mostly idle talk.

Since our experiments on the effect of heat upon tensile strength of asbestos cloth and asbestos fiber soon disclosed that the ordinary commercial asbestos lost its strength at a heat just below redness, sufficient to drive the combined water, in order to be redness of our ground, I had three independent series of tests upon asbestos made by three different experts. The results of all three tests proved independently that the character of asbestos cloth as to resisting a high degree of heat is utterly different from what is popularly supposed.

(1) The first series of tests were made by Prof. Chas. E. Fuller, in the Mechanical Engineering Laboratory of the Massachusetts Institute of Technology, on a special testing-machine designed for measuring the strength of sailcloth, and which had been previously used in a series of tests for the United States Government. We had this newly fitted with double Bunsen gas-burners, so arranged that a specimen could be either tested cold or tested for strength while heated to any desirable degree in either an ordinary gas-flame or heated up to moderate redness in the flame of the blast-lamps. These tests were made with a degree of attention to detail, which I have not space here to set forth. In brief, we found that everyone of these specimens of asbestos canvas, English and American alike, when heated for from two to five minutes to a little below redness in a common gas-flame or barely to redness in the Bunsen flame, lost from 60 per cent. to 90 per cent. of its strength, and that the fiber became very brittle. We were surprised to find that the samples with the wire insertion, when tested hot, were no stronger than the samples without wire. On cooling they regained the little of the strength due to the wire.

(2) I desired tests on larger sheets of the canvas, more nearly reproducing conditions of use, and so the tests of our second series were made at the Underwriters' laboratory in Chicago by constructing curtains about 6 ft. square and testing them with the same furnace and apparatus that had been provided near this laboratory for testing fire-shutters and fire-doors. Unfortunately, we found the furnace in poor working condition before a temporary defect in the gas-supply, such that we could not regulate the temperature evenly or measure it precisely. After testing several curtains we suspended these tests.

These Chicago tests fully confirm the conclusion derived from our Boston tests, that asbestos cloth is rapidly weakened by the heat of an ordinary fire to an extent that makes a curtain composed wholly of asbestos cloth an unreliable fire-screen for the proscenium-arch of a theatre, if expected to endure more than a few minutes, and it was proved that the asbestos canvas was so weakened that it would be ruptured easily by a blow from any falling material or by a strong current of air. The seams sewed with asbestos thread showed no special weakness more than the canvas.

A notable feature in these furnace tests with those curtains that contained from five per cent. to eight per cent. of cotton was the flame that played all over the outer face of the cloth when the furnace was lighted, and which might be disquieting in giving for a moment an impression that the asbestos curtain was burning up.

(3) For the third series of tests the friendly services of Prof. Wm. Otis Crosby, of the Massachusetts Institute of Technology, in charge of the Department of Economic Geology, and Dr. C. H. Warren, Professor of Mineralogy in the same institution, were enlisted to examine all of the varieties of asbestiform minerals found in the extensive cabinets of the Institute of Technology and the Boston Society of Natural History, in the hope of finding specimens from some locality that possessed all the qualities properly attributed to asbestos. The result of this, in brief, was that nothing was found possessing characteristics materially different from the hydrous Canadian fiber on the one hand, and the anhydrous fiber from Georgia on the other. The first class lost their strength at a heat which drove the water off; the second class were too stiff or brittle for spinning and weaving or occurred in quantity too small for commercial purposes.

Upon testing specimens of the Canadian fiber by heating in a platinum coil heated electrically, raising the temperature slowly, weighing the specimen repeatedly and all the time measuring the temperature in the crucible by electrical methods, it was found that a temperature up to 250° C., equivalent to 482° F., caused no driving off of the water chemically combined, and no apparent change in the pliability or strength of the fiber. A heat just below dull redness proved to be the critical point. One-half hour at from 440° to 480° C., equivalent to 850° F., drove off about three per cent. of the combined water and made the fiber slightly more brittle than at first, with some loss of natural luster. Heated to from 630° to 650° C. for five minutes, averaging 1,152° F. eleven per cent. of the water is driven off, and the fiber becomes slightly brown and very brittle and crumbly.

From a series of such tests Prof. Warren concluded that a theatre-curtain made of chrysotile fiber alone could not be expected to hold together for more than a few moments if a temperature of 650° C., equivalent to about 1,200° F., was reached and calls attention to the fact that, being a non-conductor, the asbestos canvas would arrest and absorb the radiant heat from the burning scenery and have its own temperature rapidly raised.

In the course of sundry other tests he found independently that the brass wire inserted in certain samples of the canvas added practically nothing to their strength while hot. Chemical analyses of these wires from the various commercial samples of canvas gave copper 63 per cent. to 69 per cent. Wires pulled out from the canvas and held in an open Bunsen flame lost their strength instantly. This led Prof. Warren to suggest that iron wire of, say, 25 or 28 gage would prove a much greater addition to the strength of curtain cloth. The residue left after driving off the water is practically infusible. Wrought iron is less readily fusible than steel, but the steel wire would probably hold up to, say, 900° C., or 1,650° F. Steel melts 1,200° to 1,300° C.; pure iron about 1,600° C. I found the small iron stairway over the Iroquois stage showed effects such as are produced by heat. Glass in the skylights was fused, which indicates about 875° to 900° C.

In other trials Prof. Warren found that a piece of asbestos canvas a foot square lost its strength so that it could be torn between the fingers after it had been held five minutes against a moderate wood fire that did not heat it to visible redness, and therefore probably not to 650° C.

In our Chicago furnace tests we also experimented upon sundry combinations of asbestos, asbestos-felt and asbestos-cement with thin steel plate and combined with wire-netting, the asbestos being placed on the stage side in the hope that it might shield the steel from the full heat and thus prevent it showing red-hot on the auditorium side, while the steel would give strength. We had to suspend these tests because of some

temporary trouble with the gas-supply to the furnace, but they were carried far enough to prove an endurance more than ample for their purpose as a shield while an audience is escaping, and it was plain to all who witnessed these tests that the steel curtain protected with some asbestic material on the fire side possessed far greater strength and endurance against fire than the simple asbestos. They also cut off the view of the fire that was apparent through the texture of the asbestos canavs.

With care given to the design of the guides and fastenings at edges and top, so that after it was lowered the curtain could not be pulled out by warping, buckling, "smoke explosions" or pressure of air, the steel curtains would have value to the fire-underwriter and probably hold the fire from entering the auditorium.

The general type of steel proscenium-curtain finally adopted in Chicago and required at all theatres was worked out somewhat hurriedly according to the average judgment of the Aldermanic Committee in advance of any other tests than the failure

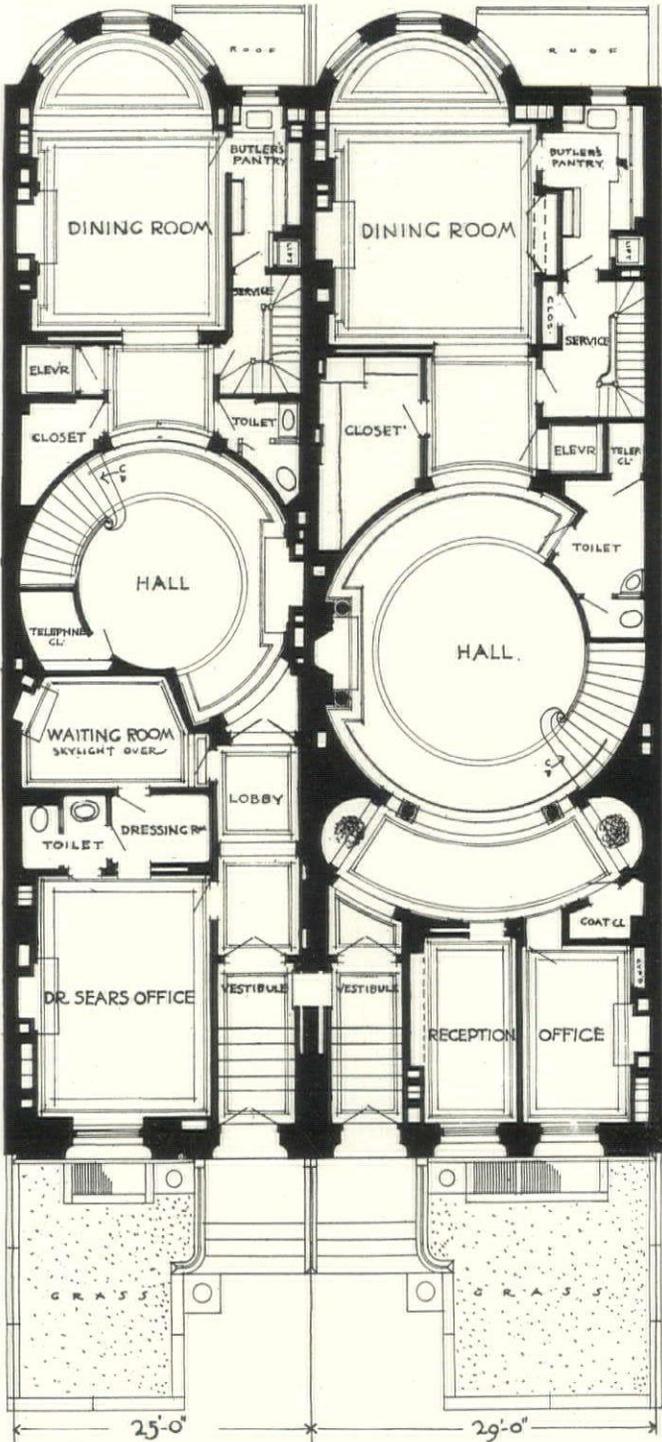
of the stage side, with an air-space of 1, 2 or 3 ins. between. Where guided only by loops on vertical cables it is required to lap over the edge of the arch about 8 ins. A structure of this kind of the ordinary size weighs from two to six tons.

The hanging would be improved by more substantial iron channels to hold the edge, and by the addition of positive down-haul tackle or some arrangement by which the counterweight could be thrown off, for now the great weight of these curtains is so nearly counterpoised that conceivably the air-pressure against its surface of about 1,000 sq. ft. may prevent the slight excess of gravity from lowering it.

(To be continued.)

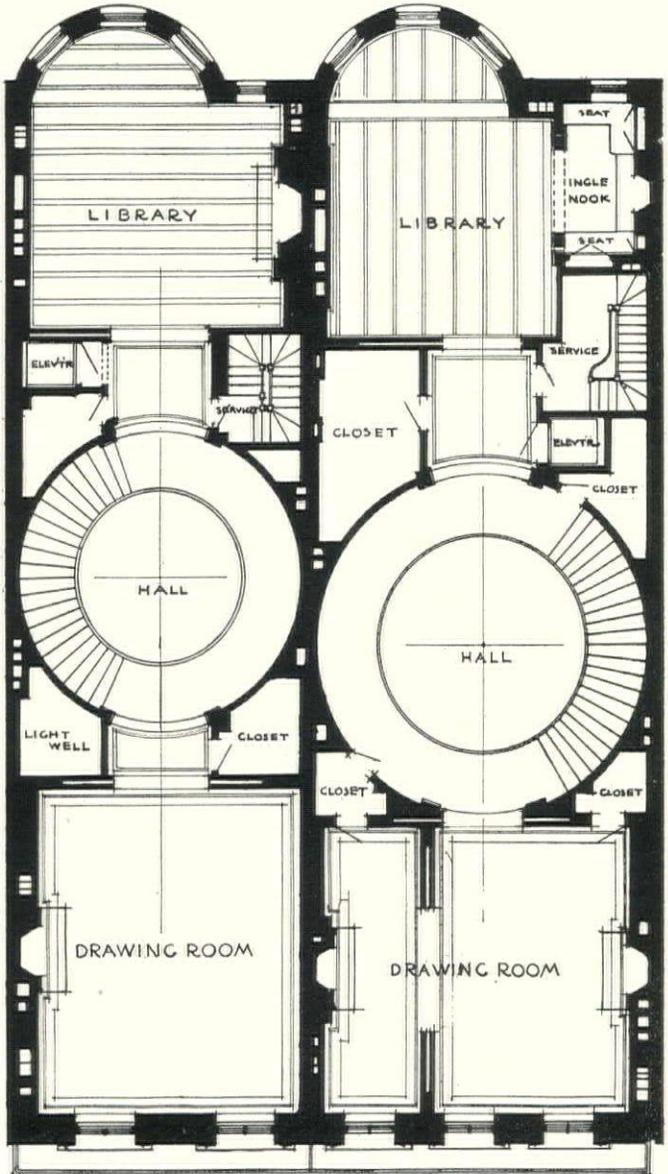
ILLUSTRATIONS.

HOUSE OF W. D. DENEGRE, ESQ., BEVERLY FARMS, MASS. MR. ARTHUR HEUN, ARCHITECT, CHICAGO, ILL.



PLANS OF HOUSES ON BEACON STREET, BOSTON, MASS.  
J. A. Schweinfurth, Architect.

of the Iroquois curtain. It consists of a light framework of steel angle-irons with corrugated plate about 1-16 in. thick on the auditorium side, and some asbestic non-conducting material on



PORTE COCHÈRE OF THE SAME HOUSE.

DETAIL VIEWS OF THE SAME HOUSE.

STABLE BUILDINGS FOR THE SAME ESTATE.

HOUSES FOR MRS. G. G. SEARS AND RALPH B. WILLIAMS, ESQ., BEACON ST., BOSTON, MASS. MR. J. A. SCHWEINFURTH, ARCHITECT, BOSTON, MASS.

HOUSE OF FRANCIS L. POTTS, ESQ., BRYN MAWR, PA. MESSRS. COPE & STEWARDSON, ARCHITECTS, PHILADELPHIA, PA.

GARDEN FRONT OF THE SAME.

PORTICOS OF THE SAME.

Additional Illustrations in the International Edition.

TERRACE FRONT: HOUSE OF W. D. DENEGRE, ESQ., BEVERLY FARMS, MASS. MR. ARTHUR HEUN, ARCHITECT, CHICAGO, ILL.

## DECAY OF STONE.

THE decay of stone is a subject which is at present discussed in Glasgow owing to the examples which are presented by various public buildings. The following letter from Mr. Walter Gibb, of the Huntersville Quarry, Bishopbriggs, which appeared in the *Glasgow Herald*, is an important contribution as presenting the results of observation:

I think it was some time during the month of September, 1904, that an article appeared in your paper by an anonymous correspondent who contended that the decay of stone was caused by the action of sulphuric acid, and elaborate statistics and analyses were quoted in support of this contention. The article was followed by a critical letter, or rather letters, by Mr. R. R. Tatlock, the city analyst, who also quoted elaborate statistics and analyses showing that the decay was not the result of the action of sulphuric acid, but was the result of the action of carbonic acid. Several others took part in the discussion on almost exactly similar lines, but one gentleman differed to this extent, that he attributed the decay of stone to bacteria.

It seems to me that all those whose theories I have noticed have gone on the assumption that the decay of stone must of necessity be caused by outside influences; but if it can be shown—and I think it can be shown—that the elements of decay lie within the stone itself, and that outside influences play only a secondary part in the work of destruction, then their whole case falls to the ground.

This brings me to the hypothesis put forward by Prof. Henry Blackburn, which appeared in your issue of Nov. 3, 1904, and which I think is well worth reproducing in its entirety:

ROSHOEN, Nov. 1, 1904.

Perhaps my observations made here in Moidart, where it is not to be thought that the air contains the destructive acids so well known in Glasgow, may help to explain the cause of the decay of stone.

About 45 years ago I constructed a pedestal for a dial in my garden here out of a flag of "Arbroath pavement,"  $3\frac{1}{2}$  inches thick, originally meant for a hearthstone. We cut out of this flag three "trusses" in the form of Gothic buttresses, and set them together vertically (at angles of 120 degrees), so as to form a pillar, on the top of which a flat, nearly circular, piece was placed as a cap to be a table for the dial plate. The face and edges of the buttresses were elaborately carved with flowers, fruit, birds, etc., and faced nine points of the compass. Rain from every quarter freely washes the carving, except where the flat table on the top by projecting affords a shelter.

What I observed is that where the rain freely washes the surface the carving is nearly as sharp as it was at first, but where the carving is sheltered from the rain the surface has crumbled a good deal. (The Arbroath stone has shown no disposition to flake off. It is compact and not stratified.) This is the same phenomenon as is observed in Glasgow, which is therefore not to be explained by acids in the air. My hypothesis to account for it is this. The stone is originally permeated by some soluble salt (perhaps sea salt); when rain falls on part of it, that part gets saturated to a certain depth with water, which spreads into the rest of the stone. The moisture dissolves the salt in the stone, and finds its way to the surface as a salt solution. In the sheltered part it dries and the salt crystallizes, and in doing so disintegrates the surface, while in the parts washed by rain or kept moist the salt solution is either washed away or does not get leave to crystallize.

The only way to prevent this "effect defective" is to rid the stone of its salts before using it. I am, etc.

(Signed)

HUGH BLACKBURN, Emeritus Professor.

I do not know anything about Professor Blackburn; he may or may not be an authority on this question, but of the value of his suggestions I have no doubt whatever.

I have been informed that in America "seasoned stone" is, and has been for a considerable time, quite a common article of commerce. I also know that a number of thoughtful, practical men in Glasgow and elsewhere have long been of the opinion that the cause of decay was the result of some such process as that described by Professor Blackburn. They were unable to account for it in a scientific manner, but rather attributed the process of decay to the evaporation of the natural "sap" or moisture in the stone on exposure to the elements, but to Professor Blackburn belongs the credit of giving us what may be termed a scientific interpretation of the phenomenon.

I have, of course, special facilities for making investigations as to the value of the various theories, and since the publication of Professor Blackburn's letter I have made such observations as have convinced me of the accuracy (for all practical purposes) of his hypothesis. It is a well-known fact that stone in buildings, if it is going to give way, will show signs of decay to the skilled eye almost at once, and therefore observations made over a year are quite as reliable as those spread over a longer period. We have an instance of this in the Municipal Chambers, where though only renovated quite recently, signs of decay were visible long before the contractors had completed their contract.

Any one interested in this matter can see a very good example of the process of decay as described by Professor Blackburn in the new part of the Central Station. The wall is covered in by a glass roof, and there is, therefore, nothing to wash the salts off the face of the stone, with the result that the salts have

crystallized, leaving the wall almost white, but disintegrating the surface of the stones and starting the process of decay. The observer will also not fail to notice that the whiteness is much more pronounced near the beds and joints of the different stones, proving that the cement has also something to do with the dissolving process.

All the evidence available seems to point to the fact that there are certain ingredients in stone which must be got rid of by the same process as applied to the seasoning of timber before it is safe to use it in large and expensive buildings, and, in my opinion, the remedy, and the only remedy, for the decay of stone is for architects to specify "seasoned stone," and to see that they get it.

## NOTES AND CLIPPINGS.

THE CORROSION OF IRON AND STEEL.—Mr. William Marriott, M. Inst. C. E., writing to the *Times* on the Charing Cross Station disaster, says: "It is, as a rule, difficult to tell steel from iron, except by the fracture; but given two structures running side by side, one made of iron and one of steel, it is the easiest thing in the world for a practised man to tell which is which, simply by the nature of the corrosion, of which there must always be some trace, unless the bridge has only recently been painted. Cases can be given of iron bridges nearly thirty years old in perfectly good order, but which have been strengthened with steel additions, which latter, in spite of all the care that has been taken, are badly pitted and corroded. Unfortunately, engineers find a difficulty to-day in getting iron plates, and are practically driven to use steel. More care should be used in the manufacturer's yard, and the rusting process on steel should never be allowed to commence, for where it has once commenced it is a very difficult thing to stop it. This will be a very unpopular subject with the steel manufacturers; but if engineers would refuse to have any rusty plate or angle put in a girder, they would save their maintenance bills afterwards."

WESTMINSTER PALACE.—The great Victoria Tower, said Mr. Philip J. Turner recently in a paper read before the Architectural Association, underwent various alterations. Originally designed 100 ft. square, it has been reduced to 70 ft. The present five arches, 53 ft. to the apex, replace an entrance of quite moderate dimensions. The numerous studies Mr. Barry made for this tower show that it must have caused him enormous trouble. The tower is 336 ft. high to the top of the pinnacles, and over 400 ft. to the top of the flagstaff. The flagstaff is of rolled sheet-iron, bolted together, and is 110 ft. long and 3 ft. in diameter at the base. The design of the Clock Tower must have given even more trouble, as drawing after drawing was made and rejected by the architect. The clock in this case had to be the prominent feature on the topmost story and of immense size, and the idea, carried out, of projecting the clock story beyond the body of the tower was at last adopted. The elevations, in a general way, have been criticized as being overloaded with ornament and small detail, but Sir Charles Barry's contention was that detail could not be excessive in amount if continued consistently in every part of a building. The whole Palace covers a site of about 8 acres, the river front being 840 ft. in length. The House of Peers is a double cube, being 90 ft. long and 45 ft. high and broad; the House of Commons is 75 ft. long by 45 ft. wide. The work of the river wall was begun in 1837. An iron and brick construction was adopted in the floors; the roofs were constructed and roofed with galvanized iron, so that the entire building is of fire-resisting material.

The first stone was laid on April 27, 1840, and the works were rapidly proceeded with. Between 8,000 and 9,000 original drawings and models were prepared for the works, in the preparation of which Mr. Welby Pugin ably seconded Mr. Barry. The former was appointed superintendent of the woodcarving; he also supervised the execution of the woodwork, stained glass, and tiles. In February, 1847, the House of Peers was occupied for the first time, and in 1852 the Royal approach was finished, and finally the towers, last of all being the Victoria Tower, incomplete at the architect's death in 1860. The original estimate was £707,104, the amount expended being nearly two millions. The main item in this increased cost was the cost of the fittings, decoration, and sculpture required by the Fine Arts Commission. The cost per foot cube is about 2s. 6d.

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WE are very glad this week to allot more even than our normal space to some report of the convention of the Architectural League of America, held last week in this city. Successful and provocative of enthusiasm as the meeting unquestionably was, one looks in vain through the report for the evidence of those important transactions that would justify the expenditure of much time and money. The absence of this evidence merely goes to show, once more, that the real good and usefulness of these annual gatherings lie not in the reports and papers that are listened to, nor in the quibblings over parliamentary procedure and the patching up of by-laws, but rather in the opportunities that individuals find for personal observation and improvement during the stated excursions and independent ramblings about the convention city. Greater, even, is the value of the mutual interchange of idea and opinion between sympathetic minds. It is a delight, after working through the year in a qualified isolation with one's own thoughts, to be brought into contact, if even for only a day or two, with those who can understand and sympathize with one's aspirations and comprehend and clothe becomingly one's inspirations.

THERE is one thing about the Architectural League of America that is particularly ingenious and deserving of imitation by other bodies similarly constituted. In place of undertaking to elect a full corps of executive officers it elects merely a president and empowers him to select his executive staff from the membership of the local club to which he himself belongs. In this way is obviated the difficulty of gathering from different parts of the country the members of a Board of Directors or an Executive Committee. Although the organization is a

national one, all its affairs, save those which can be foreseen and provided for at the time of the annual convention, are in this way left for the year to the care of and in some degree are at the mercy of purely local influences, influences that may vary as greatly as those which are supposed to affect Chicago and Philadelphia. As the practice has endured the test of half a dozen years' experience, it seems fairly evident that no serious disadvantages have yet arisen that counterbalance the very real benefits of having the executive officers so placed that they can promptly and economically come together.

IT is curious that Mr. Day, in calling attention to the way in which the banks of our rivers have been neglected and left unimproved, should not have pointed out the one signal instance in this country where large sums have been spent already and where larger amounts are still to be spent in doing the very things he recommends. The Charles River embankments and parkways between Cambridge and Boston have been in hand a good many years and the completed dam and basin will before long be actualities. Even the dwellers on Beacon street, who for long years have foolishly turned their backs on the river, have at length seen the desirability of taking associated action in the matter of giving a more attractive treatment to their river fronts and back-yards, and so have lately held a meeting and appointed a committee to consider what steps they shall take to beautify their property and make it a proper heir to its new estate. To be sure, they have been stimulated to this action by the intimation that Mayor Fitzgerald is inclined to recommend that the embankment on the south side of the river should be so extended by filling as to create new sites for another row of houses to be erected between the river and the houses which have always fronted on Beacon street and backed on the river.

THE Municipal Art Society of Albany, N. Y., supported by the Home Rule Committee of the Reform Club, has caused to be introduced a bill, cast very much in accordance with the suggestions we made some time ago, looking to the desirability of taking effective measures to prevent the dwarfing and putting out of all architectural countenance of our public buildings through the vulgarizing presence in their proximity of undesirable private structures. The Albany measure, however, seeks to proceed by direct condemnation proceedings, a course which seems to us likely to arouse more opposition than the scheme we suggested and which tended to preserve the rights of existing structures, only affecting their owners in case they should undertake at any time to remodel or replace their buildings.

AT one time or another Mr. Bernard R. Green has loomed so large as the one man in Washington competent to conduct Government building operations that it is rather strange to find a Congressional committee thinking it odd that a man of his capabilities should desire and deserve a good salary—or even several. The com-

mittee in question has developed the fact that Mr. Green draws one salary of \$5,000 per year as Superintendent of the Congressional Library Building, another salary of \$2,000 as Superintendent of Construction to the National Museum, and that while drawing these annual salaries he seems to receive also a salary of \$4,000 a year from the State of Pennsylvania in connection with the building of the Capitol at Harrisburg; and even these official occupations do not seem to interfere with his being connected with private building enterprises in Washington and elsewhere. We have no disposition to suggest that Mr. Green's total income exceeds his deserts, but it does seem a trifle anomalous that one man can draw several salaries, and can further indulge in private occupations, while the humble Departmental "sundowner" is austere advised that one man cannot serve two masters, and that Uncle Sam demands his full time and strength.

THE severe arraignment of the asbestos fire-curtain contained in the fragment of Mr. J. R. Freeman's very interesting paper on the "Safeguarding of Life in Theatres," published in our last issue, must have caused many an architect to ask himself whether some better means for closing the proscenium-opening could not be devised. We believe such means can be found and can ourselves think of two methods that are deserving of investigation. Hitherto architects and managers have been misled by a mere word and have felt, seemingly, that, since the proscenium-opening always had been closed by a curtain, only some form of curtain could be used in that place and have quite overlooked the fireproof qualities of an honest piece of brick or terra-cotta walling. In these days of deep cellar excavations and deeper boreholes for elevator-plungers there is nothing, other than mere expense, that stands in the way of closing the proscenium-opening with a wall or partition constructed of a fireproofed steel frame the panels of which are filled with some light fireproof blocks—terra-cotta-lumber, mackolite, or whatever else—all forced up from the understage region by the same powerful and quick-acting mechanism that now pushes the plunger-elevator aloft so fast. Of course, it would be necessary to have doors in this fire-wall so that, when lowered, it might not prevent the stagehands working below the stage from passing freely from front to rear of their domain; but these doors would close automatically as the fire-wall lifted, while other doors at the lower edge of the fire-wall could be arranged so as to serve as fire-doors for the escape of stagehands and actors or for the use of firemen in fighting the fire. Another method of interposing a substantial fireproof shield would be to adapt to the situation the principle of the rolling-lift bridge. The actual height of the proscenium-opening is not in many cases any greater than the width of the wings on each side, and in such cases a light but fireproof wall could be rapidly rocked down from one or both wings. In this case, too, fire-doors could be safely provided in this movable wall so as to be usable when the wall had come to its bearings. In each of these cases there is no new principle involved, no new mechanism to be invented, no new patterns to be worked out experimentally. The elevator-plunger and the rolling-lift bridge are operating hourly in many

parts of the country, rapidly and effectively. Any theatre-owner who chooses to spend the needed money can in either of these two ways positively safeguard the lives of all in his audiences.

IT is somewhat surprising to be reminded by the recent action of the Civic Improvement League of St. Louis that that really metropolitan community has not yet secured for itself the blessings that flow from obeying the wise direction of an enlightened Art Commission. However, with the influence of the late exposition not yet dissipated and in consequence of the efforts of the able committee that has the matter in hand, we do not question that a properly qualified, fully empowered and unpaid Art Commission will shortly come into being. The present plan is that this Commission shall consist of these members *ex officio*: the Mayor of the city, the President of the Board of Public Improvement, the Director of the St. Louis School of Fine Arts, the President of the St. Louis Chapter A. I. A., and, besides, a painter, a sculptor, an architect and three laymen. This seemingly secures places on the Commission for two architects, and as this might excite feeling, it would be as well to fill the second place with a landscape architect. It is rather a misfortune, seeing that so many problems of an engineering kind have to be considered, that engineers as a class are so unimaginative, and such slaves of the right line, that it would not be quite desirable to have the city engineer an *ex officio* member, but, doubtless there could be found an engineer of the right mental balance who could fill one of the three lay places.

THE curious discovery in the storerooms of the National Gallery and the consequent exhibition of a score of unremembered canvases by J. M. W. Turner make it seem more than ever possible that the arms of the "Venus of Milo" may at last be discovered in some of the vast accumulations of unopened crates and cases in the vaults of the Louvre. The natural inclination was to believe that the reported "find" in London would prove to be merely unfinished canvases or paintings not really representative of the artist. But, now that the paintings are actually on exhibition, critics seem to agree that the find is of unusual interest and value, as many of the paintings are admirable examples of Turner's latest "manner."

IT is understood that it is part of the programme that a fresh and determined effort shall be made this winter to have Parliament pass an architects' registration bill, and that, in view of the qualified endorsement of the Royal Institute of British Architects, there is good reason to expect that the bill, if introduced, will achieve passage. We are reminded of this by noting that amongst the members returned to the new Parliament there are four architects, though we do not recognize any of them as being identified with the registration movement; so it is uncertain whether their presence in Parliament indicates an attempt on the part of the promoters to "pack the caucus." At any rate, the lawmakers are evidently going to find in their own body those competent to plead with full knowledge for or against the measure.

CIVIC IMPROVEMENT FROM AN ARTISTIC STAND-POINT.<sup>1</sup>

MR. RICHARD HOWLAND HUNT (Occupying the Chair).—As the delegates to the Architectural League of America are our guests this evening, I have requested one of our members who stands at the head of his profession to address a few words of welcome to you. He needs no introduction to our home members, for he has given so many years of practical work to the benefit of his profession that you all know him, and those who know him personally certainly have a very strong affection for him.

Delegates to the Architectural League of America, I want to present to you Mr. George B. Post.

MR. GEORGE B. POST.—It is always a most pleasant task to welcome heartily those who have done anything in this country for art, and it is always a pleasing thing to speak in any capacity as a representative of the Architectural League of New York.

Nearly fifty years ago, or forty-nine years ago, to be exact, the first society for the advancement of architecture and the allied arts was organized. I refer to the American Institute of Architects. Its influence of course was principally for the development of architecture, but in the old times the architect was not only an architect, but a painter, and sculptor and engineer, and in the development of architecture he naturally developed the associated arts. By the terms of its organization none but practising architects could become members, and under its present organization none can reach the rank of "Fellow" but those who have achieved distinction in the practice of their profession.

Some twenty-one years ago the Architectural League of New York, with broader scope than the American Institute's, was organized, taking into its membership painters, sculptors, architects and those interested in the allied arts. The architects have always known that without the assistance of the painter and the sculptor their best efforts were "stale, flat, and unprofitable." The painters and sculptors have only recently come to know, I think, that without the architect they have no opportunity for the greatest development of their art. In fact it is only recently that the painters and sculptors have been able to see anything artistic in architecture. The work that has been done by these societies, and especially by the American Institute of Architects, by the Architectural League, the National Sculpture Society, the National Academy of Design, the Society of American Artists, the Mural Decorators, and by other societies, has eventuated in a wonderful development of art; and an appreciation of art by the community; and if the societies go on as they have been going for the last ten years—for it was only at the time of the World's Columbian Exposition in Chicago that the architects, painters and sculptors united in one effort to produce the best work which they could produce by their combined genius—if they proceed in the same way in which they have for the last ten years, the development in the next ten or twenty years will be still greater than it has been in the ten or twenty years just preceding.

The danger of the situation lies, I think, in the fact that as soon as a society achieves a certain amount of dignity and strength it wants to arrogate to itself duties which belong to other societies. The painter wants to control the sculptor, and the sculptor wants to control the painter, and they all want to control the architect; and the architect wants to control the whole business.

I think the organization of these various architectural leagues throughout the country, which have been united in one great body, the Architectural League of America, is a step in the right direction. I believe it has been made avowedly for the purpose of educating the young architect and draughtsman and helping them in their business, and advancing the young painter and sculptor in their art, but I think that their first effort should be given to the education of the American people to an appreciation of art when they see it. If these societies spread throughout the whole country, and every member of each society tries to educate the people by doing the best work which he can do individually, the best possible results cannot fail to be achieved.

I can only say in conclusion that I think it rather hard that the President should not have broken the ice with the regular address which he is supposed to make, and that he should have left it to a poor Past-President, without warning, to assume this function.

As Past-President and, for the moment, the representative of the Architectural League of New York, it gives me pleasure to extend a most hearty welcome to the delegates with us this evening, and to wish them and their society the best possible success.

THE CHAIRMAN.—I take great pleasure in presenting to you Mr. Ernest Russell, the President of the Architectural League of America.

MR. ERNEST RUSSELL, OF ST. LOUIS.—It is a great pleasure to me, and to the members present to-night, to be able to listen to the words of Mr. Post, and we wish to assure him and the members of the Architectural League of New York that we appreciate to the utmost his welcoming words, and to the National Sculpture Society, and the Society of Mural Decorators we wish also to express our appreciation of the many courtesies extended to us during our stay here. To those of us who come from the far West it is an unusual opportunity to see with our own eyes the work being done here in New York, a place which is looked on by everybody as the Mecca for the architect in this country.

To express its appreciation, one society has sent here the entire senior class of its institute to take part in the proceedings and to look upon the work accomplished by men so well known, and also perhaps to have a chance to look reverently upon the men themselves.

The Architectural League of America, we trust, is doing its utmost to keep the profession abreast of the times. We wish to dispel the feeling they have in some sections of the country, a feeling of indifference, which perhaps I might best illustrate by telling a story of one of our Missouri Congressmen. He was sound asleep one night when his wife nudged him and said: "John! John! Get up; there are thieves in the house." John was utterly indifferent and said, "Oh well, dear, never mind; just look at the Senate." We are going to do our best to dispel any such feeling as that, and to awaken in the breast of every member of the profession the desire to rise to the top, and we do not wish to have representing us such men as one I might mention by name even, who, when his client asked him what style his house was built in, said "It is in the Colonial Romanesque."

I thank you once again, and we assure you that we do appreciate your hospitality and your kindness to us while here.

THE CHAIRMAN.—Before proceeding with the discussion of the evening, I want to announce the results of the competitions held by the League.

The Committee on Competitions report that nine designs were submitted, and that they have awarded the Gold Medal to George A. Licht, of New York.

The Silver Medal was awarded to Mr. Colister Morton Craig, of York, Pa.

In the competition for the President's Prize I am sorry to say that there were only three designs submitted. The Bronze Medal was awarded to Mr. Hugo Ballin, of New York.

In the competition for the Henry O. Avery Prize, for which twenty-one designs were submitted, the prize was awarded to Mr. Antonin C. Skodik, of New York.

In regard to this last prize I am glad to be able to say that Mr. Avery sent for me the other day to say that he wished to donate a certain sum of money to the League, so that there would be no question in regard to this prize being continued forever.

The topic for discussion this evening is "Civic Improvement from an Artistic Standpoint. What has been done and what should be done."

I am going to call upon Mr. Frank Miles Day to open the discussion.

MR. FRANK MILES DAY, OF PHILADELPHIA.—I had expected to speak upon a certain small detail of this subject, but the President has just told me he wishes me to open the discussion, and while I shall not be able to do that in an entirely worthy manner, there are one or two thoughts I want to put forth.

Two or three days ago I received a letter from the American Civic Association, in which the writer said, "I would be much obliged to you if you would tell me what is the most remarkable thing connected with Civic Improvement in America at the present time." I replied instantly, for it did not take a moment's consideration, "The most remarkable thing is the whole phenomenon; the fact that there should have arisen in America within the last five years a wonderful movement in favor of making our cities better and more beautiful. A movement coming one cannot tell exactly from where, but wonderfully widespread."

<sup>1</sup>Addresses delivered at a banquet given by the Architectural League of New York to the Architectural League of America, at 215 West 57th Street, New York, N. Y., Feb. 2, 1906.

This, it seems to me, is the really remarkable thing, and not any single phenomenon; not any detail but the whole thing itself.

As an instance of how wide-spread this movement is, I should like to say that not very long ago I was in correspondence with a gentleman in New Orleans, who said they were doing a lot of things and expected to do still greater things: that they had various projects on hand which were going to result in this, that, and the other thing.

Now, on the other extreme, this morning I opened a letter from a man in a place which possibly not one person in ten in this audience has ever heard of a place called Edmonton, which is the capital of the Province of Alberta, 3,000 miles from here. My correspondent said: "The wave of Civic Improvement has struck Alberta; we want a park system, and we want better buildings. The banks of the Saskatchewan River are extremely beautiful; we want to preserve them for future generations, and we want to know how to go about it; how to stir up sentiment. What can we do? Won't you write us? Won't you send us some literature on the subject?" This appeal cannot fall on deaf ears. It seems to me highly significant of the breadth of the movement that it should have struck a little place, a small capital of a small province, such an enormous distance from this metropolis.

On the subject of Civic Improvement as seen from the side of beauty, it seems to me that there is no danger of any of us here present forgetting that that is, after all, the real thing that makes the appeal to us. It is because we hope to make cities more beautiful that we are interested in this thing; that we are all working away at it *con amore*; but we must not forget in our zeal to make cities beautiful that we have got to have them made beautiful by means of other arguments; by means of the argument, for instance, that we are going to make them more sanitary, and more comfortable, that we are going to improve property-values, and by means of a great variety of arguments, all of which are true, none of which must be forgotten.

Let us hold fast to the idea of making them beautiful because we are interested in beauty, because we love beauty, but let us not forget that the way to make them beautiful is to make the appeal not alone on the side of beauty, though we must not forget that, but also on the other grounds which appeal to people not trained in beauty.

Just these few words as a general introduction of the subject, and then to go to the detail of which I had hoped to speak.

One detail very much overlooked, but one which I am sure is inevitably coming to a place of importance in the whole movement in civic betterment in America, is the matter of the treatment of the banks of rivers where they flow through our cities. No city in America has yet treated its river as it ought to be treated. I venture to predict that within the next twenty-five years the problem will be a burning one, and that many cities will have made a good beginning on the betterment of their river banks. We are just now merely on the outskirts of the movement. Few cities have heard of the movement, but those which have heard of it are beginning to take a lively interest in it. One reason for this is that nearly all cities have a river, and in spite of themselves they have got to treat it one way or another. Some facetious person has said that nature has so curiously constructed things that she caused a river to run through each important city.

The problem of the river banks has three characteristics. In the first place they have a naturally wild character; inevitably beautiful until man spoils it. Then comes the city; then we get the familiar aspect of the river meandering through its mud banks, its sides affording a resting place for marble yards, abattoirs, innumerable offensive manufacturing establishments and all sorts of hideous things; a condition which I venture to think is temporary. And then we have the thing after it is finished, an example of which we unfortunately cannot see anywhere in this country; of a river properly regulated, well embanked, with a dignified city coming up to the edge of it, with a splendid tree-line, a boulevard, dignified buildings, all treated in the way a city demands.

Now we have got to go forward in this work, and go forward in spite of every obstacle. And what are these obstacles—these obstacles to the public mind absolutely insuperable? In the first place it almost invariably occurs that there is a railroad on one bank or the other of the river, and generally on both banks, and the practical man says at once: "It is obvious you cannot do anything with this; it is an ugly thing but you can't do anything with it; it is there and it has got to stay there; it is quite hopeless." The answer to that is that it is simply one of the factors

of the problem, one that has been treated in other cities; we know how it ought to be treated; there is no more difficulty in treating it here than in Paris, and London, where it has been perfectly handled. Then the practical man says, as the mayor of a city said to me when talking on this subject not long ago: "Oh, it is all very well to talk about the improvement of the river bank, but you must not forget that this city has a commerce on its river, and we cannot afford to drive away our factories and our commerce." The answer to that is, that we do not want to do anything of the kind. We are not interested in driving away the commerce of the river; what we want to see is the river active and alive; animation is the keynote of the whole thing. If we can have a river with its active and suitable landing-places, where material such as usually arrives by water transportation is received in a healthy state, and is handled as it should be handled—we want to see the commerce three times what it is on the muddy river banks of the river as they exist at the present time; but we do not want the wharves with all the unsightly things of our ordinary river front.

And now, for a moment, to go away from the question of the beauty that ought to be created. Let us think of the thing from a financial point of view. What is more retardant of land values than a slimy river bank? Think of the things in the neighborhood of it! Think of the low value of the land! Think of the space, for one-eighth of a mile back on each side of the river as a rule, given up to slums! given up to old buildings, and old sheds of no value! given up to half-used wharves! What we want is to embank the river, to bring out a fine class of buildings to the very river's edge, and to enhance five-fold the value of real estate, and increase ten-fold the amount of the taxes received from that portion of the city, and there we have an argument which should be convincing to the veriest Philistine. And if we were not hampered in this detail, hampered as we are in all other civic improvements, by the unfortunate condition of our laws, we could go ahead and do the thing with much greater ease than we can at present. I refer, of course, to that serious impediment to all civic improvement—the inability of a city to "take" the lands adjoining the part to be improved. If we are to improve the banks of the rivers, for Heaven's sake let us buy up a strip on each side of the river one-eighth of a mile wide, and let the enhanced value of it go to the benefit of the whole community, and not to the accidental owners of the land in the immediate vicinity.

One man, a client of mine, recently said to me: "I have come to the conclusion that an architect has to know more than any kind of man I have ever dealt with before." And the architect in addition to all his other duties has now got to add that of legislator and agitator. It is up to us to agitate, and have the constitutions of our States so amended that we can do this thing; that we can take this additional land and devote it to public use and public profit. Unless we so agitate and secure these modifications of our laws, so that we can do this thing, our task will be ten times as hard as it will be under any other circumstances.

Another ground upon which we can put this movement is, in the first place, sanitation. It is perfectly obvious that the improvement of the river banks must lead to increased healthfulness of a city. We cannot imagine such banks of rivers as most cities have. I do not refer to New York, because New York is healthful, with its broad stretch of rivers, splendid picturesqueness and all that sort of thing; I am thinking of the towns where the river is two or three hundred yards wide; where it bears a trifling commerce, and where saw-mills and all that sort of thing are along the banks; and there, where it pours a flood of filth from both sides, there, I say, is where an embankment will make a healthful as well as a beautiful city, and contribute much to the decency and order of the city.

It is inevitable in all cities that slums grow up along the river banks when these are not properly treated. We have only to point to London with its White Friars, and to other slums adjoining the Thames, and the Fleet Dutch, which poured their contributions of dead cats and dogs into the river for so many years, to know what I mean. This then, is I think, one very important detail in our movement, and I think we all should be alive to it. Whenever the improvement of any city is undertaken, it seems to me that one of the fundamental things is first to strike at the improvement of the river banks, and I venture to predict that we shall see more and more in the future of City Improvement Commissions striking at that as the heart of the matter.

THE CHAIRMAN.—It seems to me that Mr. Day has practically

struck the keynote of the situation—making it attractive to the public. Mr. Post also in his remarks suggested educating the public, and it does not seem amiss to suggest to the Architectural League of America, which is going to spread out all over this country, to bear in mind two things. In the first place their idea should be to give a great deal of thought and study to this very important question of Civic Improvement. If they will try and persuade their legislators that what Mr. Day has said in regard to the property adjoining river banks also applies equally well to the property contiguous to either side of improved main roadways, I think they will find that they will get their Civic Improvement much more easily.

In regard to the suggestion made by Mr. Post, of educating the public, I want to say a word to the Architectural League of America in regard to that. They are, it seems to me, giving too much thought to the education of the individual; in other words, to the supply. Create a demand for good architects and they will come in this country.

I now take great pleasure in introducing to you the celebrated painter, Mr. E. H. Blashfield.

MR. E. H. BLASHFIELD, OF NEW YORK.—A few moments ago a member said to me, "I hear you have something very serious to say to us to-night." That sounded very bad for all of us. I am afraid that the only excuse I have to offer for my manuscript is the same excuse they offer for the bad air in the Subway; that is, you will not mind it so very much when you realize that the trip takes only ten minutes.

I am to have the honor of speaking for the Mural Painters to-night. We meet here to-night as representatives of the allied arts, and the solidarity of the triumvirate of architect, sculptor and painter is just now to us the most important subject in the world. Divided they do not fall—the three arts; alone each would make a good showing of itself, it is true, but united they stand for the greatest collectivity of beauty which man has ever produced.

Follow the whole course of history and you will find no buildings of importance, save the pyramids of Egypt, which have not been greatly enhanced in beauty, celebrity and influence for good by the fact that the sculptor and painter have followed in the train of the architect. The architect comes first; he is the leader. Even in prehistoric times he fortified the cave mouth, and wattled the hut, before his younger brothers carved profiles of bear and deer on bone, or daubed them in red clay upon the rocks. But close after him came his two aides. And later, with that development which in the dictionary-definition marks the difference between building and architecture, the architect still has to determine the proportion of wall, window and door before sculptor or painter can be useful at all. Thus the architect is leader, but with the other two close after him. The temple of the arts is builded by three minds acting in unison, and the keystone to the arch is *harmony*; harmony of thought and feeling between the architect, the sculptor and the painter. It is upon this above all else that we, the representatives of the allied arts, must insist if we would be successful. The very word "decoration" tells us so; tells us that our work once in its place, must be decorous, suitable, fitting. If it is not consonant with its surroundings, if it is not enhancing to them and enhanced by them, no matter how fine it is as an individual work, it is a failure from the true point of view because it comes to jar, not to consolidate the effect.

Therefore, and because if we ignore each other we may harm each other, we must study each other; make allowances for each other—*enough* allowance, and, what is perhaps nearly as important, not too much.

If ever a situation required one to light the "lamp of sacrifice" it is that of architect, sculptor and painter confronted mutually by the same problem; but on the other hand, if the sacrifice of personality is entire the lamp is snuffed out, and there is no more light at all.

The painter, or the sculptor, who proceeds in contempt of his architect is like a bull in a china shop; to be led outside as soon as possible, and turned loose in the pastures suited to untamable personalities. But the architect will be as bad if he turns Procrustes and lops off the feet or heads of his collaborators till their stature just fits the size of his idea. Mutual concession will lead to mutual comprehension, and pave the way to mutual education. We shall never be really in harmony till each learns something of the other's specialty, and realizes that, quite apart from temperament and genius in the producer, there are *reasons* for beauty—reasons which can be studied and learned.

To-day we feel our lack of knowledge of each other, and we

are a bit irritated by it. Says the painter, "The architect has no decorative sense." Says some one else, "The sculptor has no sense of scale." As for the architect's estimate (too true perhaps) of the painter's knowledge of architecture, it reminds one of the dialogue in the novel, "*The Heavenly Twins*," between the tourist and the bad boy in the story. "Flying-butresses," says the tourist, looking at the guide-book, and then up at the cathedral. "What are flying-butresses?" "Flying-butresses," said the boy smoothly, "Flying-butresses are a sign of rain."

We mural-painters really do know something more than the tourist, but there is lots of room in us for more knowledge. More all 'round education for painter, sculptor and architect is what we want; for it is only by harmony and mutual comprehension that all-around education of the people, which is so crucial to our success, can be attained. We are willing to begin with educating ourselves—we mural-painters. We are young in art; our work, save the one splendid example in the Ascension Church in New York (still the most beautiful mural-painting in America, not excepting the Puvis Chavannes) was born but a dozen years ago at the World's Fair. We are coming of age now: a rather callow age, as yet, you say; but if we recognize our callowness we shall mature. Our art is a difficult one; each problem is a new problem; our men and women have grown from the little people of the easel-pictures to more than life size; they are harder to manage; the cleverly brushed square inches of the sketch have expanded to square yards; the portrait of the easel-painter must be taught to "carry" sixty feet at least; in our big canvases we must combat unexpected reflections and inequalities of lighting.

We ask the architect to credit us with all these difficulties, and on the other hand we must admit their right to ask sacrifices of us. A painter has no business to sit in his studio, formulating his scheme, be it ever so good, and ask the architect to fit that scheme to his architecture. Such a painter would be exactly like the artist who, being asked to paint a tavern sign with a white horse on it, said he would rather paint a red lion. "But I want a white horse," said the man. "Oh, but the red lion would be handsomer," said the artist. The man replied "Yes, but I want a white horse and won't have anything else." The artist answered, "Oh, well, if you are so obstinate, I'll paint you a white horse, but it will look like a red lion." There are architects who reasonably fear in some cases that the white horse ordered may look like a red lion, and so, to do away with such fears, the mural-painter should earnestly study beforehand the place which he is to decorate.

Before closing I want to say a word upon the subject of decorations. We have a wonderful field before us; new cities await our hand. Do not let us forget that it is an American field; that it is an American field suited to the celebration of what Americans have been in the past, what they are now, and what they hope for in the future. We do not wish to have only processions of pale abstractions upon our walls; goddesses of Liberty and Justice, and such! we want processions also of workmen with their tools; real men and women of all sorts and conditions. It is good to see the historical subjects coming; good to see the facts. But in proceeding thus as patriotic Americans let us also proceed hopefully, looking carefully at all sides of the subject. Let us remember that to the American the apprehension of fact is perhaps easier than the cultivation of fancy; let us therefore not neglect the latter.

I would deprecate with all possible earnestness the opinion of those who would wish us to substitute realistic for what they call idealistic, or allegorical, subjects. We don't want to substitute one for the other; we want to have both and we want them very much. Fine-spun allegory is a nuisance, the refuge of the uninventive; but simple symbolism is good and essential, because without it we cannot have large treatment of the nude, and simple draperies, and without such treatment no rounded national art is possible. Throughout the history of painting, during thousands of years, wherever the nude has been neglected (save in Holland) just so surely the art of that school has either ceased to be all around in character, or has ceased to be robust.

The different branches of painting are equally great, whether portrait, landscape, historic, or symbolic, but a national school does not consist of any three or four branches but of all of them taken together. Symbolic treatment of the nude, and of large draperies, is essential to us. Say, if you will, that we have not yet the capacity to treat it with the strength and splendor due to it, but admit also that we shall not learn to swim by avoiding

the water. We paint with oil upon canvas just as the Venetians did; their works have lasted four hundred years. We must learn to paint pictures whose potentiality for material endurance need not terrify us. Such learning must be based upon study of the nude in the size of life. Therefore we need and should have what is commonly called idealistic painting and sculpture.

My whole subject to-night has been the mutual education of architect, sculptor and painter. This will compel expenditure of thought, time, money; but the result should be worth the effort. Our opportunity is almost boundless. We have an empire for our client and for our themes the conquest of a continent by arts of peace; the events of four wars; exploitation; invention, and evolution. There is plenty of capacity in the American, and with perfected mutual education we shall be equal to the celebration of all this. We shall become so gradually, for we recognize our difficulties. It is for such recognition and improvement that we are teaching in the schools, founding university departments at home, and American academies abroad. We are trying to help the coming generation to a better equipment than was accessible to us. Help towards such a realization is in a way better and bigger than any picture which we can paint, statue we can model, building we can erect; and if the man grown too old for work sees such a future coming, he may put down compass, chisel, or palette without bitterness and say with a good heart "*finis coronat opus.*"

THE CHAIRMAN.—How true of art! And yet what a pretty compliment Mr. Blashfield pays to the League—the principle of the League—which is to bring the three arts together. And the harmony between our societies which I am happy to see exists at present certainly should induce closer co-operation between us.

I now have pleasure in introducing Mr. Karl Bitter, who will speak for the sculptors.

MR. KARL BITTER, OF NEW YORK.—The President, Mr. Hunt, has just said that the object of the Architectural League of New York is to bring the three arts together, and I think that on an occasion like this, when the representatives of the three arts are brought together, the purpose of the Architectural League cannot be better safeguarded than by giving an ample opportunity for the exchange of opinion, for the making of mutual acquaintances, and for general discussion, and not by one individual, and especially by an individual like myself, occupying your time unnecessarily.

While it seems to be my duty to speak upon the subject of Civic Improvement from the artistic standpoint, I would say to you that the best oration that can be delivered to you on the subject of sculpture in relation to great municipalities and Civic Improvement—that oration you have received when you took your excursion to this magnificent city.

I pointed out to you, when we took the trip to Staten Island, and looked back from the ferry-boat to the huge mass of architecture piled up before us. I said, there is architecture! There is the expression of the architect! It is wonderful and it is unique! I would say that I hope you have also looked around for the sculpture on or among the buildings, and I do hope that not only a pleasant spot of decoration, an agreeable grouping, a light and shade, interested your eye, but that perhaps you have tried to read something in what the sculptor has chiseled upon the building; the expression upon the monuments you have seen. Perhaps there was very little expressed—perhaps a great deal. I would say that I hope the younger generation of architects that is represented here to-night in the delegates will give sculptors an opportunity to say a great deal indeed, and not make mere pleasing decorative subjects, or pleasing things to look upon, in between the trees and the green of the shrubbery. I do hope that the profession of sculpture will respond in bringing up men who are both willing and able to express ideas that are great and everlasting, such as are recorded in the sculptury<sup>1</sup> you see in ancient marble.

It is but a short time ago since I listened to a lecture delivered by a European scientist, on the subject of Babylonia, illustrated by lantern-slides. And as the lecturer showed us one view after another of pieces of sculpture, he said, "In these works of art, read the history and the greatness of the people who lived thousands of years before us." Then let us architects and

sculptors record in stone, in some manner, whatever is lasting and great about us.

I do hope we will come to a time when the fair beauty "Art" will be among us, and that it will not depend upon the dress she wears that she shall be received. That the spirit will live; that the outer garment about the spirit will be secondary, and the home of that spirit then I am sure will be America.

THE CHAIRMAN.—We have heard from an architect, a painter, and a sculptor. I am now going to call upon a gentleman whose life-work is amidst painting and sculpture. I have pleasure in introducing Sir Caspar Purdon Clarke.

SIR CASPAR PURDON CLARKE, OF NEW YORK.—It is with some diffidence that I arise this evening to speak to a body so representative and important as the Architectural League, because I feel, being almost in a new country, having recently come from Europe, possibly I may be taken in a manner to be representing to you the latest thought, the latest opinions, of the people I come from, and in a manner I should do so, for it is not so very long since I was a British delegate to a conference in Brussels on this very subject. I sat there steadily, day after day, for a week through the conference. Their conversation was in a language I did not understand, but, excepting, I think, for just one short speech in one of the Slavonic languages, I was able to follow it very well. It seemed to me always coming back to the same thing. Everybody practically agreed that he agreed with the other speaker in the necessity for doing something; for regulating the buildings, the lines of streets, in new towns, and everybody lamented the impossibility of treating in any way the old ones. Reports were published, I think, but conferences are slow things in Europe, and reports are only published and distributed when everybody has forgotten everything about it. It took twelve months to get out the reports and I have not had time to read my copy yet. But it left the impression on my mind that there had been a lot of clever work, good talking and good matter practically thrown away. Everybody was disheartened; they felt they could do nothing with the old town, while people who were not artists had here and there tackled the old town.

Not everybody is old enough to remember Paris when Baron Haussmann was supported by the Emperor. Where the law would not assist them, they tried a sort of moral suasion. There were some kinds of trades-unions there and they tried to defeat the movement in the Boulevard de l'Opéra. A certain man would not give up his property. They lowered the Boulevard to a level nine feet below his front door, and left him standing up there. He was a tradesman with a large shop, and they didn't leave him any means of getting customers into it. But they had the Emperor behind them, and I remember seeing the house finally pulled down.

We are a very conservative people in England; it is very difficult to get improvements of any kind through. I do not know how certain improvements were carried out, but we have heard this evening of old Fleet Ditch with dead cats coming in—I remember the Thames in that condition—but somehow it was managed; perhaps politics gave strength to the movement. For some two or three miles down from London Bridge to the House of Parliament the whole of this sort of disreputable wharfage—it was terrible! The mud banks were well supplied with dead cats and dogs; it was a large supply; so much so that it was a constant source of reproach that they were not treated properly, and *Punch* used to give us a picture of the future Thames with its dead cats; it was no libel at all; it was the truth as appeared to all of us. But within a few years that was all swept away. I do not know how they compensated the people, but everybody was heavily compensated. I believe they sold the property for three or four times its value, and compensated them in that way. There was not a square inch of ground taken without payment, and from London Bridge some two miles to the House of Parliament there was a stretch of old wharfage left, and they took it up and continued three miles to Chelsea. The whole north bank of the Thames has been cleared of these unsightly things, and the embankment, more or less beautiful, carried along. It was not new, because the French are always ahead of us in things of that kind. In Paris they did it on both sides. The French began one hundred years before they did in London, but they did it in despotic times. We did it in times when they could not touch anybody else's property without paying for it twice its value. Otherwise you get into legal disputes, involving both sides in legal expense.

London was built from East to West, with the old country

<sup>1</sup>It is full time that this useful word should be invented. If it should "catch on," its first use here by a foreign-born citizen will afford an interesting example of the many causes that are forcing the English language to expand.—Eds.

roads going in towards London along the river bank; there was very bad communication North and South. You couldn't drive from the river bank up North anywhere without going through a lot of crooked streets. It was decided to straighten them up, and in a very valuable part of the country they opened this road some five or six months ago called "The Kings Highway." They smashed right through all these streets, with very handsome entrances on each side, which give easy access to carriages coming from East or West going North, and I should think if it was done in London it ought to be done anywhere.

When I first saw New York, twenty-one or twenty-two years ago, I thought on entering the harbor what a magnificent opportunity they had lost here for making a grand Venice; it reminded me of Venice. But treated in rather a great manner it would have been the grandest city in the world. That was my thought. I was only a few weeks here, and the thought did not last many days, because the second day I was here I saw the people clearing out in the evening, going to Brooklyn and to Jersey, and then I realized that with a city with a population as large as this, it was necessary to have a different class of buildings from anything they had in Venice, and I wondered how you would meet the problem. I arrived here a few months ago to find that you had dealt with the problem; you had not created a second Venice, but something in a way much greater. I do not say more beautiful, but it was appallingly grand. The effect of these enormous buildings, as you come up the harbor, with their myriads of tiny little windows—port-holes of commerce—make them look at first like fortresses. When I first saw those fortresses I was reminded of old Cronstadt. New York had become a vast city, covered with houses full of loop-holes; not with guns behind them—not with guns of war—but far more deadly guns, the guns of commerce, which destroy their enemies without the slightest chance of their enemies hitting back. That is the appearance New York had to me when I arrived this time. I think I must limit my remarks simply to that fact. You lost the chance of making it a Venice, but you didn't want a Venice.

Recently I have been up the Harlem River; there you have lost a chance of reproducing those old Dutch towns, with their canals and old Dutch barges. But then do those old Dutch barges move fast enough for you? It is another type of life. I dare say where there is so much earnestness things will come right before long; but they never will come right unless you urge the principle of some of the dealers in the old country; ask for twice as much as you want, and the chances are that you will get three parts of it.

THE CHAIRMAN.—I am now going to call upon a very dear friend of mine to say a word to you—Mr. Frank Hopkinson Smith.

MR. FRANK HOPKINSON SMITH, OF NEW YORK.—I have listened with very great pleasure to the eulogy pronounced upon my adopted city by the distinguished English expert, Sir Purdon Clarke. I welcome you gentlemen to this city. I know how poverty-stricken you are for beauty in your own. We have a certain civic pride about our institutions, very much like the Irishman who took his boy to a shoe-store and said, "I want you to fit this boy with a pair of shoes." "French kid?" said the storekeeper. "No," said the Irishman, "Damn you—born in the Fourth Ward."

When you arrived in this great metropolis and saw that magnificent aggregation of "yellow waffles" set up on end, with their tiny windows, which this distinguished gentleman from the other side calls "port-holes of commerce," I know your souls must have been filled with pride.

If I had been in charge of the Committee it would have given me the greatest pleasure to have shown you our streets; to have impressed upon your minds their safety. I should have taken you up to the derricks on 34th Street, where the walking-delegates of a sister organization cut the guy-ropes the night before, and where the policeman turned his head the other way. I should have shown you the crowds on Fourteenth Street, so vast that the President's daughter could not even move to get a bonnet without three hundred and seventy-five thoroughbred American gentlemen levelling their cameras at her. And so high is the standard of morality among us that a distinguished judge on the bench devotes his time to literature, so fine, so moralizing and so uplifting that numbers of the publishers of our daily press ask hourly for "copy." These are the things that make us boast in New York! These are the things that swell our bosom with pride!

We welcome you to this metropolis. We know that when

you go home you will have seen things which you never saw before—and some of which you will never want to see again. But there are some things left; things which will not only brim your eyes when you think of your chosen profession, but which will fill your hearts with joy when you realize to what heights it can attain. The Morgan Library, by McKim, for one; the portico of the Guarantee Building, on Broadway, by Bruce Price, for another; the new Custom House, by Cass Gilbert; the great Library, by Carrère & Hastings; and a dozen other structures, each of which is an open protest against the vulgarity of the age in which we live.

You young men, who are the hope of the beauty-progress of the country within the sound of my voice, must remember that you have entered a profession that is more ennobling than all the other professions on the globe. Look back upon those who have gone before—those who have crossed over to the great majority! The father of your President, to whom more than to any other man is due the very possibility of your meeting in this building, a structure which did not even exist when he went home to glory! When the whole trend of the movement was for something decorative, something ornate, something encrusted all over like a mud-pie, Hunt built the Lenox Library. Not from the World's Fair, as has been stated to-night, because he was the World's Fair, but simply because of that innate love of beauty which was born in him; to his determination to do the simple, the pure and the great is our present art movement due to-day. And then we had Richardson, and Van Brunt and Atwood! Some man in Chicago told me some years ago that the Chicago Fair cost thirty millions of dollars. "Thirty," I answered, "it would be cheap if it had cost sixty millions of dollars, and had produced Atwood! for you will get every penny of it back before the Republic is fifty years older!"

Do you know what it is to be an architect? Have you ever had an idea of the responsibilities that rest upon your shoulders? Come with me some lovely autumn afternoon and stroll out through that great open-air bric-à-brac shop of the universe, the Piazza of San Marco; you will miss the wonderful bell-tower in the vault of blue—gone now these two years! But it will come again! I saw the final stones of the foundation placed on the 20th of October of last year. Two years more and the Marangona, that great bell in the tower, will ring out the hours as it has done for centuries. Look with me on that wonderful jewel-casket, with its bronze horses, its columns of porphyry, and verde antique, its mosaics in gold and precious stones! With that same love for the beautiful, with that same skill, with that same mastery of color and composition, that you admire so much to-day, this master-work of the architect of that day grew and grew until, as the great Ruskin said, its very sky-line against the blue was as if white-capped waves had been tossed up and frozen. And not only San Marco, but come down to the Piazzetta, and from the Molo, between the gateless posts of the Lion and St. Theodore, watch the setting sun gild the angel on San Georgio, the golden light slowly mellowing down into deep shadows below. Who wrought the things that make this beauty? The man with the trowel! Who stood behind him? A man poring over a drawing board, a T-square and pencil in his hand, and a flaming thought in his soul that has illumined the universe.

#### CONVENTION OF THE ARCHITECTURAL LEAGUE OF AMERICA.<sup>1</sup>

MR. RICHARD HOWLAND HUNT, OF NEW YORK.—Mr. President and Members of the Architectural League of America:

It is a great pleasure to see you here, and I most heartily welcome you in behalf of the Architectural League of New York to our home. It seems to me particularly fortunate that you are holding this convention here, because I had the pleasure of having a very interesting talk with your President, and I feel that your being here is going to give the men in New York a chance to understand your objects and really find out a little more what your purpose—the purpose of your organization—is. I do not propose to make any speech, because your time is very limited, but there are one or two little points that it seemed to me it might be wise to bring to your attention, particularly in view of the fact that this is a comparatively young organization, and, so far as I can see at the present moment, started out with that most definite idea of what you want to do, the most definite that you have had since your organization has been established. In view of that fact it seems wise to give you a short résumé of what we here in New York have been doing, which

<sup>1</sup>Held at 215 West 57th Street, New York City, Jan. 31, 1906.

is allied in a way with what you are trying to do, or intend to do, in a very much broader way in the United States. Within the last few years, there has been a harmony between our different societies here in New York which has not existed before; and it is owing to the fact that our societies are learning that each society has its own province; that it can only do one thing well, and that it is not wise to try and do the work of more than one society at a time. The Architectural League of New York has adopted the policy of not—you might call it, interfering with the professional and ethical side of the profession. That is taken care of by the Chapter. The Sculpture Society takes care of that same work for the sculptors, the Mural-Painters for the painters, and the Beaux-Arts Society is taking care of the educational side; and our Architectural League of New York resolves itself into practically a clearing-house for the different societies, always ready to endorse and forward any movement that is started or initiated by one of the societies whose special province it is to look after a certain matter. A case comes up in point just now where our Chapter has made certain recommendations to the Mayor in regard to the composition of the new Board to revise the Building Code. It was suggested that the Architectural League should take that up. It hardly seemed proper, considering that our League was composed of architects, painters and sculptors; but since the Chapter has taken it up the League proposes to endorse that movement, and also we hope to have the Society of Beaux-Arts Architects endorse it. You have established now, if I understand it, a very definite policy. Whether it is wiser to educate the individual or to educate the public, and in that way create a demand for the individual, or to create the supply, that is a question, of course, that I suppose you have threshed out very thoroughly, and have come to the conclusion that you want to educate the individual. But no man or society can do more than one thing well, and I think from our experience here in New York—we have had quite an experience—we have had quite a number of years of trial—that it is not amiss to have made this suggestion to you. Take your policy, fight it hard, work all you can and push it through and may God go with you.

ADDRESS OF THE PRESIDENT OF THE ARCHITECTURAL LEAGUE OF AMERICA.

MR. N. MAX DUNNING, OF CHICAGO.—In behalf of the Architectural League of America, and in behalf of all here assembled, I wish to thank the National Sculpture Society, the National Society of Mural-Painters and the Architectural League of New York for the splendid reception that they have accorded us, and for the splendid evidences of entertainment that are given us on the programme which we have before us. I also wish to thank Mr. Hunt for the gracious words in which he has given us welcome.

We are here, gentlemen, on an important mission, to legislate wisely for the future expansion of the League's work and to give that work such direction that it will bring about the best possible results. The work which the League has accomplished should give us ground for great optimism. The work which still lies before the League in possibility of accomplishment is worthy of the most serious thought and careful consideration. We have arrived at the seventh year of our age, and with each year has come a better definition of purpose, a more clearly defined grasp of what our mission is as an architectural organization. With each year also has come an increased responsibility of increasing power, and the responsibility for its judicious application goes hand in hand, and should never be lost sight of. The conventions of the Architectural League of America are not unlike the observations taken on a ship at sea. The latitude and longitude are found, the mistakes of the past voyage are corrected, and the ship sets its course straight for its destination. The Architectural League has made mistakes; the Architectural League will make other mistakes in the future. That need not particularly embarrass us; we may not particularly regard them, for it is through error, to a large extent, that we learn the truth. In some of our projects we must admit failure, but we must work indefatigably for success. In all of our projects we must be inspired by a noble purpose consistent with our high ideals as an organization; and in all of our projects we must work to the end that our architecture will assume the dignity of a profession in the eyes both of its practitioners and the public, who, unquestionably, are fast awakening to a better appreciation of art. It seems to me that in this public awakening to the value of art lies one of the great fields for usefulness of the Architectural League of America. With our power as an

organization we can accomplish a great deal in directing public sentiment into channels that will be productive of great good. The governing board of the Architectural League should be the clearing-house of the highest and best ideas of architecture in its broadest sense as they relate to architecture and painting and sculpture and gardening and the making of cities, and everything that comes under that vast head. The thoughts that are given out, the directions given by the governing board can be best worked out through our constituent clubs understanding, as they do, all of the peculiarities of their local conditions.

One of the great fields for the Architectural League of America is the educational field—the education of young men. We have in our organization hundreds of young men whose minds are supple, who are susceptible to good influences or to bad influences. The teachings that go from the central body, the teachings that go from each of the constituent clubs should always be an inspiration to these members to become better architects and to mould a higher ideal of their profession. The habits of thought and study of these young men are being formed, and you can appreciate for yourselves the wonderful influence it would have upon the future generation of architects that these minds should be so moulded that they would come up with a high regard for the æsthetic side of architecture, becoming in consequence better men.

The convention then organized, with Mr. D. Everett Waid, of New York, as chairman, and Mr. Albert E. Skeel, of Cleveland, as secretary.

THE CHAIRMAN (MR. D. E. WAID).—I will rule a speech on my part out of order, but I cannot get out of my mind a remark that I heard last evening from the head of the famous Hampton Institute, who said that he had just been trying to interest a prominent man of New York in their institution, that famous college from which Booker T. Washington graduated, and this prominent New York man said he had never heard of that institution! That is an illustration of the dense New York ignorance which you will find on many subjects. It is one of the things that has been of continual interest and surprise to me; so you must not feel disappointed if you find that the Architectural League of America is not well known in New York. Even a convention here of a thousand delegates causes scarcely a ripple, and a very small percentage of New York knows that it is being held at all. So if we are not noticed by the citizens generally it will not be strange; but I do hope that this convention will do its work with such earnestness and with such sane and calm balance that it will make an impression on the profession, on architects, on sculptors and on painters, and will show that the object of this organization is one which is to be carried out with a single purpose.

Mr. Dunning then read the report of the Executive Board.

REPORT OF THE EXECUTIVE BOARD.

Your Executive Board respectfully submits the following report:

As provided by the Constitution of the League, your President, representing the Chicago Architectural Club, selected the following gentlemen from that club to act with him: Mr. Richard E. Schmidt, *V. Pres.*; Mr. John L. Hamilton, *Sec.*; Mr. Hermann V. von Holst, *Treas.*; Mr. Alfred Hoyt Granger, Mr. Howard V. D. Shaw, Mr. Elmer C. Jensen, who, together with your President, N. Max Dunning, have constituted the Executive Board.

The meetings of this Board have been held approximately every two weeks, at which time questions of routine business have been taken up and disposed of.

The Executive Board has been particularly fortunate this year in having had its line of action largely mapped out for it by the convention in Pittsburgh and has bent its efforts toward putting into active operation the projects recommended by the retiring Board, and by the Standing-committees in their reports to that Convention.

We have succeeded in a measure, and I am pleased to report the following results:

*School Scholarships.*—In our effort to establish scholarships in the architectural schools of the country, we met with a most generous response from the President and Fellows of Harvard University, receiving from them by gift three "scholarships in architecture," each equivalent to one year's free tuition at Harvard. Two of these scholarships are awarded upon the result of a competition in design conducted and judged under the auspices of the League, in the various constituent clubs and open to any of their members. The third scholarship is awarded to

that member of the League who passes the highest regular entrance-examination. The first competition for these scholarships was held simultaneously in all of the clubs last September and two scholarships were awarded. The men receiving these scholarships are at present pursuing their studies in Harvard. While there were but few competitors, this fact was easily attributable to the short notice that could be given and it would be an unfair criterion by which to judge of the success of the scholarship idea. Announcements have been issued for the second competition, which will be held early in March and upon the results of which the scholarships for next year will be awarded. It is only due to the President and Fellows of Harvard and to Prof. Warren, who has so earnestly championed our cause, that a large number should compete and show that we are deeply sensible of the great assistance they have given us in carrying out our programme of education.

While we have not as yet received scholarships from other architectural schools, the manner in which they have taken up the question and the interest shown in its possibilities lead us to expect that eventually we will have other scholarships to offer to our members.

The Executive Committee respectfully recommends that this work be carried on.

*Traveling Scholarships.*—We have also secured pledges of the funds necessary for establishing an "Architectural League of America Traveling-Scholarship" of a value of \$1,200. A part of these funds are already in the League treasury and we anticipate no delay in receiving the remainder. Announcement of this competition has already been sent out, and the programme has been written, but this will not be made public until the time of the preliminary competition.

It has been the intent of the Executive Board to make the restrictions as to eligibility as broad as can be made, consistent with the best interests of the Scholarship and its recipient.

We will require from all competitors an essay in which they will set forth their opinion as to what is the function of such a scholarship as this, and what if any, are their natural predilections, with the intention that their designated study may be made congenial to their tastes and impose the least possible restriction on the individuality of their work.

We will require that the holder of the first scholarship observe particularly some designated subject pertaining to the improvement of cities, and report to the Executive Board.

Your Executive Board has given this question of a Foreign Traveling Scholarship deep consideration, and are greatly impressed with its future possibilities and inestimable value. We therefore respectfully recommend that this project be continued and developed. We would further recommend that, at the earliest moment it may be found expedient, the League establish Traveling Scholarships in Mural-Painting and in Sculpture.

*The Annual.*—A contract has been signed with Mr. John C. Baker, of Philadelphia, to assume the management of *The Architectural Annual*, and this work will be carried to completion without the League assuming any financial responsibility whatever. The work of soliciting advertisements for this volume has been begun.

We have also communicated with the various clubs securing permission to select plates from their 1906 catalogues and have met with favorable responses from all but one, and there is no doubt that we will be able to secure any plates we may desire in this case.

We have every reasonable assurance that *The Architectural Annual* will not only be a volume which will be a credit to the Architectural League of America, as a *résumé* of the current work in Architecture, Painting and Sculpture, but that it will also maintain the Foreign Traveling Scholarship in Architecture and probably, in the near future, in alternate years, scholarships in sculpture and mural-painting.

Your Executive Board respectfully recommends that this venture be given an impartial trial.

The Executive Board wishes to commend most emphatically the splendid work done by the Committee on Education, of which Prof. Newton A. Wells is Chairman, and of the Committee on Civic Improvements, of which Mr. Frederick S. Lamb is Chairman, and of which you will hear in detail when their reports are made. In making this special mention, however, we do not wish to imply that the work of the other committees has been less zealous or attended by less successful results.

The Executive Board have had published the document issued by the Committee on Education and have also had published and

distributed in pamphlet form, the Report of the Committee on Civic Improvement, as authorized by the last convention.

*Recapitulation.*—Your Executive Board recommends:

a. That an effort be made to increase the number of Scholarships in the Architectural Schools.

b. That the *Architectural Annual* be continued as an organ of the League.

c. That the Traveling Scholarship in Architecture be continued.

d. That Scholarships in Mural-Painting and Sculpture be established.

e. That the present Standing-committees be all continued.

f. That the question of periodical bulletins be considered. These to set forth the prospective work the League has in mind, in order that it may be incorporated in the programmes of the various clubs.

g. That special committees be appointed or elected to take care of the work in connection with the Traveling Scholarship and *The Annual*.

h. That the Chairman of the Committee on Current Club-work should be selected from the city represented by the Executive Board. That a Committee be appointed to look into the Circuit Exhibition.

i. That archives for the preservation of club documents should be established.

j. That a Committee on Foreign Correspondence be made a standing-committee. Their duty to bring about a closer harmony between our organization and foreign similar organizations, to the end that our traveling-scholars shall be given a better standing and increased opportunities while abroad, and the international question of better government as expressed in concrete examples of civic improvement may be more universally studied and the knowledge more systematically disseminated.

k. That the Architectural League of America appoint a delegate who is thoroughly familiar with the League's work and ideals to attend and represent it at the World's Congress of Architects to be held in London in July. Our position as an architectural body and our interest in the progress of architectural thought seems to demand that this be done.

Finally: It is the opinion of your Executive Board that, considering the personnel of our Society, the sphere of its greatest usefulness is an educational one in the broadest sense. That we must use our good offices to encourage in the minds of the younger members of our organization high ideals of architectural expression and professional practice.

And finally, that we shall exert in the greatest degree possible a strong influence in moulding the public mind to a better appreciation of art.

The Convention then amended its constitution so as to reduce the annual dues of Undergraduate clubs from \$25 to \$10.

#### SECOND DAY.

The time of the Convention during the second day was consumed mainly in listening to the reading of the routine reports, few of which led to any discussion.

PRESIDENT DUNNING, OF CHICAGO.—If it is in order, I should like to suggest, or make the motion, that a committee of three be appointed by the Chair to take up the question of rehabilitating "the circuit exhibition." Very often that is incorporated in the report of the Executive Board as one of the recommendations, but it seems to me that the time is going to be so taken up with a consideration of the different recommendations that have been made that it will be very difficult to give them all the consideration that some of them deserve. I think that the question of the exhibition circuit is a very important one, and I know from experience, as others do, that it is a very difficult one to solve. We have attempted to solve it at various times without any success so far, but at the same time there is a call from the different constituent members of the League that that shall not be abandoned; that a great many of the clubs look toward the League for that as one of its best features. Some of the clubs, in fact, join the League to gain the benefit they could get from participation in this circuit exhibition, and we think it would be advisable for a committee to take up this question alone, and leave it out of consideration of the Committee on Committee-Reports, and give that Committee the power to call in and obtain the sentiment of the different clubs, calling delegates from each of the different clubs to advise with them in reaching their conclusion, and they should report back to this convention, and at the business meeting to-morrow. If it is accepted, I will make that as a motion before the convention. I make the motion that

the Chairman be empowered to appoint a committee of three to look into the question of rehabilitating the circuit exhibition.

PROF. WELLS, OF URBANA, ILL.—That is a question that I have been interested in personally, having had some experience, having been Chairman of the Exhibition Circuit one or two years, and I should like to see that whole problem solved satisfactorily to the League. I think such a committee ought to be appointed, and that this investigation ought to be gone into. As Mr. Dunning said, it is a very difficult thing to handle. I think most of the members of the convention know my sentiments concerning that matter from a report which I returned last year, namely, that this exhibition should be reduced to the form of an annual exhibition taking place at the time and place of the convention meeting, and that some means should be devised for having a jury—a competent jury of experts along the various lines of drawings—to pass upon them and make awards of honorable mention. I personally do not believe in offering monetary prizes. I believe in having simply awards of honor. It might be possible that matters might be improved along the lines of classification. I hope such a committee will be appointed.

MR. HEADMANN, OF SAN FRANCISCO.—On behalf of the San Francisco Architectural Club, I would like to say that, if this proposed committee is appointed to take up this problem, we would like that committee to consider us in the matter; that is, in helping to facilitate the arrangements so it would be possible for us to follow that circuit exhibit out there on "the coast." It may be impracticable on account of the expressage, but if there is any way practicable, within the means of the League, we will consider it very much in our favor.

Motion seconded and carried.

The chair appointed the following as such committee: Prof. Wells, of Illinois, Chairman; Messrs. Nicholson, of Philadelphia; Headmann, of San Francisco, and Lacey, of Philadelphia.

#### THIRD DAY.

SPEAKER WAID.—The report of the Special Committee on Reports of standing committees will now be read.

The report follows:

The Special Committee to receive and report on the reports of Standing Committees respectfully reports as follows:

1. *Executive Committee.*—Your Committee has carefully considered the report of the Executive Committee and endorses the recommendations contained therein and urges their adoption.

2. *Education.*—The thoroughness with which the Educational Committee has done its work cannot be too highly commended. This Committee recommends that its summary or comparative table be given wide publicity in that it is of value to all interested in architectural education and of particular value to the faculties of architectural schools.

3. *Publicity and Promotion.*—Your special committee in considering the report of the Committee on Publicity and Promotion respectfully recommend that additional steps be taken to induce the non-affiliated Architectural Clubs mentioned in this report to join the League. In this connection we further recommend that particular efforts be made to induce the Architectural Societies established at the Universities and Colleges throughout the United States and Canada to become affiliated with the League, the well-known policy of the organization being to foster in every way the education of the student and draughtsman. This will be materially simplified now that the status of the junior members has been clearly defined.

Your Special Committee endorses the recommendation that efforts be made to assist the architects and draughtsmen in the smaller centres to organize themselves into architectural clubs, when possible, or to become eligible to the benefits of the Architectural League of America by becoming associated with some club already a member.

4. *Current Club-work.*—In the opinion of this Committee the report of the Committee on Current Club-work contains many suggestions of value and we recommend that the report be sent to all organizations members of the League. Also that especial attention be directed to the growing practice of giving architectural books to the winners of club competitions.

We recommend that wherever practicable League exhibitions be held at the time and place of the conventions.

We are surprised that the Current-work Committee found such a woeful lack of support of the various clubs of the League by the older members of the profession, and we recommend that increased efforts be made to gain their interest and support.

5. *Committee of Co-operation with the A. I. A.*—We recommend that the Committee be instructed to work with the Com-

mittee of the A. I. A. and adopt such means as may be deemed best to bring about the establishment of the scholarships in architectural schools.

6. The able report of the Committee on Civic Improvement is a complete résumé of work done or projected. In order to carry out the instruction of the last convention this should be supplemented by bulletins issued at intervals giving current data and references relating to the subject.

MR. GLADWIN.—I move its adoption as a whole.

Motion seconded and carried.

MR. ITTNER.—There is a question about one item in Section *b*, that *The Architectural Annual* be continued as an organ of the League. May I ask if the name of that annual is fixed? I ask the question for this reason: Mr. Kelsey was speaking about it, saying that the name "*Architectural Annual*" belonged to him; that it was a copyrighted name, and that he could proceed against this organization if we used that name. If the adoption of this report carries with it the fixing of the name of the Annual as the "*Architectural Annual*," I think we ought to change it, because we do not want to get into trouble with Mr. Kelsey.

PROF. WELLS.—The report of the Committee on Exhibitions, which has not been heard, will have something touching right upon that point, as to the name of an annual or annual catalogue.

PRESIDENT DUNNING.—I will say in explanation that I suppose we used that word because it is a contraction of "The Annual," or "Year Book of the Architectural League of America," and I know that in the correspondence in connection with this matter it has been called three or four different things; that is, the "Year Book" and "the Annual of the Architectural League of America," and there has been nothing said about a definite name for this at all. It is probably a matter that would very properly come up for action to decide on what you want to call this year-book. In all of our correspondence that I recall it has been called either "The Annual" or "The Year Book of the Architectural League of America," but that title has never been defined by any action of the League or of the Executive Board. It is a thing that should be properly defined before we publish the book.

What we are talking about is a recommendation in the report of the Executive Board that the *Architectural Annual* be continued.

A DELEGATE.—I would like to know how far that involves the League in any financial responsibility?

PRESIDENT DUNNING.—The recommendation of the Executive Board to the incoming executive officers last year at the convention at Pittsburgh was that an effort should be made to publish an annual; that is an annual publication in which we should give plates carefully selected, plates from catalogues of different architectural exhibitions throughout the United States, the idea being that we could obtain the use of these plates through the various exhibition committees. In that way we could obtain about 150 or 200 carefully selected plates from these exhibitions and any other place we were able to obtain them, and we desired to put them in a book of this kind. We also would have the best papers obtainable from the papers read before the annual convention of the League and before the various architectural clubs on subjects pertaining to architecture and architectural thought. These papers would be obtained in that way, and they would be solicited from men competent to write upon these subjects, and it was intended that they should be compiled and carefully edited and also published in this annual; that that annual should be financed by the securing of advertisements, and from these advertisements we expected to derive enough revenue to pay for the production of the book itself, and enough to maintain our foreign traveling-scholarships—that is, from the sale of the book and the amount we would derive from advertising. We may not require all for the traveling-scholarship, and if the project proves to be as successful as we have every reason to suppose it may, we all hope in probably two years, or perhaps next year, to get in the additional scholarships. We absolutely feel it as much our duty to get these scholarships as it is our duty to get scholarships in architecture. The reason that architecture was selected as the first one was because the preponderance of architectural members seemed to demand that; but it is the idea to take care of all those different branches of the arts allied to architecture, landscape gardening, sculpture and painting.

MR. HARDER.—It seems to me that the report might be adopted, but as to the adoption of the recommendations therein it does not seem necessarily carried.

SPEAKER WAID.—The Chair rules that the report has been formally adopted. If you are not ready to adopt it as a whole, a motion to reconsider will be proper.

MR. HARDER, OF NEW YORK.—I should like then to have the previous motion rescinded, and I will move that the report be received and placed on file and discussed by paragraphs.

It seems to me that such a vital thing as this annual, involving the League in financial liability, is too serious a matter to pass over without discussion.

PROF. WELLS.—I second Mr. Harder's motion for the simple reason that the committee of which I was chairman, was out, and some of the work we have to recommend touches very closely the whole problem of the publication. I therefore second Mr. Harder's motion.

Motion carried.

MR. HARDER.—I should like to ask for information as to the status of this annual publication at the present time.

PRESIDENT DUNNING.—Acting upon the instructions given us by the last convention we took up this matter involving the carrying on the publication of the year-book of the League, and have signed with Mr. John C. Baker, of Philadelphia, a contract by which he is to secure the advertisements and place them and publish "*The Annual*," guaranteeing a publication of 2,500 copies to be placed on sale without any expense to the Architectural League of America. Mr. Baker, I will say, objected very strenuously to this, on the ground that he thought we tied him up in a knot in our contract, and that the League stood to lose nothing while he was responsible for the entire financial end of it. We simply took the ground that the League was furnishing its good name and that it really stood to lose as much as he could possibly lose, so the contract was finally signed. The League is not financially bound in any way whatever, even in the publicity necessary in putting this book on the market, the soliciting of advertisements, or anything of the kind. Mr. Baker, furthermore, has nothing to do with the editorial part, and we have a very broad scope in the placing of advertisements. I will say that the contract is signed on the basis of the T-Square Club catalogue of 1905—that it must be a book in every respect as good in the way of material, binding and general appearance as the T-Square Club catalogue of that year. That was the necessary basis of our contract, and the Architectural League of America is not bound in any financial responsibility whatever for one year.

MR. HARDER.—My motion is that this portion of the report be adopted. My motion now is that the action of the committee be endorsed, and that this portion of the report be adopted.

Motion seconded and carried.

PROF. WELLS.—The committee appointed to report upon "Circuit Exhibition" reports as follows:

The Committee recommends that the Circuit Exhibition as an Exhibition be abandoned; its place to be taken by an Annual Exhibition of Architecture and the Allied Arts; that it be held at the time and place of the Convention; that Medals or Diplomas of Honor be awarded for the most worthy work in Architecture or the Allied Arts exhibited during the Convention which have been previously executed.

We further recommend, in case the above recommendations are adopted by this Convention, that a Committee be appointed to complete the details of this exhibition scheme.

I will say, for the information of the members present that some of these details were discussed in the committee, and among others, the problem of a catalogue. Certainly such an exhibition should have its catalogue, and such a catalogue should be limited to the exhibits of that exhibition, and that catalogue would have to be maintained by the advertisements. Immediately I perceived the difficulty arising from a publication already being provided for and contracted for, that would not perhaps provide for this scheme. There may be a way in which the annual publication of the League could incorporate its catalogue. It seems to me that such a catalogue of such an exhibition would appeal to advertisers, and it is a question in my mind whether it should be made too bulky with papers and articles of a more or less literary character that might be published in our periodical literature. This is the report; you have it before you.

SPEAKER WAID.—If there is no objection the report will be received and placed on file. The matter of adopting it will come up by special motion.

It was moved and seconded that the report be adopted.

MR. HARDER, OF NEW YORK.—This, again, is one of those sub-

jects that involve considerable thought and labor, which it would seem wise to refer, with power, to the incoming board of officers. It is a very easy matter to sit here and decide that we are going to hold this kind of an exhibition in a certain way, at a time and place to be designated hereafter. It may be a place where there are no facilities for that sort of thing. The next convention may be held at a place where that kind of thing would not even be advisable. It may also be possible that the amount of preparatory work required and the schedule of dates and times at which the exhibitions are held might interfere, so it seems to me that whatever purpose there may be in the investigation of the difficulties which the committee has reported, that that could be done equally as well if the entire report was referred with power to act on it to the incoming Board. My understanding is, if it is adopted, the incoming Board has no discretionary power, and it must proceed to the execution of these recommendations.

MR. HYNES, OF TORONTO.—I am well aware that this circuit exhibition is something that has annoyed the members of the League and has been a matter of disappointment and hardship. While the suggestion contained in this committee's report seems to be very good, it does not strike me that it is along the lines of least resistance. Several things have occurred that seem to me to show that there is a possibility of making a circuit of some service to the League, and also to the component members of it. For some time, I believe, it has been the habit of the T-Square Club to send to the League here in New York at the time of its exhibition and select a number of exhibits to be transferred over to the exhibition in Philadelphia, which usually follows this one. I noticed in the Boston catalogue and exhibition they did not get any drawings from Messrs. Carrère & Hastings; but as they printed in its entirety a letter they received from them explaining that—which makes the suggestion that they would be very glad to even go as far as preparing special exhibition-drawings, if they were to be exhibited first at New York, which they considered the academic exhibition, and then to have them go on, possibly, to Boston, or some other city for exhibition there. If we can get men of the repute of Messrs. Carrère & Hastings to make such an offer, to have the things that they consider worthy of their exhibiting, it would be of immense benefit to the constituent members of the League to have these drawings also exhibited, and I think that might be accomplished without great hardship to any executive operation of this League, if the following method in some way were followed: New York has the first exhibition, and from its exhibits that seem to indicate some particular merit, a very few drawings might be selected and sent to three or four different places and returned at once after going to the second exhibition. This would overcome the objections that the drawings have to go on circuit. I do not think it would entail very much clerical work on the part of the members of the clubs in these cities to allow these men to pack these drawings and send them to us, and I think it would be providing a circuit which was, in the earlier days of the League, looked upon as a great thing; and while it has been impracticable in the way it has been undertaken before, I do not think there is anything impracticable in having—probably in the case of a dozen—perhaps three or four going to each city. It would be of an exceedingly high character. The benefit would be very great in setting a standard throughout the country.

PROF. ASH, OF WASHINGTON.—I want to correct one little statement. The T-Square Club has its exhibition first. New York second and Washington Architectural Club third; but since we have held an exhibition we have endeavored to arrange dates to come immediately after New York, and have sent a committee here to make a selection of drawings from the New York exhibition. That, in a sense, is a small circuit of three clubs, but it illustrates the time it takes. I think the T-Square Club exhibition opened the 28th of October. We won't have our exhibition until March, and to hold a circuit of three large exhibitions, that is Philadelphia, New York and Washington, means considerable work and time. I think that is one of the points about a circuit which has not always been understood, that the length of time to properly arrange your exhibition precludes any long circuit. It must be one only within a few clubs, and if you want to have a circuit exhibition it must be by circuits arranged within small clubs—that is, a few clubs. The other point I want to make in connection with Prof. Wells's report is the idea that the club holding the exhibitions is to lose its individuality in the exhibition. That is to say, if you say there is to be an exhibition at the place of the next convention of the Architectural League, is the Architectural League to hold that exhibition, or is the club

entertaining the Architectural League to have the exhibition on their hands and the convention, too? That is a point I would like to have settled, because the Washington Architectural Club would not wish to relinquish its responsibility for its exhibition.

PROF. WELLS, OF URBANA.—It was not the intention of the committee to interfere in any way with the local exhibitions, and it, of course, is taken for granted that the League will, in its future conventions in all probability meet at some metropolitan city. It will also be necessary to work out the details of this thing, and it will be necessary for some responsible person to be appointed and employed at some remuneration to attend to the getting up of schedules, to the mailing of them, to the receiving of exhibits, and to their return; but this exhibition was not thought to take the place of any other local exhibition whatever, but to become an American affair including the States and the Dominion of Canada. We did not look at small things, and we are looking to the future and at large things. At this exhibition it will be necessary to acquire a competent jury to pass upon these things. The committee is looking to the future and for large things, and it will be necessary, of course, for a committee to be appointed to work out the scheme of work in connection with the incoming Board for next year—the officers for next year—and would have to submit, of course, their reports to that Board for its approval. This is simply in the form of a recommendation, and not binding on the convention to do any particular thing. We have simply recommended it and ask the convention to make its recommendation to work out the details—to work in conjunction with the incoming board of officers which may finally decide to abandon the whole thing.

MR. ITTNER, OF ST. LOUIS.—If that was the intention of this committee I think the wording of this report is unfortunate, because it makes it mandatory, in my opinion.

PROF. WELLS.—It was not intended so to be made.

MR. ITTNER.—If it was the intention to make this mandatory, I think it is a mistake, and we are not quite ready for it, for this reason: Washington comes to this meeting with the purpose of inviting the convention to meet next year in Washington. That means that the Washington Club will have to stand the expense of entertainment of this convention. If this convention forces upon Washington an exhibition, who is going to pay for that, the League or the Washington Club? We cannot expect Washington to entertain us and pay the expense of an exhibition. If it means that the League must pay the expenses, I hold we are not quite ready. We have got too many other important things. We are establishing scholarships, and we are publishing an annual year-book, and while this would be very nice eventually, I do not think we are quite ready for it. I am of the opinion that the circuit should not be abandoned altogether, because it is of use to the younger organizations. We heard the report of the representative from San Francisco. His club has joined the League, and he crosses the country to attend our meetings. One of their reasons for coming in was that we could help them in their exhibitions. They expect to get drawings out of that. We ought to extend that more, because in the smaller communities it is a great aid, not only in stimulating club members but in arousing public interest, to continue these circuit exhibitions, and I believe the committee ought to burn a little more midnight oil and go into the matter a little farther, and see if we cannot devise some other circuit and have the drawings and send them to wherever we see fit.

MR. HARDER.—On the subject of circuit exhibitions of course we have a richer and more varied experience in this organization than we have in anything else. We may recall that at the beginning we started in with a very large idea of getting practically all the good exhibits from one exhibition and passing them around the entire circuit of clubs. At that time I think there were six clubs, and that was the inception of the idea of this organization. That failed because the undertaking was too large for the executive capacity of the organization and the constituent organizations. The amount of work was extensive and the expense was far too great, consequently it failed. The later amendments that were made to the scheme were all in the direction of reducing the amount of expense and responsibility and work to such modest proportions that it would be a success. Consequently if it was impracticable to pass these drawings through those six clubs it is certainly more impracticable now, because we have something like eighteen clubs instead of six. While we are glad to see the largeness of view with which this idea which is advanced now—and undoubtedly it would be a very fine and

grand thing, greater even than anything we have ever attempted before—the fact is we did not succeed, by reason of the lack of executive capacity, in making even the smallest thing a success. For instance, take this Architectural League exhibition—it costs \$10,000 to hold this exhibition. I presume it would cost even more now, and it seems to me in that respect it would be impracticable. It might be proper to demonstrate that by an experiment. This thought occurred to me, whether it would not be more profitable to have an exhibition of architecture by the delegates and by the members of the organizations, than to go to all the work of creating and arranging and establishing a great national annual exhibition of architectural drawings, because I make a distinction between exhibitions of architecture and exhibitions of architectural draughtsmanship. I wonder how many men there are in this room who have ever been to Newport. Wouldn't it be a good idea to have a convention at Newport, even if there was no club there. Would it not be better to hold a convention at Newport where there is no club. Let the delegates and members and clubs meet there and hold our convention in one of the excellent hotels which exist there, and let all the members go about and see an exhibition, perhaps second to none in the world. You will show them an architectural exhibition which they may never see in a lifetime in any other way. It seems to me that is going more directly to the point of progress in education in architecture than the attempt to hold a great exhibition of architectural draughtsmanship, which could only practically be held in two or three places; say Washington, say New York City, or Boston, Philadelphia, or Chicago, or St. Louis. I suggest these ideas which have occurred to me since I heard the subject mentioned. First, what is the exhibition for? An exhibition for the progress of art, the dissemination of ideas of architectural work, and it seems to me that we too frequently lose sight of the influence of architectural draughtsmanship. If we take the public to a real exhibition of architecture instead of a mere imitation of it, it seems to me we are going by a more direct route, at far less expense and with no risk whatever, to that objective point which we are trying to reach.

MR. KELSEY.—As I look over the scene that has been pictured, in which we are to have all sorts of junkets free of expense, I think it is well for us to consider the plain possibilities of the schemes suggested. I was not in the room at the time that mention was made of the architectural annual, and that is really my purpose in speaking now. I might add, now, that I know Mr. Baker very well, and that Mr. Baker came to me with a proposition before "*The Architectural Annual*" was ever started, which did not appeal to me at all, but had I followed Mr. Baker's advice, the financial results would have been a good deal better than they were. Even with that experiment, however, I am in a position to say that there are great financial possibilities in such a publication, and it is not wide of the mark to state that, if the project should be started, it is quite possible to net, even the first year, \$10,000 in advertising, while the cost of publication itself need not, even with editors' expenses, run over half that amount. I think Mr. Harder's idea is a very excellent one, because certainly we never any of us enjoyed a better exhibition than yesterday in the "rubber-neck wagon." We all of us enthused more on seeing actual buildings than when seeing exhibits. I want to be as brief as possible, and would say that until yesterday I knew nothing whatever of this project of an architectural annual, and it occurred to me that in return for the many courtesies that have been extended to me by the League, and as its first President, I should be delighted to surrender the good-will of "*The Architectural Annual*," and the lists, and so on, and if it should be deemed advisable by the incoming administration to accept this, they are at liberty to have the entire good-will without any compensation whatever.

PROF. WELLS.—I simply want to put before the convention an idea as to the motive that makes it possible to obtain contributions for an exhibition. I think Mr. Harder has not seen that side of it as strongly as I have. The failure has not been owing to inability on the part of committees to handle the thing, or to finance the thing. It has been simply inability to get contributions. I know something about that personally, that until you create a motive that makes a man want to exhibit—you are not going to get the best work, or if you get anything from him you are not going to get his best work. He is not going to contribute unless he sees an opportunity to get some honor or emolument or advertisement. You have got to appeal to the selfish, human vanity, and that is one of the things the committee thought of in making an annual exhibition, at which awards should be made by a competent jury. I believe you can get contributions sent at

the sender's own expense for sending and return, just the same as I often send down to the Architectural League of New York and pay the expense of sending and returning for the honor of being placed upon your walls here. An exhibition of this kind, of a national character, at which the names of the jury who would pass upon them, and by whom the awards would be made would be known, would, I believe, stimulate the contribution of worthy exhibits, and I believe that is the greatest motive to get them, and the lack of that motive, I think, is an insuperable difficulty in the way of having a good exhibition.

**SPEAKER WAID.**—Are you ready for the adoption of the report? If there is no objection there will be a few words added which the Chairman of the Committee has inserted into the report to make the meaning clear.

Secretary Skeel then read the report of the Committee on Circuit Exhibition as follows:

"The Committee recommends that the Circuit Exhibition as an exhibition be abandoned; its place to be taken by an annual exhibition of architecture and the allied arts; that it be held on the time and place of the convention; that medals or diplomas of honor be awarded for the most worthy work in architecture or the allied arts exhibited during the convention which have been previously executed.

"We further recommend that, in case the above recommendations are adopted by this convention, a Committee be appointed to complete the details of this exhibition scheme, working in conjunction with the incoming board and subject to its authority."

**PRESIDENT DUNNING.**—As to one clause in the report of the Executive Board, relative to the publication of "*The Architectural Annual*"—inasmuch as we have given that as the name of the publication, and as I find that that is the name given in the contracts which we have signed with Mr. Baker, of Philadelphia, I wish to state that the convention should, in adopting the report, understand that they are also adopting that as the name of the publication, and I think that in using this name we should give Mr. Kelsey the consideration that is due him for the generous manner in which he has given us the future use of that name. The reputation enjoyed by the two annuals that Mr. Kelsey published is indeed a very excellent inheritance. They were most beautiful books in every sense. While we might differ with him in some of the details, I do not think there is any one but will accept them as very valuable additions to the architectural publications, and I therefore think that it would be a distinct benefit to the annual which the Architectural League of America is to publish to have it go under the same name as Mr. Kelsey's previous publication, inasmuch, particularly, as he has waived all of his rights, his copyright-rights in connection with this name.

#### AFTERNOON SESSION.

Friday, February 2, 1906.

**SPEAKER WAID.**—There is one thing suggested by the report of the Executive Committee, namely, the election of a delegate to London to the International Convention in that city this coming summer. It might be well to make a motion to proceed with the election of that delegate.

**MR. RUSSELL.**—Are we entitled to more than one delegate?

**THE PRESIDENT.**—I think the convention is entitled to send as many as it chooses.

**MR. ITTNER.**—Inasmuch as I understand a number of our delegates would like to go as delegates to the coming International Congress, it would seem proper to me to delegate our incoming Executive Board to elect these delegates. Anybody signifying his intention to attend the Congress should be properly accredited as a delegate from the League.

**SPEAKER WAID.**—The motion is that the matter of sending delegates to the International Convention in London be left to the Executive Committee, with power to send as many as they can find available.

**MR. ITTNER.**—And all expenses of each delegate to be borne by him, of course. I was the League's delegate at Madrid last year and I paid the bills.

**MR. KELSEY.**—I attended the first International Congress at which America was represented in Brussels in 1897, and I was very much impressed by the character of the men who were present there and by the poor showing made by the United States, and I think that it would be well that there should be no limit whatever on the number of delegates that we are entitled to send, and that it would be well for the convention to in-

struct the delegate or delegates as to some specific duties. I noticed that the foreign delegates, especially the German delegates at Brussels, had a cut-and-dried plan and made a very impressive appearance before the convention; and in view of the fact that the Institute is going to put the best foot forward at London, it is quite important that some instructions be given to our delegates.

**SPEAKER WAID.**—The Institute is going to use great efforts, sending only the most distinguished members to the convention: it will be an honor to represent the Institute, and we should exercise the same care, it seems to me; but as it stands now this matter is left in the discretion of the Executive Board.

**MR. HYNES.**—There is one point that I think might be brought before the convention, and that is the possibility of having the Architectural League of America organize a European trip. There are very many who would like to see the other side, and it is a little beyond their means to reach it; and as special rates can be obtained by getting a few together, I think if a committee were appointed here that they might learn from the different clubs how many would possibly go, if a limit were set for the trip, say of \$500, and to spend probably eight or ten weeks abroad and under the patronage of the Architectural League of America, which no doubt would give access to many things that we might not get to personally—I would like to move that a committee be appointed to examine into the feasibility of having a European excursion, possibly annually, under the auspices of the Architectural League of America.

There being no further remarks on this subject, the matter was put to vote, after being duly seconded, and carried.

**MR. HELFENSTELLER.**—Under the head of Unfinished Business I wish to bring up again the matter that formed the topic of our conversation since we left and since we heard the lengthy debate this morning on the question of exhibitions. It would seem as a consideration due the smaller members of our organization, to which they are entitled and unquestionably so, that some aid and assistance should be given them toward having their little exhibitions. It has been a mooted question, how best to do this, and I take the liberty of offering one suggestion which, if it finds favor, will insure for each one of the smaller organizations, as, for instance, Toronto, San Francisco, and the University of Illinois, that which they have been craving for. The plan that I would suggest is this: That we here, who have come together a number of times and who know each other and have confidence in each other, should promise and pledge ourselves individually to go back to our clubs and listen to the appeals from the clubs that are contemplating holding exhibitions; and that we pledge ourselves to provide for these clubs say six or eight drawings to each club, which are representative of the best work that we are doing in our communities. That operation will require about four hours of work for the right man who will see to it that the drawings are properly boxed and consigned to the point of destination, and who will upon their return see that they are properly distributed to the contributors. Now, if each one of us here, representing the eighteen clubs would pledge ourselves to do this, it would form a nucleus of some seventy odd drawings, which are unquestionably sufficient to give the clubs what they are craving for. And I wish to amend that right here by saying that I take the liberty, over my older associates here present, of putting my shoulder to it, by promising that when the appeal is made to St. Louis the drawings will be forthcoming.

**MR. HYNES.**—Since the discussion here this morning, I had the pleasure of mentioning the matter to Messrs. Carrère & Hastings, the Boston (*sic*) people, who seem to display considerable interest in it, and also displayed, I may say, considerable lack of knowledge of what the Architectural League is trying to do in this matter. It struck me that if a firm of this prominence were prepared to go to the length of making a set of exhibition-drawings of the work that they most desired to exhibit, that it would stimulate any section of the country that it came into, and be worthy of any community, the large cities as well as the smaller. I told him that we understood that it was a hardship for these drawings to be away from their owners so long. He met my idea by saying that he did not care whether the drawings ever came back or not, as long as they went on exhibition in the different cities. And I think that possibly other men would be willing that a set of their drawings might be sent from New York, say, when the people in St. Louis desired to exhibit, all that would be required being that the drawings be returned at the end of the exhibition. That would form a nucleus, give us something of a standard. I suppose the idea of trying to get a

very large exhibition especially for the smaller clubs is quite out of the question. If we had, say at one exhibition, a particular piece of architecture presented to us, it would be a stimulation to us in that way; another year they might take another piece. I should like to see some such scheme worked out as set forth in Mr. Carrère's letter to the Boston Architectural Club.

**SPEAKER WAID.**—If there is nothing further under the head of General Business we will proceed to the appointment of Standing Committees. A motion is in order to hear the report of the committee to nominate chairmen of the standing committees, and the President.

**MR. DUNNING.**—As Chairman of the Committee on Nominations, I wish to state that they have gone into the question very thoroughly of making the nominations for the chairmanship of the various standing committees and the nomination of the men who are best equipped to carry on the work of the League next year. Before giving the results of the report of this committee, I wish to make some remarks about at least one of the candidates for the presidency of the League whom we have considered at great length and very favorably, but whom we do not recommend in our report. Of all of the men who were considered as candidates for President of the League next year, there was none who received such favorable comment from the Committee on Recommendations as Mr. J. P. Hynes, of Toronto. Mr. Hynes has shown, through his connection with the Architectural League of America, the interest that he has taken in all of our conventions, the interest that he has shown in the work that we have asked him to do, the faithful way in which he has performed every duty that has been asked him—that he is certainly a person of the right presidential timber. And there was absolutely no question in the mind of this committee that so far as the personality of Mr. Hynes is concerned or his interest in the League, or his endeavors or anything of that kind, that he would be an ideal candidate for the presidency of the League. The only suggestion that we took into consideration in relation to Mr. Hynes was the question of expediency and policy of the League. And in this the argument was brought forth that at the present time that, whether the opinion would be just or not, an opinion might be created, seized upon by some of the constituent bodies of the League who are not thoroughly familiar with the convention work, that the time was not quite opportune to send the Executive Board to Toronto, Canada; that at the present time Canada, or any other American community outside of the United States, was not sufficiently representative to be given the Executive Board; and this consideration was the one consideration that influenced the committee, more than anything else, to decide upon another man to recommend to you as President of the League for the next year. But we wish to make it clear that we were thoroughly in favor of Mr. Hynes from every other consideration, except that we believed that it might be prejudicial to the best interests of the League at the present time—and at the present time only—to have the presidency of the League go to Toronto; and we wish to put ourselves on record as a committee, and I know that we voice the sentiment of every person who has been in attendance at the League conventions in the past years, as showing our appreciation of the splendid work that Mr. Hynes has done, our appreciation of the splendid interest that he has shown in the efforts of the Architectural League of America, and to thank him for that interest. Mr. Chairman and Delegates: Your Nominating Committee has the following report to make: We recommend that as Chairman of the Committee on Publicity and Promotion, Mr. Molitor, of Philadelphia, in recognition of the splendid services he has performed during the last year, be elected to succeed himself.

On the Committee of Education there is no word to be said. All of you who have heard the report of Prof. Wells know very well that it would be very prejudicial in the interest of our educational work not to have him continued in the splendid course that he has undertaken during the past year. We therefore recommend that Prof. Newton A. Wells, of the University of Illinois, be continued to succeed himself as Chairman of the Committee on Education.

On the Committee on Co-operation with the American Institute of Architects, there is one man who performed the duties of chairman of that committee last year, who has been most interested in the work and who has been one of the staunchest friends of the Architectural League of America in all of our efforts to secure this co-operation which we desire in our educational work in connection with the American Institute of Architects, and we wish to recommend this man, Mr. William B. Ittner, as

Chairman of the Committee on Co-operation with the American Institute of Architects.

As to the Committee on Civic Improvement, it seems best to continue the present chairman of the Committee on Civic Improvement in his work, as he has a certain amount of data which he has compiled during the past year and issued in the report which we have before us and in the pamphlet, feeling that it would retard the progress of this Committee if a new Chairman took up the work and tried to find the channels for securing the information necessary to this Committee. We therefore recommend that Mr. Frederick Stymetz Lamb, of New York, be appointed to succeed himself as Chairman of the Committee on Civic Improvements.

As to the Committee on Current Club-work, we have recommended Mr. J. P. Hynes, of Toronto, as Chairman, knowing from the way he has performed every other duty that has been put before him, that he will perform the duties of Chairman of this Committee in the same commendable manner. We therefore recommend for your consideration Mr. J. P. Hynes as Chairman of that Committee.

Our nominee for the presidency of the League next year is a man who needs no recommendation from me. He is a gentleman who has been identified with the work of the Architectural League of America from its beginning, a man upon whom has been thrown a great many duties to perform, and who has always performed those duties well, and the interest that he has taken in the League, the interest that he feels for the League now and the work that he has done, the successful accomplishment that has come from his efforts, all point to Mr. Ernest J. Russell, of St. Louis, as the logical candidate for the Presidency of the Architectural League of America for the coming year.

**MR. HELFENSTELLER.**—Before proceeding with the election I would like to address a few words to the President and this convention. Through the very clever political manipulation of our President, Mr. Dunning found it possible for himself to be made Chairman of the Nominating Committee. There is no man—and I speak unhesitatingly and with candor—that is more deserving of the confidence of this body than is Mr. Dunning. He is the one man who has continually and since the inception of this organization had his right shoulder to the wheel and has been pushing the cart forward. It was only at the earnest and urgent solicitation on the part of Mr. Dunning, who explained to the Nominating Committee that it was utterly impossible for him to continue in this office, that we permitted him the privilege of not having his name presented. But every man at a certain period in his life has to have time for his own affairs, and he must be willing to sacrifice some of his ideals. Mr. Dunning has tendered, or rather presented this Committee to tender, his services to the newly elected President, stating that he will take care of that part of the work which under his administration had found its origin. He promised the Committee that he meant to tender to the new incoming President his services toward carrying out the work that he has begun for the Architectural League of America.

**SPEAKER WAID.**—Your speaker, in acknowledging that he has been influenced by "clever political manipulation," in naming Mr. Dunning as Chairman of the Committee on Nominations, would like to add a word about Mr. Dunning. He was satisfied that Mr. Dunning was the logical candidate, but Mr. Dunning assured him that he would not be a candidate again under any circumstances. And I want to say to you that the Chairman appreciates, and I am sure you all do, the great sacrifice and earnest work which Mr. Dunning has put forth in behalf of the League and its work during the past year. The candidates are now before you.

**MR. HYNES.**—Mr. Speaker, I would like the pleasure of moving the adoption of the recommendations of the Nominating Committee which, as I understand, includes Mr. Russell as President for the coming year of the Architectural League of America. I also wish to express, while on my feet, my appreciation of the kind expression of Mr. Dunning who has so kindly spoken of me in this meeting in what I consider an altogether undeserved way. I feel a little conscious, from what Mr. Dunning has said, that perhaps in some manner, in my bearing, I had shown ambitions for the presidency; and I just want to take this opportunity, while expressing my appreciation of his kind words to say that nothing was farther from my thoughts, for I do not concede that I have done anything for that reason; all I have done was purely because of the interest I felt in the matter.

**MR. KELSEY.**—As there is only one candidate, Mr. Chairman,

I want to move that the Secretary of this convention be instructed to cast the unanimous vote of this convention for the election of Mr. Russell.

A rising vote was then taken, the election being unanimous.

MR. RUSSELL, OF ST. LOUIS.—Gentlemen, I feel very much like a lamb led to the slaughter. I am deeply appreciative of the great honor which has come to me unsought. I didn't want it, but I do promise to do everything within my power for the best interests of the League. I have had, as Mr. Dunning has said, the interest of the League at heart from the time of the first convention which I attended in Chicago. I think you all know that I lack the ability of a speaker, and will therefore excuse me upon my promise to try and show you what I can do.

SPEAKER WAID.—Nominations are now before you for Chairman of the Standing Committees.

MR. ASH.—Mr. Chairman, I move that the Secretary be authorized to cast the ballot of the convention for the usual standing committees, as there is only one name in each case, to save time.

The Secretary being so authorized cast the ballot and the gentlemen were declared elected.

MR. ASH, OF WASHINGTON.—After reaching New York I received the following telegram, from which I will read, and which requires no further comment on my part. (Reading): "Percy Ash: You are authorized to invite the convention to meet in Washington next year. Louis A. Simon, President Washington Architectural Club."

MR. KELSEY.—It do not rise to in any way depreciate the courtesy that has been extended from Washington, but to point out that it is going to be difficult indeed for any city to in anywise equal the hospitality which we have received here this year, and it is going to be particularly difficult for Washington next year to take care of two conventions. As I understand it, the date of the convention will be approximately the same as this year, and the Institute, having had a dull convention, or comparatively dull convention this year, are setting out to do something to surpass even the brilliant convention held there last year; so, if it would be acceptable to those who invite us, to postpone the visit to Washington, it would be to the best interests of the League not to have the convention there next year.

MR. HULL, OF BROOKLYN.—I, too, feel that it would be a great mistake for the Architectural League of America to hold its convention in Washington next year. Possibly some of the delegates are not aware of the fact that the next convention of the American Institute of Architects is to be the semi-centennial of the founding of the Institute, as a result of which the Institute is going to make extraordinary efforts in the matter of the next convention; and for that reason, and for that reason alone, I feel that it would be a great mistake for the convention of the Architectural League of America to be held in the city of Washington in the same year, and within a few weeks of this immensely notable celebration that is contemplated by the Institute. I think that the Architectural League of America would suffer very much by the comparison, and it is the last thing in the world that I would like to see, to have any comparison made between the American Institute of Architects and the Architectural League of America, to the detriment of the latter.

MR. KELSEY.—The entertaining of the delegates to the two different conventions rests in entirely different hands. The Washington Chapter has practically nothing to do with the Washington Architectural Club. I would urge most emphatically that whenever this League decides to meet in Washington, that you postpone the date from January or February till the spring. Washington is to be seen at its best in the latter part of April, and it is really worth seeing when the green first begins to color the streets, and I should certainly urge that when the convention decides to come to Washington, if it isn't expedient to come this next year, why they will extend the invitation a year hence, if we are still alive, and ask that you try to arrange to come the latter part of April or the first of May. It will be to your pleasure, I am sure, to do that.

I would like to point out that this matter of entertaining is more or less irrelevant and sometimes demoralizing. Too much entertaining takes us away from the real seriousness of the convention. Now, I have been to several of the Institute's conventions, and I was surprised, in summing up its last convention, to see that practically no "entertainment" had been arranged for us. We were invited, after the convention was over, to go some miles out in the mud and see a cavalry drill, but that, as far as I can remember, was the only entertaining that was done

for us, *gratis* at least, and yet the convention was widely attended, a great deal of important business was transacted, and I do not think any one ever complained against the absence of such entertainment. Now, in looking about for a possible host who can be induced to invite us to come, I do not think that we want to make it an irksome job for such a host. In fact I feel that it would be better if the League could have at intervals of say five years, or when there is some such great occasion as the Louisiana Purchase Exposition, could have at such intervals such occasions. For my own part I am always in favor of plain living and high thinking; and I think it is most important that we put ourselves on record, if possible unanimously, that entertaining is not a thing that we are looking forward to with the most eagerness.

MR. ASH.—I just want to say that, of course, in inviting this body to Washington, the Washington crowd does not expect to rival in any way the entertainment given by New York. We are physically unable to do that, but we hope to have the pleasure of entertaining you and showing you a hearty welcome on a much quieter and smaller scale, and possibly inaugurating a less elaborate method of entertaining. I am sure that no one could give us more hospitality, or arrange a more beautiful programme than has been provided this year here in New York. I consider that this is the high-water mark, and we, in Washington, have no hope, and do not intend to attempt, to rival any such entertainment as you have here.

MR. ITTNER.—If I remember correctly Washington made a request for the convention last year, at our last meeting. Now, this invitations is repeated, and I feel that it ought to be accepted and accepted unanimously. I don't believe that in the matter of the meeting place the burden should be thrown on the Executive Board, and I therefore call for the question.

MR. DUNNING.—I wish to speak upon this subject. It seems to me that we have had a most gracious offer from Washington for the entertainment of the Architectural League of America in the next convention. The spheres of action of the two societies are so entirely different that it doesn't seem to me that in that way the conventions would conflict in any sense whatever. The value of these conventions of the Architectural League of America is not the clamorous idea that it gives the public of our existence or of our doings or professions or anything of that sort; it is the hard work that we accomplish in our business sessions. The entertainment is something that is very enjoyable, but is really irrelevant to the business that we attempt to transact. Now, the convention in New York this year is held at the present time in order to bring the time of our convention at the time of the exhibition of the Architectural League of New York. It is for us an unusual time of the year. In our other conventions we have held the convention a little later in the year or rather earlier in the spring, from the fact that we obtained far better results, because this is the time of the year when almost all of the architects, the people who would like to attend the convention, are so busy that it is almost impossible for them to attend, and the effect has been shown in a great many of the clubs constituting the League this year, in that the people who otherwise would have come to this convention, have been absolutely unable to come through the business that has been occupying them in their own cities, the business that comes in along about the first of the year when capital is seeking investment to a large extent, and those projects which they are getting ready for spring work are being considered. I really think that this is a very inappropriate time of the year to hold a convention of the Architectural League of America. I therefore think that if the time was postponed next year a little later, so that the two conventions would not come so close together in Washington, if they were separated by a couple of months, or two and a half months, that there would be no conflict whatever between the convention of the American Institute of Architects and the Architectural League of America; and I believe that the two conventions would bring out no invidious comparisons at all against either one of the societies. It seems to me that Washington as a city is peculiarly adapted as a splendid place of meeting for the Architectural League of America. The Washington Architectural Club has been on its feet again and again in this convention tendering an invitation to the Architectural League of America to accept their hospitality, and it has always been put off, because we have believed that, as a matter of policy in conducting the affairs of the League for the first few years, it was advisable to hold its conventions in other cities than Washington. It seems to me that it should be an evidence of the real appreciation of the spirit that has been shown by the Washington Club, an evidence that is due them,

that we accept their very kind invitation and decide to hold the convention in the city of Washington next year allowing the date of the convention to be fixed by the Executive Board, because that is a matter of detail that they can attend to, but with the tentative understanding that the date shall be set a little farther along in the year, so that it will not conflict with the date of the convention of the Institute. I do not think that there will be any unjust comparisons drawn. I do not think that it will detract in the slightest degree from the value of the work that will be accomplished by the League or by the Institute. I think that another thing that makes it advisable that we go to Washington, after the frank statement of Mr. Ash that they do not contemplate any elaborate social entertainment, is to start a new régime in the way of the entertainments of the convention. That is not said in any critical way; that is, I am not referring in any critical way to the splendid entertainment that has been given to the League in the past conventions by the societies in New York or in Chicago or St. Louis, or those other clubs that have entertained us so magnificently. But the truth is that the fact that the entertainments have been on such a magnificent scale has discouraged some of the smaller clubs from ever hoping to enjoy the enthusiasm and the inspiration which would be given them by being able to hold a convention in their own city. It has become a current impression that in order to secure a convention of the League, the League must be assured of a splendid programme of entertainment. That delusion should be shattered once and for all. The Architectural League is for its members, and it ought to be possible that, for instance, the University of Illinois, or any other small organization could with just as much grace as any other invite a convention of the Architectural League. The important thing, as I said before, is the work that we can accomplish, the direction that we give to the work of the League, and the firm, solid, substantial basis upon which we can put that work and carry out our projects, and we will carry back with us recollections of what we have accomplished, the discussions we have heard, and everything of that kind, that will last just as long and be just as pleasant remembering as the remembrances that we retain of these magnificent entertainments that we have had. I therefore should recommend to this convention that we accept unanimously the most gracious offer that is made by Mr. Ash for the Washington Architectural Club.

**SPEAKER WAID.**—The motion is now before you that we decide upon Washington as the next place of meeting for the convention.

The motion was thereupon unanimously carried.

**SPEAKER WAID.**—The question of time now comes before you.

**MR. ITTNER.**—I move that the time of holding the convention be left to the Washington Club.

The motion was carried unanimously.

**MR. DUNNING.**—It seems to me that before a motion for adjournment is in order that there is something that should be said before this convention adjourns, and while I have occupied the floor a great deal more than I should have, I believe you will excuse me in occupying it a little bit longer, while I express my own, and I sincerely believe the feelings of every delegate here present, in extending to those gentlemen of the National Sculpture Society and the National Society of Mural Painters and the Architectural League of New York the most hearty thanks for the splendid entertainment that they have given us, for the great effort that they have made to make this convention in New York a memorable one, and one which will strengthen the cause, the causes of the League, and give us recollections that we can carry home with us and preserve for years and years. I think it is entirely in order before we adjourn to offer a rising vote of thanks to all of these organizations who have so splendidly entertained us while in New York.

**MR. LORCH.**—May I add a word to what Mr. Dunning has already said? It seems to me that owing to one or two things said in connection with the question of the next place of holding the convention, that there might be some misunderstanding as to the value of this meeting to some of us. I don't believe at any time in the experience of all who have attended here has such an opportunity been given to the members of this organization to see what it means to have associated together the various arts of design as here in New York City. No city in the world at present is doing more in the same vital sense, in the same almost national sense, than has been done here in New York City. We have brought together for us, especially in the University Club, perhaps one of the greatest achievements that this country has ever seen and perhaps will see in a great many years to come

In Washington, in Boston, nowhere is there anything that can compare with it, with that splendid convention, particularly beautiful convention of the arts of design, where is exhibited architecture, the mother art with all her children, and therefore I feel that we want to be sure to let the New York men know that while their sumptuous entertainment has been on such a grandiose scale, it has not detracted in any measurable degree whatever from our very great appreciation of the many beautiful things they have here in this city. (Applause.)

The convention then dispersed.

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## ILLUSTRATIONS.

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NORTH RIVER SAVINGS BANK, 31 W. 34TH STREET, NEW YORK, N. Y.  
MR. CHARLES E. BIRGE, ARCHITECT, NEW YORK, N. Y.

FRONT ELEVATION OF THE SAME.

PLAN AND LONGITUDINAL SECTION OF THE SAME.

GARDENER'S COTTAGE: ESTATE OF E. V. R. THAYER, ESQ., LANCASTER, MASS.; REMODELLED COTTAGE FOR REV. DR. BARTOL, LANCASTER, MASS. MESSRS. WINSLOW & BIGELOW, ARCHITECTS, BOSTON, MASS.

### Additional Illustrations in the International Edition.

NEW BOURSE, AMSTERDAM, HOLLAND. MYNHEER H. P. BERLAGE, ARCHITECT.

SIDE ENTRANCE AND INTERIOR VIEW IN THE SAME.

INTERIOR VIEWS IN THE SAME.

NEW HIPPODROME, PLACE DE CLICHY, PARIS, FRANCE.

ONE OF THREE HOUSES ON THE FRANZ-JOSEFSTRASSE, MUNICH, BAVARIA.

THE NEW BOURSE, BUDA-PESTH, HUNGARY.

DETAIL OF THE ROYAL PALACE, BUDA-PESTH, HUNGARY.

AUSTRIAN-HUNGARIAN BANK, BUDA-PESTH, HUNGARY.

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## NOTES AND CLIPPINGS.

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**BICYCLE-STANDS AT THE BODLEIAN.**—It has been a quiet term, and our sovereign body has enjoyed but one field day. The occasion was—but how relate the tale so that solemn things become not a jest to the profane! The Curators of the Chest have by statute the superintendence of "the Bodleian quadrangle, and the open spaces in and about the said buildings." Relying on this mandate, they caused bicycle stands to be set up in a certain air-swept passage known variously as the Pig Market, the Proscholium, and Bodley's "vaulted walke." The Bodleian Curators objected, but failed to take effective action. Then arose Bodley's Librarian, and *suis fretus viribus* cast forth the obnoxious stands, and when they reappeared cast them forth again. The Curators of the Chest appeal to Convocation to authorize the innovation. But Bodley's Librarian is a foe both powerful and resourceful. On the very eve of the contest he circulates a pamphlet entitled "*Pro Bodleio!*" the peer of which was surely never seen before, so exquisite are the eleven plates which, relevantly or irrelevantly, illustrate the dignity and beauty of Bodley's building. (My copy at least shall never be reft from me by the Transatlantic dealer.)

"Here at least," cried the member of Convocation, "is a man who is ready to back his opinion handsomely; but the Chest, it rises to nothing, not even to a distribution of cheap bicycles." Most of us—for has not every man his price—attended with our minds made up. For a while we were regaled with legal subtleties touching the meaning of "open space." No counter subtleties were forthcoming from the side of the innovators, though "*bibliothecarius totius interioris administrationis curam habeat*" offered a tempting theme. Then overwhelmingly the non-placets declared themselves, and the eleven plates had won the day.—*The London Athenaeum.*

**THE NATIONAL GALLERY GETS THE VELASQUEZ VENUS.**—*The Standard* says it understands that the Velasquez Venus has been purchased for the nation, owing to an anonymous person becoming the guarantor of the purchase money. The Paris Louvre had unavailingly offered \$250,000 for the canvas.

# The American Architect and Building News

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THE French architectural societies have recently taken a position which we thoroughly believe is, to a considerable degree, a mistaken one, though we realize that their action will be applauded by the majority of architects everywhere. In 1903, the City of Troyes inaugurated a double competition for the reconstruction of its hôtel de ville and towards the end of January, 1904, the primary competition was decided by the selection of six architects who were to take part in the final competition. When, however, the programme for the final competition was distributed, it was noted that the terms of competition had been changed in some particulars; whereupon the six competitors, feeling aggrieved, addressed complaints to the Société centrale des Architectes Français and the Société des Architectes diplômés par le Gouvernement. These bodies, having considered the matter separately and conjointly, authorized their respective presidents to address identical expostulatory inquiries to the civic authorities at Troyes. These letters declare that “the programme of the first competition has created, between the municipality and the competitors, a contract, which no one, and certainly not one of the parties to it, has at this date a right to abrogate.” They close by intimating that, should the city fathers hold different views, the societies may find themselves obliged to take a hand, “in the general interest of the profession.”

THE fact that a municipal election had brought about a change of officials accounts for, while it does not—from the complainants’ standpoint—excuse, the acts against which complaint is brought. The grounds for complaint are, first, that the limit of cost in the final programme had been lowered by one hundred thousand francs. This action we hold to be wholly justifiable and perhaps absolutely necessary; nothing could be more foolish than to hold a second competition for a building

which could not be erected for the sum within the reach of the inaugurators of the competition. In the second place, while the original programme absolutely promised to the winner the execution of the work, and prizes to the non-successful, the final programme declares that there is “no longer any question of execution” and the winner is to receive only a prize of two thousand francs while the others receive smaller payment for their endeavors. Here the municipality is clearly in the wrong and a suit for breach of contract would certainly lie against it. But, further, the original programme contained the singular stipulation that in the final competition the six contestants must adhere to the scheme they had developed in the original competition—“at least so far as essential parts are concerned.” Such a stipulation as this is well enough, where the object is to determine by academic standards merely the relative capacities of the designers. But in everyday life clients hold competitions for the sake of getting the best possible solution of their problems, and it is the very object of the double competition that the client may have full benefit of the maturer reflection, the valuable “second thoughts,” of the competitors. To arrange that the really ideal solution must not be reached simply because it did not occur to any one at the time of first considering the problem is rankly absurd.

IN the third place, while the first programme declared that the principal façade and the main-hall alone need be preserved, the final programme provides that the original building in its entirety must be retained and that certain other accommodations not originally mentioned must be provided for. Here again, in spite of the fact that the change in stipulations practically prevents the competitors from making much use of their first designs, we hold that the municipality is well within its rights. If public opinion has veered and demands that the city-hall shall be preserved entire, must it be destroyed simply because the first programme suggested keeping only a portion of it? Besides supporting the complaining architects in the particulars mentioned, the two societies volunteer the opinion that the second competition should be judged by those who decided the first one. Here, again, we disagree. The value of a fresh opinion is recognized in other walks of life and why should it not be of value in architectural matters? We daily call in new consulting physicians when our lives are at stake, we constantly add new leading counsel, we carry our causes from lower to higher courts, why, then, is it reasonable that a client treating with architects must content himself with such advice and comfort as can be given by the first counsellor that chance throws in his way? It seems to us that this Troyes case is but an unusually good example of the determined one-sidedness with which architects seek to deal with the competition evil. The client really does have rights and courts are not at all slow in granting them, and yet architects persist in hoping to be able to convince their clients that they have very few rights worth mentioning.

THERE is a real usefulness in knowing what one's rights are even if it is not desirable to insist that they shall be respected. Mr. Arthur B. Headley, an architect of Rochester, N. Y., seems now to know his and to intend to have them observed while incidentally making certain other people uncomfortable. It seems that in building the "Oxford" apartment-house he, through some unexplained oversight, allowed the steps of that building to pass beyond the not too clearly established building-line, whereupon certain aggrieved neighbors and citizens naturally and properly filed complaint against these steps as a nuisance. Thereupon the Commissioner of Public Works issued an order instructing Mr. Headley to remodel his design so that the steps may not trespass on the public way. Having his attention called to the matter in this way, the architect set about discovering whether his building was the only trespasser of the kind and, finding it was not, naturally inquired what action the Commissioner proposed to take against the older offenders. Receiving no answer to his private inquiry he published a second demand to be notified categorically what action the Commissioner would take in regard to certain specified buildings—amongst them some of the most important in the city—intimating that, if it was the purpose to do nothing, he, Headley, intended to begin mandamus proceedings to compel the Commissioner to take action against the older offenders. It is a quite a pretty case of quibbling. But while we deplore Mr. Headley's original blunder, we quite sympathize with his later action, for it is a case of the *lex talionis* since some of these older buildings belong to persons who have complained of the "Oxford's" encroachment. It should be observed, however, that a proper district-surveyorship system, in regular operation, would have prevented all these oversteppings of the legal building-lines.

A CURIOUS case is reported from Buffalo, N. Y., which shows how important it is for architects to inform themselves accurately as to what are the real needs of their clients. It seems that, for something more than half a dozen years, all the architectural work for Erie County has fallen to Mr. George J. Metzger without competition, he doing the work not as county architect for a stated salary but as a private practitioner at the regular rates of commission. This, not unnaturally, has caused charges of favoritism, "pull," and all that, which, of course, is unpleasant. But we have no concern with that phase of things just now. Quite recently, the County Supervisors desired to have the Maternity Hospital remodeled and asked Mr. Metzger to look the place over and make the needed specifications and drawings, intimating that they expected to spend about five thousand dollars on the repairs. Mr. Metzger did as he was ordered and, when he was ready, asked for bids from sundry contractors: but, to the amazement of the officials, the lowest bid was found to be twenty-two thousand dollars! Then they looked more closely into the alterations Mr. Metzger proposed to make and found that in addition to sundry extravagances he proposed to build a "solarium," an apartment which, while desirable enough for an orphan or infant asylum, is not an essential feature of a maternity hospital—at least of one that was to be

remodeled inexpensively. It would seem that in this case the architect would have the utmost difficulty in collecting the "usual commission on the lowest bid actually received."

THE battle over the Municipal Building, or Borough Hall, for Brooklyn, is to be well fought at least, for Mr. Hull, the protesting claimant, has had a larger experience than most architects in getting into trouble and has showed himself a man of much resource in getting out of it. The situation is an extremely mixed one, where not only professional ethics are deeply involved but where political manœuvring of very particolored complexion is evidently going on. If the case ever comes to trial, we hope we may understand the mysteries that Mr. Hull promises to reveal and also ascertain how it was he achieved the active enmity of the late and the present Presidents of the Borough, Messrs. Littleton and Coler. For the moment, we can only feel that his case should be impregnable, for, if ever there was a case where a programme stated and implied that the purpose was to select an architect—not necessarily the first or the second plan be provided—this Brooklyn competition is such case.

AS we have noted the light yellow haze of dust rising from a dray-load of Portland-cement in bags as it went jolting over the pavement, or seen the workmen at a Staten Island factory come to the windows and remove their respirators so as to get a breath of fresh air, we have been prone to wonder what statistics would reveal as to the mortality amongst cement-mill hands from diseases of the respiratory organs. Respirators are not worn in every department and yet this fine yellow dust rises everywhere and when inhaled must, it would seem, find enough moisture in the lungs to be there converted into mortar and "setting" there put follicle after follicle out of commission, so causing tuberculosis in one form or another. The thirty-one million barrels of Portland-cement produced in this country last year also probably produced many widows and orphans. The growth of the Portland-cement industry is portentous and almost incredible, and it seems likely to go on expanding for a long time to come. Twenty-five years ago, when the product could be sold for three dollars per barrel, this country produced only forty-two thousand barrels, while this year the country is likely to produce just about one thousand times as many, at a selling price less than a dollar per barrel. As short a time ago as five years, the cement produced was about evenly divided between the natural and the Portland cements, each kind being turned out to the amount of rather less than eight and a half million barrels. Since that time the production of natural cement has fallen off until last year it was only about half what it was in 1900, while the output of Portland-cement had increased nearly fourfold. Engineers have always been, by far, greater consumers of cement than architects have been, but, though the relative position of the two professions will always remain the same in this respect, it is unquestionable that the rapid increase in the use of cement is due rather to the general interest architects are taking in concrete-steel construction than to an increase in engineering construction.

CEMENT BLOCK ARCHITECTURE.<sup>1</sup>

I COULD never have hesitated long in accepting the cement-block idea. I have hesitated long, however, in agreeing to accept cement blocks as at present manufactured. I have recognized the inherent merits of concrete construction, and from the beginning have felt that making concrete in block form was a worthy building and commercial enterprise, but as one interested in architectural work the actual results of concrete manufacture have been such that, until recently, I have felt that I could not afford to encourage and foster this industry. I am doing it now in this way, not because of any decided encouragement through specific results, but on account of what I recognize as a possibility. I know that a worthy cement block can be made commercially. My conviction rests upon the well-known and well-recognized merits of concrete as a building material and because it is desirable to fabricate it into block form. It is difficult to form concrete along proper architectural lines into structural and decorative shapes, such as monolithic walls, columns and lintels. The construction of forms of wood or other material for monolithic structures above grade is very expensive, not readily practical and by no means satisfactory for structural and decorative purposes. The block machine is the logical former of concrete for building purposes. Through its agency any shape or form may be made. Concrete will come into structural and decorative use largely through the agency of the machine.

Our highest and best thoughts may be given permanent and adequate expression through the medium of the machine and the concrete. But I have never seen an artistically successful structure executed with cement blocks. I am pinning my faith in concrete blocks to what I know can be done, and am not resting upon what I have seen done in a commercial way in a completed structure. I have not seen one worthy artistic expression through this medium. Think of it as you may, regard these expressions as sentimental if you will, say that it is all *fol-de-rol* if you feel that way, but bear in mind that the cement-block industry will rise or fall, you will make money or you will lose it, according as you meet the canons of artistic sentiment. Through the medium of cement blocks you must be able to do what has been done with other building material—give expression to the manifold capacities of the human intellect, with all of its hopes, ambitions and emotional flights—give them permanent form in structural material. Few of you will go into business for art's sake, yet for the dollar's sake you must produce the medium of artistic expression. This you have not done.

There are times when it pays to blurt out the whole truth. This is such a time, and this is the truth: Architects are unfriendly to the concrete block as now made. Is this because the architect is unfriendly to concrete? I answer this question by asking another: Who has been more ready to use concrete as a structural medium than the architect? The architect wants to use the cement block. He is always looking for a new medium. The architect will tell you that when you realize the possibilities of this material he is ready to use it.

The most successful terra-cotta concern in the world makes the most artistic forms. It carries out the designs of the architect most faithfully. The most prosperous pressed-brick makers in America make the most artistic brick. They have certain stock patterns, well designed, which a self-respecting architect is not ashamed to use. They will make what he wants, but if he hasn't time to wait for the new designs there are often those in stock which he does not hesitate to employ. The architect uses stone, terra-cotta, brick, and he uses them in block form. He is not using concrete in this form. This is the fault of the block-maker, and not of the architect. As now made, he is afraid of it structurally and decoratively, and doubtful of the general capacity of the manufacturer to carry out his plans.

There are those among us who will say that the block-maker is not ambitious to furnish material for the great cathedral, the tall office-building, the impressive public structure or the modern palace; that he is willing to let this work go to the quarryman, the stone-cutter or the clayworker. If the concrete-block is not for these important buildings, it is not for the cottage, the store or the factory. There is no relative difference in the structural ideal of these problems. The \$1,500 house is deserving of the same quality of attention, the same care, as the important structure.

The block situation is rather unique. Oftentimes, in placing

a relatively new product before the people, one has to bring the people up to his ideals. The public is demanding a structurally better product, a more highly developed substance artistically than you are giving them. The opportunity is a rare one. It is for you to educate yourselves to meet the public standard. A greater opportunity never presented itself to a lot of business men.

Do not imagine for a minute that art needs help from you. It is you who need the help of art, and the foundation of your art is utility. You are not to be patrons of the arts for art's sake. You are patrons of art for your own sake, for your pocketbook's sake. You need art; art does not need you.

It is our æsthetic demands which give great value to raw material. The modern alchemists are the artist, the scientist, the engineer—men who have ideals and give them practical expression. The modern alchemist mixes the sand, the cement, gives it form and turns it into gold. This is the key to the cement-block situation to-day.

The modern alchemist who would turn sand and cement into gold must first learn how to make concrete. Block-makers and cement-workers generally are lamentably ignorant of this fundamental operation. The impression has got out that a laborer who is not fit for anything else can mix concrete, that the cheapest labor that one can employ is good enough to do this work. This part of the world is well saturated with this idea. The question of brains and the concrete-mixer is rarely considered. Almost the only difficulty in the physical composition of cement-blocks is in the making of concrete. With this understood and appreciated and thoroughly ingrained into the cement-worker, his physical difficulties are well out of the way. The block-maker, strange as it may appear, is the most difficult of all men to interest in the mixing of concrete. The architect who talks to the block-maker on this question is apt to meet a dull ear. His auditor thinks that it is the other fellow. He will acknowledge that the rest of the regiment is out of step on concrete-mixing, but that he is the one man who is in step.

Before we get through with our block business we are going to grade our sand, we are going to know that the voids are reduced to a minimum before the cement is introduced, and we will thoroughly mix the sand and the cement in the dry before the water is applied. Most cement-workers believe that they are already doing this. Their wrong belief is the source of the physical trouble. It is the cocksureness of nearly all that is the real stumbling-block. Block-makers, particularly, have been educated by the machine salesmen that any old thing can mix concrete. When we learn to mix concrete we can hope to make the impervious block. Cement-makers, as a class, have done their work well and scientifically. They have availed themselves of all of the resources of science, and it appears absurd that this work should have stopped with the making of the cement. The chemist, the engineer and the cement-maker have joined hands in the mixing of concrete. In the making of blocks they have parted company. We have been floundering around, dopping our blocks or letting the rain pour through them merely because we have not given the right kind of attention to a primary step in block-making.

We may take lessons from the modern mechanical mortar-maker in the mixing of the aggregate in concrete. He dries his sand and mixes it mechanically. The makers of bitulithic pavement have reduced the grading process to a science, and on that account are reaching a large measure of success. We may study a modern asphalt plant with profit.

Sand must be clean. Most cement-blocks that I know anything about are made of dirty sand. All of them were of a muddy tone. If one would make a clear, crisp, life-colored block he must use clean, crisp, sharp, live sand. Barn-yard mixtures make barn-yard colors. Most of the blocks that we see are dull, heavy, lifeless and leaden in color and texture. This can be obviated by clean sand and a proper proportion of cement of the right kind. The oölitic stone that we use in our best buildings is almost absolutely pure in its ingredients. As we ride through the country and see the cement-block buildings, with their dull, leaden color, we may trace the cause to dirty sand. We may do whatever we please with cement mixtures with respect to color and texture. We may make a white block, if we will: but we must use white sand and white cement, and then handle it with clean hands and clean tools.

We will mix our aggregate with more water than has been common with most of us. We will experience troubles from crazing, hair-cracking, if we do not take advantage of our opportunities. The cause of this trouble from cracking suggests

<sup>1</sup>A paper by Louis H. Gibson, architect, Indianapolis, Ind., read at the convention of the National Association of Cement Users, at Milwaukee, Wis.

its own remedy. It is the relatively neat cement on the outside of the block, the difference between the composition of the surface of the block and the interior—a difference in contraction. If our blocks are of the right composition we may wash them and we may cover them with damp cloths while they are setting. We may rake them over with a fine-toothed tool. We may give them a texture with a wire brush. The man of resource, keen perception and artistic insight will find many ways of getting around this difficulty.

The principle involving the production of proper texture is not difficult to understand, when we analyze it. We want cement enough, certainly not too much. We know that we want it evenly distributed. The nearer we can come to exposing the sand on the surface, the nearer we can come to having the view side of the sand, the side that we see, free from cement, the better. Those of us who can remember the lost art of old-fashioned, hard-finished wall-plaster know what this means. With a brush and water the plasterer washed out all superfluous lime, and up to a certain point the more lime he washed out the harder and stronger, brighter and crisper he got his plastering. This principle may be applied to the surfacing of cement-blocks. In one way or another we shall wash out the neat cement. Unless the proportion of sand and cement be uniform, the texture will not be uniform. The best brick that are now made for decorative purposes, for facing, are not intensely smooth. They have a grain—a texture, we call it. The surface is gritty; it has somewhat of a sand-paper quality; it receives the light in a pleasing way. This is what we mean when we say that a surface of stone or brick has good "texture."

I have merely hinted at the possibilities of color-work in concrete. We have not yet reached the stage where it would be very profitable to go into this. When we know how to mix sand and use clean materials and mix the cement and water with it, when we know how to handle our blocks, when we know texture and uniformity, then may we consider color. It is sufficient to say that the liveliest imagination of the Arabian and the people of the Orient may find permanent record and adequate expression in the color, texture and substance of the cement-block. We will have to get out of the backyard and shed stage of this industry, however, before we can take up cement polychromy.

The immediate task before us is to do the best with what we have, with the men and the brains that we have, with the sand and the cement that we have. The cement is adequate to our capacities for some time to come. We can afford to disturb ourselves a whole lot less about cement and a whole lot more about sand.

An influential cause for the feeling which architects have about the cement block is the difficulty of having their plans exactly carried out. There is too much cut-and-dried business. The architect or the builder is not going to submit to compromises in one material that he does not have to submit to in others. In terra-cotta, stone and brick all plans can be carried out to a nicety, and there are no advantages otherwise in the concrete-block which will lead to a compromise in its favor. The setting plans of a stone-cutter and a terra-cotta-worker are marvels of neatness, exactness and accuracy. Great buildings are built practically without the sound of the hammer. Certainly the work is fitted before it leaves the cutting shed or the factory. There is no reason why this should not be done in the same way by the block-maker. It must be done or the block business will not succeed. I recently had an experience with a block-maker who made a setting-plan on a shingle and then lost the shingle.

Mechanically, the cement-block industry is in good shape. The work has been fostered and promoted very largely by machine makers. However, the industry has been injured by the machine salesman, who has minimized and at times concealed the difficulties in the way of making a commercial block. So far as the block itself is concerned, the machine is the least important factor in its manufacture. A cement block can be made in a wooden box.

Any machine will make a block that is commercially satisfactory if the material is at hand to put into it, providing there is an opportunity for proper tamping or compression. The important part which the machine plays in this industry is in reducing the cost of the block. This work has been well done and little need be said about it here. It is well for the block-maker to understand, however, that he must be able to so adjust his machine that a block of any size in any direction within fractions of an inch can be readily made on a commercial basis. The builder, the house owner, the investor can get what he wants in other

materials, and he will not put up with compromises in the block.

The laying-out of the work in the shop and the preparation of careful shop drawings will very largely eliminate the evil of indifferent handicraft, bad workmanship, and we all know that there is no branch of the building business that has suffered as much at the hands of the botch as the block industry.

Concrete, in its nature, suggests a comparison with stone. Hence the high standard. A part of the beauty in a building is color, texture, general design, but after that there comes the question of detail, of the parts, the mouldings, the ornament. On the one hand there is mere construction, mere building, and then there is art. In order to have architecture there must be both building and art. In architecture the two are inseparable. It costs no more money to make a beautiful form than it does an ugly one. I would regard it as an opportunity lost if I did not say here and now in the strongest terms at my command that there is no excuse for an ugly structure of any kind in this world. Be it a building, a bridge, a bit of furniture, a machine or any other subject in which material and labor are brought together, there is absolutely no excuse for ugliness on any account.

There is no excuse for ugliness on the grounds of cost. Good proportion costs no more than bad proportion, harmony of color costs no more than inharmony; there is no more expense of material or labor in a well-formed moulding than in an ugly one. There is no more expense attached to grace than to clumsiness. Beauty is a condition of mind, a condition of heart, of character, and not one of pocketbook. Clumsiness and crudeness come out of a crude and clumsy mind. It takes no more time or material and no more labor to cast a beautifully formed block than one ugly in form. I do not say that one form may not be more expensive to cast than another, but I do say that there is no excuse for casting an ugly one.

Everything made by man might be beautiful without material consideration. There are certain standard forms that can be produced and reproduced, as they have been for more than twenty-five hundred years. Their repetition has had no effect upon their beauty or appreciation by the public. The forms most commonly in use at this time by architects and artist builders date from the fifteenth and sixteenth centuries. It is from this source that the ornamental-brick makers draw most of their inspiration.

It will be necessary for you to employ artistic designers who can design for you certain relatively simple standard designs which may be readily adaptable for various purposes. This is eminently a practical thing to do, and it must and will be done if the block business is to reach any large measure of commercial success. Hitherto he has been a great sinner in producing the crude and ugly shapes.

The cement-block machine is a great art democrat. It may produce and reproduce artistic forms for the masses. It may give us beautifully decorated structures at a minimum of cost. Art is not for the few any more than education is for the few. Art should be for everybody. Art should be democratic, and the block machine should be a great art democrat. There is an intimate relation between this idea and the bank-account of the block-maker.

There are those among you who will say that these expressions in regard to the making of concrete, the grading of sand, the cleaning or washing of sand, the fine adjustment of mixtures, the matters related to color, form and art are ideal. Possibly they are ideal. We progress through idealization. The cottage is a man's materialization of a state of mind which seeks something more than to keep out of the wet and cold. But for the idealization, we would not quarry or cut stone, we would not make brick.

#### CHICAGO LETTER.

THE FEDERAL BUILDING.—THE MAJESTIC THEATRE BUILDING.

IN view of all the talk as to draughts and ventilation in the new Federal Building here in Chicago, it seemed well to select, for a first extended visit a calm day. Consequently with sails closely reefed we will enter the large central rotunda, for the gales which play through this structure are too well-known to take any chances with flying garments. The outside of the building has been mentioned before in these letters. It is not without dignity and many good points. The dome is especially attractive, while the main entrance features of the four fronts are charming compositions, entirely worthy a great public building, such as this is. The visitor's attention is somewhat distracted from these attractive

features of the exterior by the recently erected black mail receptacles, looking like a row of gigantic, ancient sedan-chairs, minus the poles, which cumber the sidewalk along the east front. These monstrosities no doubt facilitate the handling of large quantities of mail, for the boxes are open on the side towards the street, so that the bags can be sent directly from the wagons, through the chutes, into the distributing basement. Chicago is constantly fighting the appropriating of the sidewalk by private owners, for the use of skids and other obstructions, so when the Federal Government sets this bad example, municipal Government feels as if it had received a slap in the face. This is especially a sore point just now, since the city Government is taking a decided stand in trying to insist on compensation, by annual rental, for space used underneath the sidewalks, and for space occupied by large bay-windows on the first story which project over them. With the present plan of the building there probably is no other place convenient for the mail receptacles; but it seems a pity that the general scheme should have been so conceived.

Roughly speaking, the plan of the building is that of a Greek cross, the eight or nine story rotunda being at the crossing of the arms, and the offices for postal, custom and court officials opening off from the arms.

The entrance vestibules are finished in brown Tennessee marble, while the corridors are in a gray tint of the same material. The rotunda generally is finished in white marble and ironwork. Red marble shafts to columns which have gilded capitals tend to relieve the monotony of color or rather lack of it, but the monotony of design is most striking, the only interruption to the seven similar stories being the alternating on different floors of marble balustrades with bronze grilles at the openings between the columns. The two higher stories open on the rotunda with



U. S. POST-OFFICE AND CUSTOM HOUSE, CHICAGO.

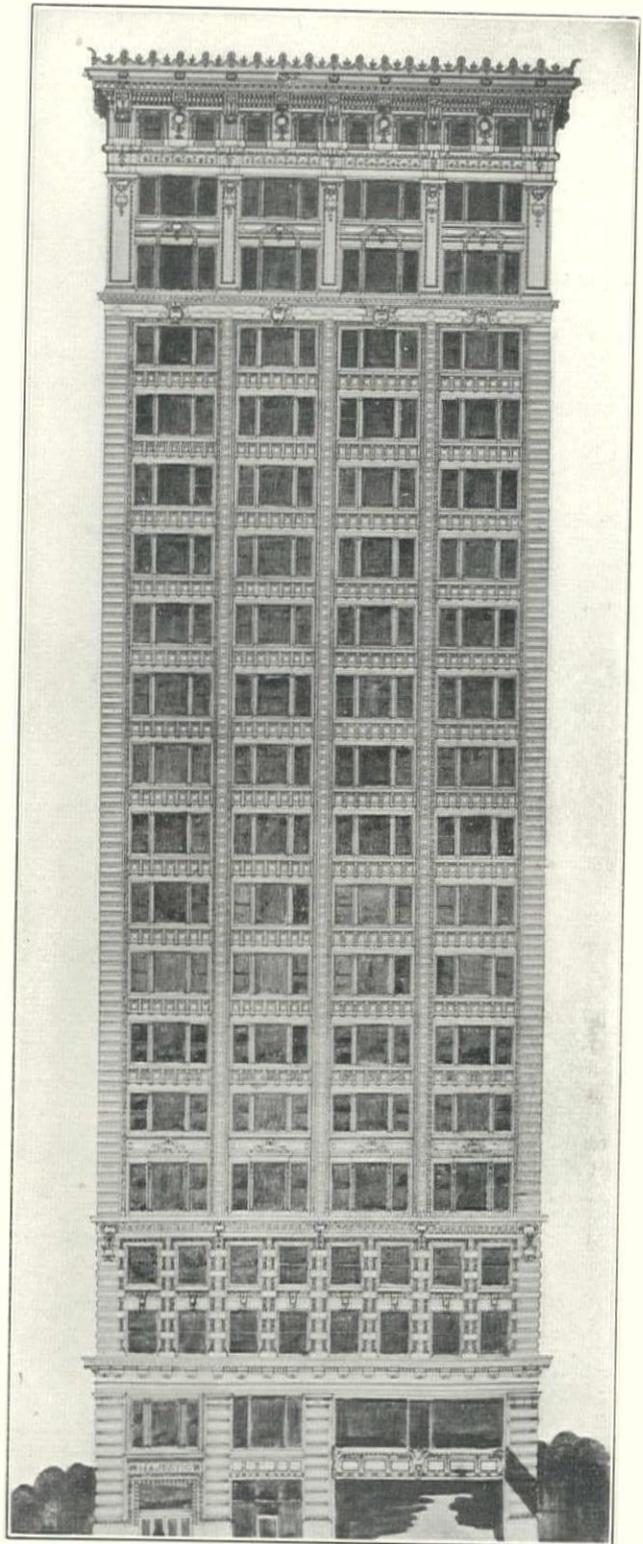
round lunettes instead of the large square openings of the floors below, and between the two upper stories a cornice in the form of a white painted iron "crown" intervenes. Electric-light bulbs and green bronze electroliers are here introduced, but the grimy appearance of the white painted iron is already most trying.

The columns, which rise around the rotunda, are of the Corinthian order, but, like most of the details of the building, seem to lack in their design the touch and strength which mark the difference between the fine and the mediocre. When Mr. Cobb was chosen architect, whatever complications might be feared, we, here, felt that we should get a well-designed building; but it is most disappointing. Just in this matter of the columns around the rotunda, note the defect. The design of them, as said before, lacks that touch which could stamp them as something really fine. And when they "go on forever," like the Brook, through seven or eight succeeding stories, with no change, you immediately see in your mind's eye the design for that original column with its legend "repeat on all stories up through the eighth."

The mosaic floor of the rotunda offers another example of carelessness in design, and the eagles, in the same material, on the landings of the white marble stairs. They are simply our American "spread eagle," not the dignified symbol of a great nation. And in this matter of design and care of detail the same inartistic element is to be seen through the entire building, making the whole structure extremely commonplace. Whatever criticism has been raised against Mr. Cobb, one cannot help but feel that if the Federal architectural factory at Washington had permitted him to prepare the details we should have had at least something fairly artistic and harmonious, instead of this most

stupidly commonplace composition, entirely unworthy a great national building.

In the offices in the upper stories, the finish of the doors, windows and cornices are all of the most ordinary description, which, with the gray and white plaster, produce rooms without any suggestion of charm or cosiness. The woodwork, in part, of the Postal department, is more elaborate, but the same carelessness of detail, the same disregard of the principles of good



MAJESTIC THEATRE BUILDING, CHICAGO.

design are noticeable. The ironwork and bronze of the elevator shafts is of the same indifferent character. The little drinking-fountains with the bronze dolphins, that trickle out water *pro bono publico*, are rather attractive, but as it is one of the Wolf Manufacturing Company's stock designs, which you see in Chicago every few minutes, the charm begins to pall, after a while. In some of the offices and court-rooms the windows are so small and far between (doubtless sacrificed for exterior proportions)

that artificial lighting is needed nearly all the time. This is, of course, ridiculous in a situation where an unlimited supply of outside light could be obtained.

In these upper stories the siroccos that play through the lower corridors seem to be wanting, and in their place there is a calm, stifling atmosphere, devoid of life and breathing of the past, so to speak—the past week, or past month, if you will. There is no change of season here, for oxygen having once been captured, it appears to be good for all time, even though through much usage it has been converted into something else. Descending into the lower corridors we meet the "spicy breezes," which unfortunately have no suggestion of having "blown soft o'er Ceylon's isle." It would seem as if every toilet-room in the building found outlet for its discarded atmosphere in the round and the corridors opening off from it. This foul atmosphere is especially noticeable in the neighborhood of the Custom-house department, and around the money-order and stamp sections. After one has been in the building from a half to three-quarters of an hour, the effect of the bad air is so apparent that it is hard to understand how the men who work there continuously are able to endure it.

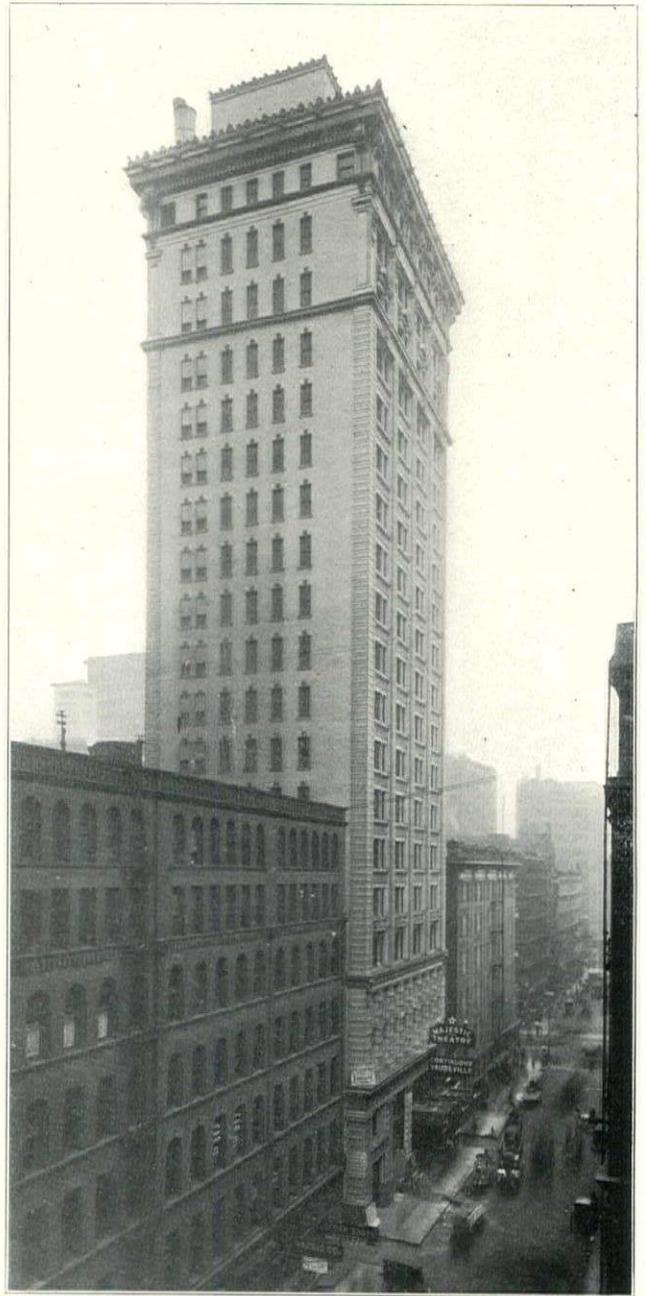
It certainly is a discouraging fact, but one which we cannot fail to recognize, that in nine cases out of ten, when the Federal Government puts up a building, just such a botch as this is the result. It is most disheartening when we realize, as in this case, that neither time nor money has been stinted. And here the execution of the work is quite equal to the design in crudity. The marble of the interior decoration is good in quality, but is so carelessly laid, with joints apparent several feet away, that a great part of the charm of the material is lost.

A unique feature in the Chicago postal-service will be the reception and distribution of mails by way of the underground tunnel of the Chicago Telephone Company. This tunnel, which has been spoken of at length in some previous letter, furnishes a means of bringing the mails from the railroad-stations directly into the sub-basement of the building. Here it is transferred onto endless belts and raised to the various distributing-rooms, the empty cars being then loaded with outgoing sacks, which have been sent down from above through chutes connecting with the rooms where the mails are made up. When this system is in full operation it is expected that the huge quantities of mail collected from all parts of the city will be delivered at the railway-stations in the most expeditious manner and without chance of delay by any teamsters' strike.

In marked contrast to this Federal Building is the new Majestic Theatre Building, just completed in about one-tenth of the time, several blocks away. On the exterior an effort has been made to combine the utilitarian façade of the modern office-building with the more festive character which should belong to a place of amusement. The result has not been wholly satisfactory, giving a façade which hardly seems suited to either character and especially not to a seventeen or eighteen storied building. Too ornate for a commercial style, it is too devoid of lightness and grace to suit a house of amusement: yet a façade has resulted which is certainly striking and one which would attract attention, which doubtless is one of the ends aimed at. A small but especially attractive feature of the façade is the bronze doors, window-settings and electroliers of the saloon by the side of the theatre entrance. The work has certainly a most Sullivanesque touch, though the building itself was designed by Mr. Edmond R. Krause.

The seating capacity of the theatre proper is said to be four thousand, which makes it the largest theatre in the city, next to the Auditorium. This comes as a surprise to one, when once in the theatre for, owing to its peculiar and well-studied proportions, it strikes one as a comparatively small auditorium, but one so cleverly arranged as to be without the effect of crowding or general stuffiness. Owing to the fact that there are forty-two exits the main entrance and foyer have been kept comparatively small. Once passed the glass door, presided over by the gentleman whose specialty it is to collect ticket-stubs, the charm of the design and detail of the decoration begin to be evident. On either side of the entrance vestibule a recessed stairway leads down to the women's rest and the men's smoking-rooms. These have been made a pleasing architectural feature by the introduction of an arched effect in the wall enclosing the landing and upper part of the stairs. Very little space is wasted in this way, but by the introduction of two fairly good mural-paintings, at the side of the landings, which are seen through the white marble arch, between the palms which are on its ledge, a very good effect is obtained. From these little recessed landings the stairs

lead down on either side the vestibule directly into the two above-mentioned rooms. Passing into the foyer one is decidedly surprised at its proportions. Extending across the entire width of the theatre, its effect is that of a narrow room, seemingly about ten feet wide. Its color scheme and the unusually good oil-paintings which adorn its walls make it far from unattractive. One straight flight of marble stairs leads at one side to the first balcony, which is here dignified with the name of "mezzanine balcony." The stairs seem very inadequate for exit, till one realizes that the special exits from the galleries are what are intended to be used. This straight flight alone leads to the mezzanine balcony, the entrance to the second gallery being outside the foyer.



MAJESTIC THEATRE BUILDING, CHICAGO.

The effect of the Iroquois disaster and the fire-regulations which were the result of it are here distinctly seen, leading to the greatest possible safety in the general layout of the building, exits, etc. As said above, the theatre is reported as having forty-two exits, none of which it is possible to lock except with a bolt pushed from the inside. Covered fire-escapes lead from the balconies to the alleyways, the building having been isolated so they could be used when the theatre is emptied. The most approved system of ventilation is made to renew the air in the house at short intervals, the air passing through some special cleansing process before entering the main body of the theatre.

The openings of the proscenium-arch, boxes, doorways, etc., are all square, giving an effect of more dignity and repose than

is usually seen in theatres. With the exception of a small portion of the seats at the rear of the mezzanine balcony, the space is occupied by boxes. The brass rods which divide them, on which are hung small plush curtains of the prevailing hue of the house, give a bright effect to the balcony which ordinarily is not seen there.

The entire scheme of decoration is especially charming, the coloring being exceptionally pleasing. The main combination is an old pink, contrasted with cream-color and gold tracery. It is said that the credit of the color-scheme was largely due to some specially good men employed as decorators by one of our large dry-goods houses.

As mentioned above, the foyer, which is long and narrow, running across the width of the building, might have been particularly ugly if it had not been for its especial method of treatment. All the metalwork throughout the building is not bronze, but iron, painted a light green. Combined with this in the foyer, where, by the way, the ironwork is rather a darker shade than elsewhere, the walls are hung with a light olive plush just off of white. On this is hung an astonishingly good little collection of paintings. The collection includes a Bouguereau, a Jacques, a Roybet, one Ridgway Knight, a Carl Bergen, and one or two Italian pictures. Above the pictures, covering the electric lights and reflectors, are small reddish lambrequins, embroidered in gold. As the pictures are strong in color this red touch does not lessen their effect. We notice here at the drinking-fountain our old friend the dolphin, drooling as usual for our comfort. Inside, the walls of the auditorium are entirely in old pink. Plush curtains of the same color at the proscenium-boxes and small balcony boxes further carry out the scheme, and with the judicious introduction of cream-color and gold in mouldings and well-designed ornamentation make a very charming ensemble. Over the proscenium-arch a fairly good mural-painting fills the space.

The chairs in all the boxes are of mahogany upholstered in dark green leather, and their shape and design are carried out in the regular orchestra chairs in the rest of the auditorium.

The same care has been taken in the design of the details of that portion of the building given up to offices. The elevator hall is small, but mosaics of good design are on the floor and the green painted ironwork is well designed as to details here, as also through the entire, comparatively small stairway. Space has been judiciously economized where space is not especially required for comfort, but only for show. The white marble wainscoting is a decided contrast in its excellent workmanship and treatment to similar work seen in the Federal Building. Another contrast is in the offices proper. Of course the general exterior scheme of the building lends itself to large and many windows at regular intervals. The trims of doors and windows as well as other woodwork in the rooms have been given enough thought to be introduced as a feature of decoration, and consequently the offices, though equally large, are not the cheerless barns that they are in the Federal Building.

#### HÉRACLÉE.

THE *Boston Transcript* translates the following article by M. Joseph Galtier which appeared recently in *Le Temps*:

"I have lately heard talk of a scheme that seems to me genuinely noteworthy. Certain well-known Parisian artists, painters, architects and men of letters are about to found a city. Apparently they are actuated less by the rare pleasure of founding something than they are by the conscious need of escaping the excitement and promiscuity of the great centres of modern life. They dream of a quiet nook to which they can go to find shelter from the exactions and vulgarieties of the social hurly-burly. They want to found their city as carefully as they would found a club. They want to make it a close corporation. Nobody will be allowed to live in it unless he has a clear title to citizenship in the Republic of Letters and the Arts.

"The idea is certainly attractive, nor is there anything especially surprising about it. What more natural than that victims of our decrepit civilization should look back witsfully to the days when youthful tribes ceased their wandering at pleasure to fix their dwelling in the land of their choice? What more alluring than to quit the smoky, horizonless metropolis and enter the land of sunshine and there—with one's own hands, so to speak—to build an ideal home in a city peopled only by one's chosen friends? For these impassioned builders all have the same tastes, the same aspirations.

"They're as madly in love with their future city, I imagine, as Horace was with his villa. They make it the symbol of their inde-

pendence and the guaranty of their repose. No one will work in the future city, say they. It will be purely a city of rest. Its people will never be disturbed by anxiety for the future. They will bask in the present like shrewd epicureans and evoke from the past its most endearing memories. With no ambition save that of tasting the sweets of existence with artistic delight, time will pass altogether deliciously. And time will be infinitely valuable, for nobody will think of setting a price upon it and declaring it to be 'money.' Time will be loved for its own sake only.

"We shall have fled far, indeed, from the current ideas of living. We shall have returned to the olden ages that knew nothing whatever of the complicated machinery that stamps human existence with incessant trepidation and an ever increasing feverishness. Our founders don't intend to put all the resources of recent inventions at the service of their enterprise. Their city won't be the last word on scientific perfection. It won't in the least resemble a roaring Anglo-Saxon town. Rudyard Kipling will never chant its charms. Its serene graces would be better celebrated by a John Ruskin, who would admire this return to simplicity, quietude and the worship of nature.

"The site of the future city has already been chosen, and attests the æsthetic taste of those who—to-morrow, perhaps—will be its first inhabitants. Like all famous cities—those mothers of civilization—the city will rise in the basin of the Mediterranean. By the shore of that sounding sea which cradles the childhood dreams of our race, upon a site that possesses the harmonious lines of Greece and the luxuriant verdure of the Orient, and at the head of a gulf with shores drawn gracefully in broad curves like those of the acanthus leaf—there you will one day find the new city. It will rest upon French soil. The chosen spot lies hidden away on the Côte d'Azur in a nook quite remote from the regions pre-empted by fashions. It is just behind the islands of Hyères. M. Sardou already owns a hillside holding there.

"Properly speaking, the location has not been discovered; it has been rediscovered. Our ancestors knew it well and valued it so highly that they built a city there and named it Héraclée. The new Héraclée will accordingly replace the ancient one. Still unborn, it boasts a high and noble lineage, and it will link its future to an illustrious past. Héraclée de Gaule flourished during the twelfth and thirteenth centuries of our era, and had many lovely villas belonging to merchants from Marseilles and wealthy Ligurians.

"Our artists are pleased to place the resuscitated city under the protection of Hercules—just as it was in the olden times. They doubtless expect that their propitiatory worship will yield them a sound and sane repose, for they don't attribute too precise a significance to this idea of patronage or seek to make a dozen illustrious works the prerequisite for admission. That would be altogether too aristocratic a conception. And yet one foresees that upstarts won't find it easy to enter the promised land. Héraclée will be a place for those upon whom Fortune has deigned to smile. Only proud mortals with handsome incomes will stroll its streets. Héraclée will be an object-lesson full of encouragement for future generations.

"Will Héraclée ever exist? Will the project whose charms I have just exhibited ever be realized? Is it anything more than a poetic dream? I hastened to hunt down all the Héracléans I could hear of, and when I caught up with the first of them—a man still young and vigorous—he showed me two large photographs that lay on the sofa in his study.

"Here are two views of the chosen spot. You see we are not merely building air castles. It's a lovely place! The valley is rich in tall palms, while the hills—as elegantly outlined as the Tuscan mountains—are covered with pines. The sea forms a bay with magnificent curves, and the Manres Mountains shelter the whole region from the awful blasts of the mistral. It's a wonder it's been left uninhabited. The glitter of fashion has never visited it. It's almost like a little island. The thought of one day going to live there is a sure cure for ennui, and the sight of that exquisite bay, where I can already see my cottage, consoles me for the rains and fogs of Paris. Even now I take refuge in Héraclée in my leisure moments. I could wish that I might have nothing but leisure moments.

"The supreme charm of Héraclée is the certainty that tasteless houses won't be tolerated there, or sumptuous villas or pretence of any sort. Every new building must first be approved by the "citizens," and they'll see to it that the site isn't dishonored. Besides, M. Nénot, the celebrated architect, has already made us some drawings, and he will be regularly consulted so as to check the caprices of property-holders."

"I took pains to call upon this M. Nénot, who was so thoroughly qualified, according to the Héracléan, to tell me about Héraclée. The architect of the Sorbonne, who perfectly understands the value of proportions, has reduced those of the famous scheme to their just measure.

"It is true that we want to found a sort of colony—a group of villas for a coterie of friends—on the Côte d'Azur, behind the islands of Hyères. For my own part, I could wish that we might remain a little colony all by ourselves. Don't speak of such a thing as a wholesale invasion. Nothing could be more unfortunate than that!

"The thing we must especially avoid at Héraclée is architecture. We want no columns, no pediments, no lintels. I recommend very simple houses, in the antique style, in keeping with the landscape and the climate. I forbid the Norman, which is wholly out of place on those sunny shores. I should be pleased by the adoption of the picturesque and comfortable rustic houses of Capri or of the little Greek cities; white walls with well-placed window-openings and no balconies; terraces, as in the Orient, before the entrance, and a pergola in the Italian style. The rooms should be spacious, not too high, and with a friendly look of hominess. The walls should be thick, so as to temper the rigor of the seasons. Finally the houses should be homogeneous. I have drawn the plans for my own house and that of a friend of mine.

"I don't want telephones or electricity. The railroad is about two miles and a half away; I hope it will stay there. We shall not be tempted to hurry at Héraclée. We shall live for the sake of living.

"I shall spend my declining years there, and there I shall lay me down to die. Like the old men in "Faust," we shall watch the ships sail past; but, happier than they, as we gaze upon the all but Grecian blue of the sea, we shall fancy that now and then we're catching sight of Ulysses's white sail.

"At present the surroundings of Héraclée are an unbroken desert; you may walk twenty miles along the beaches without meeting a living soul. The whole district is abandoned, and you would never imagine that a city flourished there in the twelfth century. And yet it was a favorite watering-place, like Baise, in the days of the Empire, and land was then as dear as in the Boulevard des Italiens, costing 4,000 francs a metre.

"On the site of my future house are the remains of a Roman villa. I intend to excavate them. As for that, a good gentleman from Lyons has got ahead of me; he touched off a dynamite cartridge under the soil and the explosion strewed the surface with coins and medals. He made presents of them to all his friends—except me!

"The land is rich in memories; also in fertility. The varied vegetation proves that conclusively.

"Now, you see, we've nothing to do but build our villas. The city will come later. I shall make my plans for it on the spot, and in the sunshine of that lovely shore. Like the villas, the city will be of the Midi style of architecture—without ornament. Everything will be sacrificed to comfort and simplicity. The streets and avenues will avoid the right-angle regularity of modern thoroughfares and their graceful curves will be a delight to the eye.

"Rejecting the gifts of civilization, the Héracléans will return to the primitive life of peoples more artistic than scientific. A city without railroads, without electricity, without telephones and without automobiles will be so absolutely exceptional that—if ever it is built—the whole world will want to visit it. Our artists will no longer have it all to themselves. Will they raise an army to defend their gates? In our day the founding of a city involves numberless unforeseen difficulties. And I may add that the project encounters a lot of scepticism. A clever friend of mine, to whom I had described it, exclaimed: 'A city!—a city of artists!—and probably a city of old artists! But such folks can't keep peace among themselves for the space of a good dinner!'"

## ILLUSTRATIONS.

OPENING OF THE ERIE CANAL: MURAL PAINTING IN THE DEWITT CLINTON HIGH SCHOOL, TENTH AVE., 58TH AND 59TH STS., NEW YORK, N. Y. MR. C. Y. TURNER, PAINTER, NEW YORK, N. Y.

THE FIRST BOAT ON THE ERIE CANAL. MURAL, PAINTING IN THE SAME SCHOOL-HOUSE. MR. C. Y. TURNER, PAINTER.

Studies for these two panels are amongst the interesting exhibits

at the current exhibition of the Architectural League of New York.

"WESTWARD": MURAL PAINTING IN THE STATE CAPITOL, DES MOINES, IA. MR. E. H. BLASHFIELD, PAINTER, NEW YORK, N. Y.

Studies for this painting, too, which caused some distress to certain bucolic critics, are hung at the League Exhibition.

ROMAN CATHOLIC CHURCH, WESTCHESTER, N. Y. MESSRS. ELLIOTT LYNCH & W. H. ORCHARD, ARCHITECTS, NEW YORK, N. Y.

HOUSE OF MORRIS HOOPS, ESQ., GLENS FALLS, N. Y. MESSRS. WINSLOW & BIGELOW, ARCHITECTS, BOSTON, MASS.

INTERIOR OF ÆOLIAN HALL, FIFTH AVE., NEW YORK, N. Y. MR. J. H. MORGAN, ARCHITECT, NEW YORK, N. Y.

For this illustration we are indebted to Messrs. H. F. Huber & Co., who were charged with the decoration of the room.

DESIGN FOR A TERRA-COTTA FACTORY BY MR. G. C. FENHAGEN.

To this design was awarded a first mention in one of the problems of the University of Pennsylvania's architectural course.

PLAN OF THE SAME.

### Additional Illustrations in the International Edition.

LIBRARY OF J. PIERPONT MORGAN, ESQ., EAST 36TH STREET, NEW YORK, N. Y. MESSRS. M'KIM, MEAD & WHITE, ARCHITECTS, NEW YORK, N. Y.

ENTRANCE TO THE SAME.

*Correction:* Mr. Arthur Heun desires us to explain that although he was the designer of one of the "stable buildings" for Mr. W. D. Denegre, illustrated in our issue for February 10, the horse-stable shown on the upper half of the plate was designed by Messrs. Andrews, Jaques & Rantoul, of Boston.

## NOTES AND CLIPPINGS.

THE PAPAL PALACE, AVIGNON.—In our Notes of July 18, 1896, and January 12, 1901, says *The Builder*, we commented upon the demolition of the Porte Limbert, a part of the old fortifications, and of the ancient gateway facing the modern suspension bridge across the river, which constituted salient features of the walls around Avignon—a notable relic of mediæval France. We now learn that steps are about to be taken for completing a restoration which was begun in the early years of the last century of the Popes' Palace at Avignon, and for converting the buildings for purposes of a museum of religious art. After the Revolution the palace was taken for a prison and soldiers' barracks, the great hall, wherein the groining and shafts remain, being divided into floors for dormitories. In 1309 Clement V. (Bertrand the Goth) removed his Court from Rome to Avignon, which Philip III. had ceded to Gregory X. in 1273; Benedict XII., also known at Rome as Nicholas V., began the erection of the palace in 1336, and, by one account, his successor, Clement VI., bought the land from Joanna of Sicily for 80,000 florins. Until Gregory XI. restored the papal chair to Rome, in 1377, Avignon formed the seat of seven occupants of the papal throne. During the schism of 1378-1447 it was the seat of several of the Anti-Popes, and it continued in possession of the See until the deposition in 1798 of Pius VI. The palace, which covers more than 1¼ acres of ground, and combined the structural features of a monastery and a feudal castle, was surrounded with high walls and towers. The Tour de Trouillas in the northern block was built by the architect Pierre Obrero for Benedict XII.; it was used as a state prison and there, it is said, Rienzi was incarcerated. Giotto decorated the lower chapel for Clement V.; the frescos in the "Salle de l'Inquisition" are attributed to Spinello Aretino; but the greater portion of the mural paintings and decorative work have suffered irreparable injury. The grand staircase has a continuous groin; the walls of the "question-chamber" were built so as to contract above in the shape of an inverted funnel in the belief that they would prevent the passage of sound.

"THE HORSES OF DIOMEDES."—"The Horses of Diomedes," a bronze group, modeled by Gutzon Borglum, which won a gold medal at the St. Louis Exposition, has been presented to the Metropolitan Museum of Art by James Stillman, president of the National City Bank. The group represents the Greek demi-god Hercules subduing the wild horses in full flight, as he clings to the back of the leader.

# The American Architect and Building News

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THE citizens of New York, of the whole country in fact, have just been given an agreeable proof of the *bona fides* and the stiffness of neck of the new management of the Metropolitan Museum of Art. Quite recently, Mr. George A. Hearn offered to the Museum twenty-seven paintings by foreign artists of repute and also the sum of one hundred thousand dollars, the income of which was to be used by the Trustees in the purchase of the work of native or naturalized American artists. Besides these two main items, he offered two further sums of twenty-five thousand dollars each and the choice of twelve other paintings from his gallery of American paintings. But, as usually is the case, he coupled his gifts with the condition that they must always be kept together as the "Hearn Collection." As Mr. Hearn is not only himself a Trustee of the Museum, and as such familiar with its purposes and policies, but has already given to the Museum twenty-four paintings of great value and interest which have always been hung together and identified with his name, it was a particularly difficult matter how to deal with the proffered gifts under the new conditions. For one thing, the new gift was not, in a sense, new, it was rather the expansion of an old one, and, moreover, it was a gift which perhaps it had long been known it was his intention to make, and yet the conditions, acceptable enough in earlier days, ran directly counter to the more sensible policies of the new management. The delicate situation seems to have been admirably handled. As Mr. Hearn was at hand, the matter could be explained and discussed amicably and the genuine good feeling and sincere purpose to be helpful on the part of the giver was shown by his consenting to remodel his conditions, in place of flying into a passion and sending his benefactions elsewhere. He now allows the Trustees to accept his gift as offered, only expressing the opinion that the authorities should "consider themselves under moral obligation to keep the fifty-one pictures together, for the period of not less than twenty-five years from the date hereof, in the gallery they are now

in, or all together in some other gallery of the Museum of equal size and importance and equally well lighted." This excellent solution will spare the giver the possible pain of seeing his collection broken up and distributed; it will allow for a possible change of policy on the management's part, while, best of all, it reserves to the Museum the privilege of dealing with its treasures so as to render them of the greatest service to the public, though in this case the privilege can only be exercised somewhat belatedly.

THE authorities of the Citizens' Union of New York, have done an admirable thing that deserves imitation by similar organizations elsewhere. They have employed a lawyer to examine all the bills thus far introduced before the legislature at Albany and have caused to be published in the daily papers a list of these bills, properly classified and in a few words giving a clear statement of their evident real purpose. It is a motley collection of course: most of them obviously without merit and doomed to die, while some of them which are not unlikely to achieve enactment are of at least doubtful desirability. Amongst these is one designed to give relief to our old friends the Knickerbocker Trust Building in Fifth Avenue and the New Amsterdam Theatre on Forty-second Street, both of which trespass, with more or less rightfulness, beyond the building-line, both of which have been and still are the subject of legal proceedings, though they are but representatives of a considerable class. Of the two cases named, we have less sympathy for the more pretentious offender on Fifth Avenue, as the trespass was, we understand, intentional. It appears, however, that although the several owners succeeded in building and occupying their buildings as their several architects devised, they are still not happy, for they have discovered that the trespass constitutes a flaw in their titles and because of it they can neither sell nor mortgage their properties—if ever they should desire to do so. To relieve them, a bill has been introduced providing that, where such trespass has been permitted by resolution or ordinance (illegally granted, of course) the privilege to avail of such trespass "shall continue and pass to the successors in title to such properties," but only until the Board of Aldermen shall by a general ordinance declare that the public desires to resume the rights usurped by the trespasser. This bill is opposed because, while it affords a possibly justifiable relief, it obviously offers politicians an excellent chance for the blackmailing of those who enjoy these precarious privileges. To us, the measure seems objectionable simply because it offers condonation for an offence knowingly committed against the public.

THE duty that the profession owes to the public is a greater and higher one than that which it owes to itself." This dogma we enunciated when speaking of the action of the St. Louis Chapter, A. I. A., in voting to take no part in the competition for the Roman

Catholic Cathedral for that city, and now that the competition has been decided, we wonder whether the members of the Chapter are not of our opinion, and disposed to feel that their action was misguided. Instead of the work falling into the hands of one of the foreign invited architects, as it was alleged was the desire and even the intention of Archbishop Glennon that it should, the competition has been decided, with the aid of two expert advisers, in favor of Messrs. Barnett, Haynes & Barnett, themselves members of the Chapter and so, we suppose, recalcitrants.

EVERYONE is familiar with the fact that it is an every-day feature of diplomatic life that there should be attached to each foreign embassy a military and a naval attaché, though it is a mystery to most of us what practical service they can render, unless they condescend to the despicable watching, eavesdropping and pilfering of the paid spy. It would have been something in which Americans as vaunting leaders in progressive civilization might have taken just pride, if their Department of State had thought of companioning the military and naval newsmongers with another kind of attaché whose work could only result in bringing aid and comfort—not anguish and woe—to the living. But it is Germany who here shows up as a leader, for there has just been added to the German Embassy at London an “architectural attaché” whose duty it is to be to observe and report upon the present condition of artisans’ dwellings and whatever experiments may anywhere in England be made to improve them. Here is an example worth following, and we hope that, even if the Bureau of Fine Arts which some people are trying to bring into being should never be established, our Government may perceive that the reports of architectural attachés assigned to our leading embassies abroad would be quite as profitable to the civilized progress of this nation as most of the matter now to be found in our “Consular Reports”—reports which are now held to be worth while only if they show how one dollar may make another one. The post of architectural attaché might be a welcome reward for a stated term of service in the office of the Supervising Architect, or, if our numerous “traveling-scholars” cannot be provided for as placemen in charge of important public buildings, after the French method, the Government would find their knowledge of foreign languages and ways of life very serviceable qualifications when their possessors should be attached to a foreign embassy.

WE cannot say that we feel any special interest in the recent dismissal of Mr. James Mulcahy, architect, from the office of Building Commissioner for Boston. Removal seems to have come absolutely for political reasons, the present Mayor holding that he was not sufficiently “active” in raising campaign funds and otherwise, a line of conduct somewhat at variance with that shown by him, as alleged, during previous political campaigns. If this is really the reason, the architects and builders of Boston may well croak dismally, feeling that they have probably merely, in the language as Æsop, exchanged King Log for King Stork.

WE note with amusement that newspaper editors are showing a disposition to argue that architects do not know how to build libraries, because Mr. Putnam, the Librarian of the Library of Congress, already foresees the time when the present building will not hold the books consigned to it. In fact he is already taking steps to provide more space for bound volumes, by attempting to bring about the erection in one of the court-yards of a special “stack” for newspaper files. If the criticism of architects were laid by the general public, there would not be reason for comment; but newspaper men are very close to the book trade and know well what is the almost measureless capacity of the modern printing-plant and how cheap paper and presswork really are. Moreover, they know that the Library of Congress is not a fair criterion, since the statute law makes compulsory the deposit there of two copies of every piece of copyrighted printing done in the country, good, bad and indifferent—even two copies of “*Fads and Fancies*” are to be found there now. Yet there are two things that architects may as well confess are beyond their powers, and these are: To design and erect with available funds metropolitan libraries and school-houses that will not speedily be outgrown.

THE late E. W. Godwin, who died in London in the eighties, was something more than noted for the cleverness with which he designed theatrical costumes and scenery in the interludes of more serious architectural practice, and it was largely due to his example and Sir Henry Irving’s insistence that the pleasure of the modern theatre-goer is no longer tried by the architectural absurdities of the old-time scene-painter. The art of scene-painting has had a new birth within the memory of most of us and not a few young men who began to study architecture found another outlet for their talents and have specialized as scene-painters, while many architects who do not make a practice of theatrical work have at one time or another been led to follow in the footsteps of Lionardo da Vinci and Inigo Jones, master of the revels. Amongst these must be classed Mr. Frank Chouteau Brown, whose treatment of the settings for “*Julius Cæsar*” gave much pleasure to his fellow-members of the Boston Society of Architects when, in a body, they attended a performance this week. As Mr. Brown has also designed scenery for several other of Shakespeare’s plays, he may fairly be held to have specialized in this direction.

THE head of the United States Bureau of Labor, Mr. Charles P. Neill, is seeking to collect informing particulars concerning what he calls “establishment funds,” that is to say all those funds established by or in behalf of workmen whether by their own unaided effort, by the unaided action of their employers or by the combined endeavors of both classes. If anyone connected with the building interests we reach can furnish Mr. Neill with full particulars concerning any schemes in successful operation in this country that provide effective, or partial, insurance of workmen against sickness, accident, disability, old age, unemployment or death, they are begged to take the trouble to communicate such particulars to him at Washington.

THE ORIENTATION OF BUILDINGS AND OF STREETS IN RELATION TO SUNLIGHT.<sup>1</sup>

“THE Orientation of Buildings and of Streets in Relation to Sunlight” is a subject that I have been led to investigate in connection with the study of hospital architecture, but the results are equally applicable to the construction of all buildings occupied for residential purposes. If sunlight is essential for the recovery of the sick, is it not a still more powerful agent in the prevention of disease?

Unquestionably, the first requisite for a hospital is abundance of sunlight. Not only the exterior wall surfaces of the buildings, but also the ground surfaces between and around them should have the direct rays of the sun for as long a time as possible each day.

“Second only to air are light and sunshine essential for growth and health; and it is one of Nature’s most powerful assistants in enabling the body to throw off those conditions which we call disease. Not only daylight, but sunlight; indeed, fresh air must be sun-warmed, sun-penetrated air. The sunshine of a December day has been recently shown to kill the pores of the anthrax bacillus.” (Galton, “Healthy Hospitals.”)

Wall-surfaces, especially brick walls, absorb a large amount of moisture during rains. This moisture is quickly dried out by exposure to sunlight, but is retained for a long time in walls which are not exposed to the sun, and creates an unhealthy condition; for dampness, with lack of sunlight, is a combination favorable to the growth of low forms of vegetable life, and should be avoided in hospital buildings. To secure sunlight in the fullest measure requires that the general plan of the buildings shall be carefully studied with this end in view.

In the study of existing hospitals I have found the greatest divergence in the orientation of the buildings. It therefore seemed to me advisable to make an investigation of this subject, and several years ago I obtained from the Harvard Observatory a table showing the position of the sun for different periods of

things that it will be convenient to fix in our minds. In the first place we see that the sun rises pretty nearly in the northeast in summer and sets pretty nearly in the northwest, and in winter the same distance southeast and southwest. At the time of the equinoxes it rises in the east and sets in the west.

Another thing convenient to remember is that in June about eight o’clock in the morning the sun is very nearly due east, and four o’clock in the afternoon very nearly due west. Then I would like you to observe the low altitude of the sun at noon in winter and the high altitude in summer. In one sense the period of the equinoxes may represent the average day because it is intermediate between the two extremes; but the declination of the sun is changing much more rapidly at those periods than it is in June and December. Consequently there are a great many more days which resemble December 21 in the winter and a great many more days in the summer which are typified by June 21 than there are days which are typified by March 21 and September 21. You will find, if you consult the almanac, that the length of the days is changing very slowly around December 21 and June 21 and very rapidly at the time of the equinoxes. For instance, two weeks before December 21 the length of the day is only eight minutes longer than on December 21. So about June 21, two weeks before and after, the day is only a few minutes (about seven or eight) shorter than it is on June 21. On the other hand, two weeks before March 21 the day is forty minutes shorter than it is on March 21, and two weeks later, on April 4, it is forty minutes longer.

The time shown upon these diagrams is the time as shown by a sundial, which is different from our “eastern time,” but the correction in each case can be made by consulting the almanac.

This slide illustrates what I call the “first lesson” in orientation. It represents a building square in plan. In one position it is set squarely with the meridian, and in the other the meridian passes through the diagonal. You can see that in the first the north wall will obtain no sunlight at all during half the

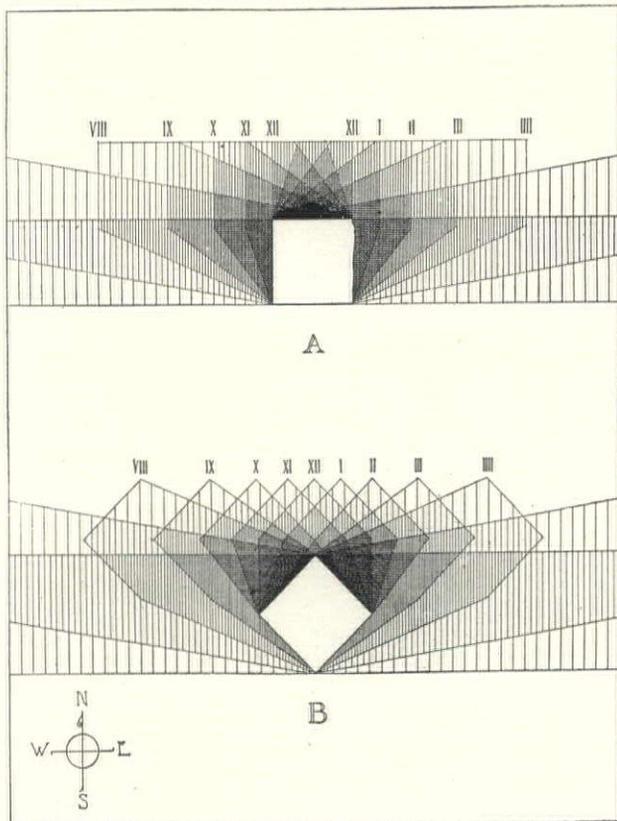


FIG. 1.—SHADOW DIAGRAM OF A CUBE.

Giving the shadows cast by a cube from sunrise to sunset at the period of the equinoxes. Latitude of Boston, Mass.

the year, and the data thus obtained are embodied in a sun chart which I will now show you.

Astronomy is not studied nowadays as it used to be, and perhaps it will be well to refresh our astronomical knowledge a little. These three diagrams show the position of the sun at each hour of the day for the three typical seasons of the year: December 21, the shortest day; March 21 and September 21, the equinoxes; and the longest day, June 21. There are several

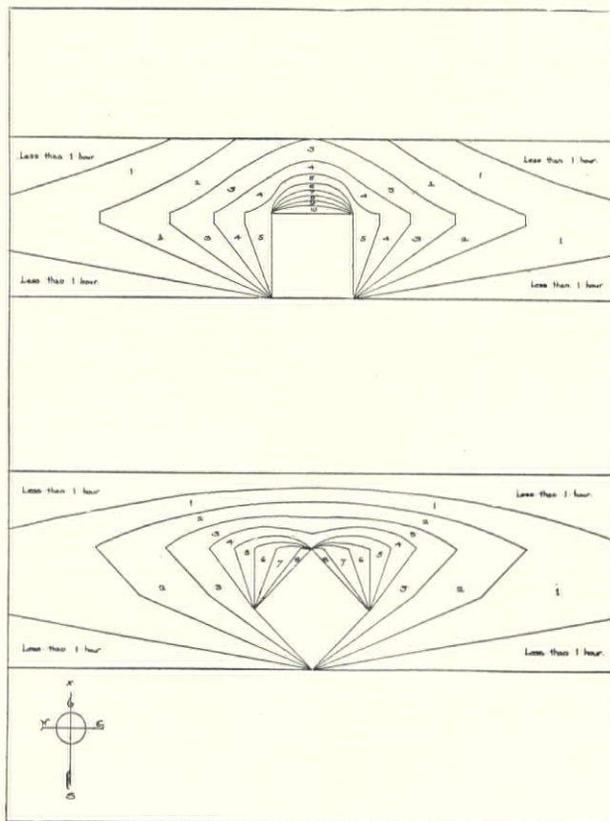


FIG. 2.—SHADOW CURVES OF A CUBE.

This diagram is constructed from the preceding. The numerals indicate the number of hours during which each area is in shadow; i. e., the areas marked 1 are in shadow from one to two hours; those marked 2, from two to three hours, and so on.

year, whereas in the second all four walls of the building will have more or less sunlight at all seasons of the year. The typical plan of the Swiss mountain dwelling is a square building set on the diagonal with respect to the meridian, and the living room is placed at the southern apex. Evidently the dwellers in these mountains learned to appreciate the value of sunlight at a very early date.

This diagram (Fig. 1) represents the “shadow plan” of a cube placed in the two positions which I have shown. The

<sup>1</sup>A paper by Mr. William Atkinson, architect, read before the Society of Arts, Boston, Mass., Jan. 26, 1905.

shadows are drawn for each hour of the day and are superposed one upon another, and the degree of blackness corresponds roughly to the length of time in which that particular spot is in shadow during the day; the full black in that case represents an area which is in sunlight for less than one hour. You will observe that in this position (A) of the cube there is a very considerable triangular area here, much larger than in this one (B), which has very little sunlight. In other words, a square building placed in the latter position shades the ground around it very much less than a similar building placed in that position (A). The diagram suggests another and better method of representing these matters by means of curves. The intersections of the various shadows will determine one series of points, each of which is in shadow for exactly one hour, and another series of points in shadow for two hours, and so on; and by joining these points we obtain a series of curves which may be called the "shadow curves" of the cube.

The next diagram (Fig. 2) will show these shadow curves for March 21 and September 21. In each area the numerals indicate the number of hours during which that area is without sunlight. Similarly we might draw such a shadow diagram for a building of any shape by pursuing the same method, but practically we find that almost all buildings, especially hospitals, are composed in their elements of two wings forming an L, or three wings forming a U-court. Especially are hospitals composed of U-courts, so that if we study the U-court we have accomplished the greater part of the necessary study.

If we study the shadow plan of such a U-court (Fig. 3) we shall find that the most advantageous position is that in which the court faces southeast or southwest, and the least advantageous is that in which the court faces the north; and yet how often do we see buildings constructed on this plan with the court facing the north!

So far, we have considered the outside surfaces of the building

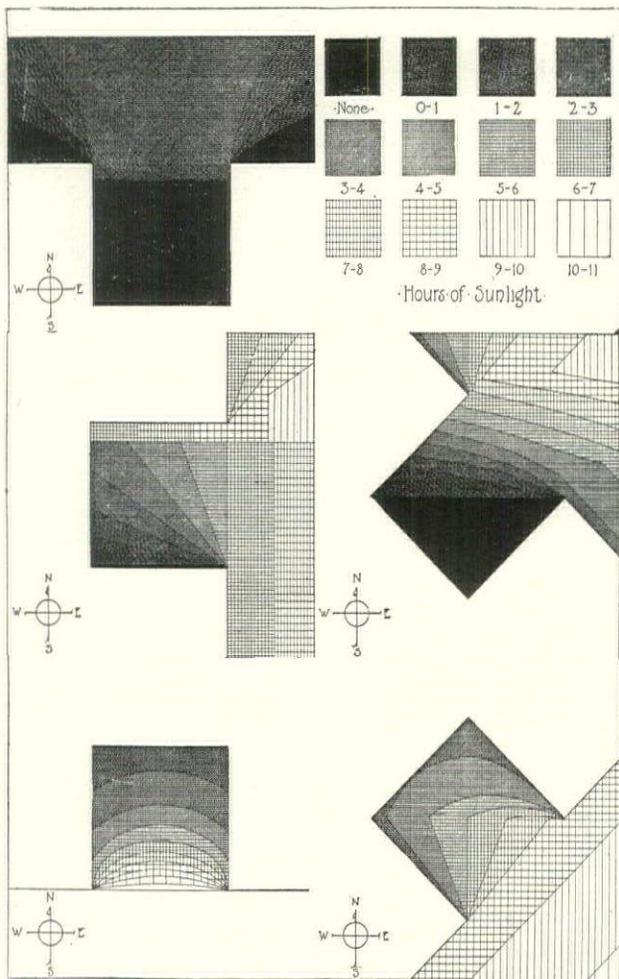


FIG. 3.—SHADOW DIAGRAMS OF A U-COURT.

Representing the distribution of sunlight upon the ground surface of a U-court facing north, northeast, east, southeast and south. The height of the court is supposed to be equal to the width and depth. The depth of shade at any point indicates the length of time that point is in shadow, corresponding to the table of tints in the upper right-hand corner. Latitude of Boston, Mass. Time: March and September.

and the surface of the ground around it. We now proceed to study the interior lighting of buildings. This diagram (Fig. 4)

illustrates the subject of windows. These various patches of different shapes represent cross sections of a prism of light rays passing through a window 8 feet high, 3½ feet wide, and thickness of 1 foot in the wall. Now by multiplying the area of any

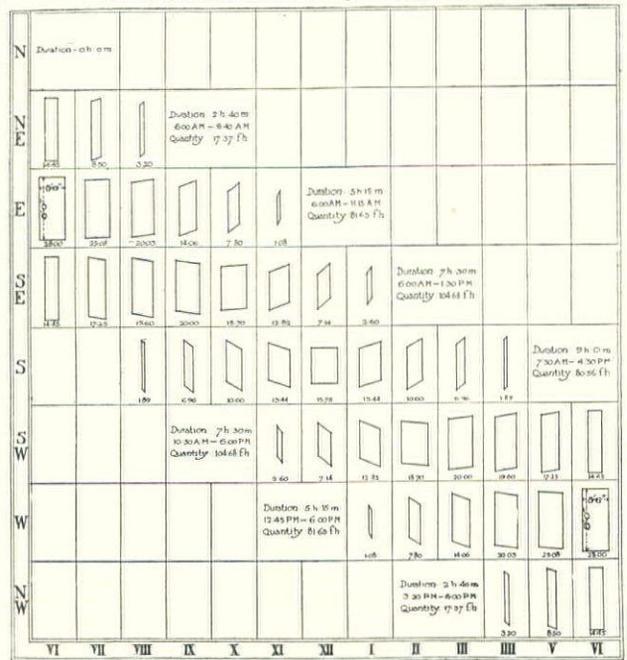


FIG. 4.—WINDOW ASPECTS.

Giving the aspect of window openings as presented to the sun, for windows facing in various directions. Size of opening, 3' 6" wide, 8' high, 1' thick. The numerals below each figure give the area of the cross-section in square feet. The numerals following the word "quantity" give the amount of sunlight, in sun-hours, passing through the aperture during the day. The letters in the left-hand column indicate the direction in which the window faces. The Roman numerals at the bottom give the hour of the day for which each figure is drawn. Latitude of Boston, Mass. Time: March and September.

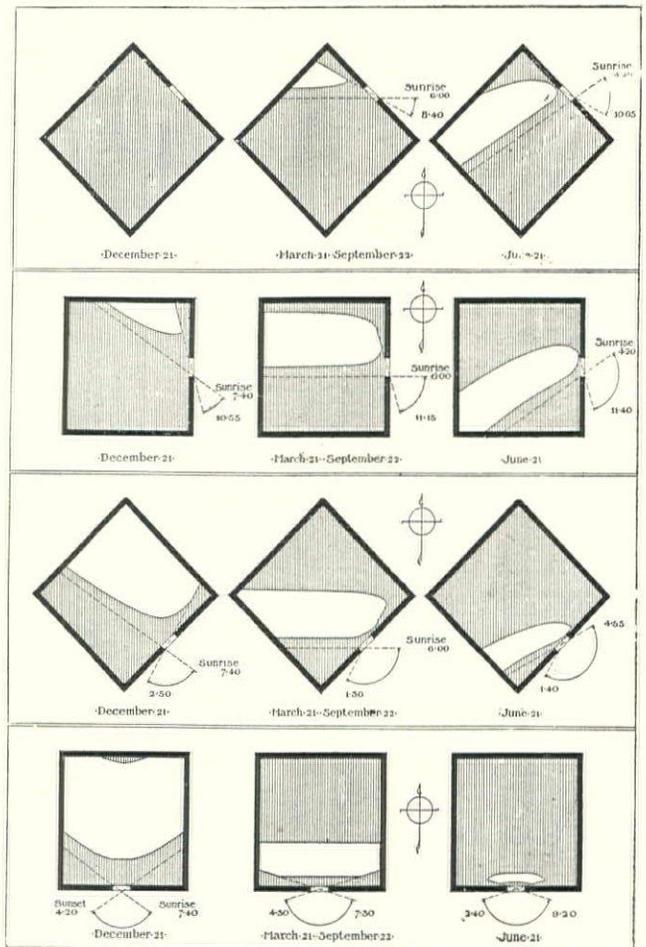


FIG. 5.—WINDOW ILLUMINATION.

Representing the floor area of an apartment 24' square, illuminated by a single window 3' 6" wide, 8' high, 1' thick, sill 2' above floor, facing north-east, east, southeast and south. Latitude of Boston, Mass.

one of these figures by the length of time during which the sun is shining through the aperture of that shape, we shall obtain

what I call the "quantity" of sunlight expressed in "sun-hours," the sun-hour being the amount of sunlight received by a surface 1 foot square exposed to the sun for one hour. This diagram (Fig. 5) illustrates the illumination of the floor through the window, and if the floor of that room were covered with a carpet dyed in aniline colors we should find at the end of the day the unshaded portion somewhat faded, because that represents the area of the floor which has received sunlight during the day. The diagram is drawn for the four typical seasons of the year. The south window is one of extremes; in winter it transmits a great amount of sunlight, but in summer, owing to the great altitude of the sun, this small patch of floor is all that receives sunlight during the day; so the south window is a very cool one in summer and a very warm one in winter. By superposing these areas on any given plan we can obtain the floor illumination of a room of any shape and with windows variously placed. For instance, this diagram (Fig. 6) represents an open ward in a hospital.

So far we have considered buildings only, but buildings (in cities, at least) are generally governed—that is, the orientation of the buildings—by the direction of the streets on which they are built, and it is to the matter of streets that I propose to pay my particular attention this evening; and in the study of streets

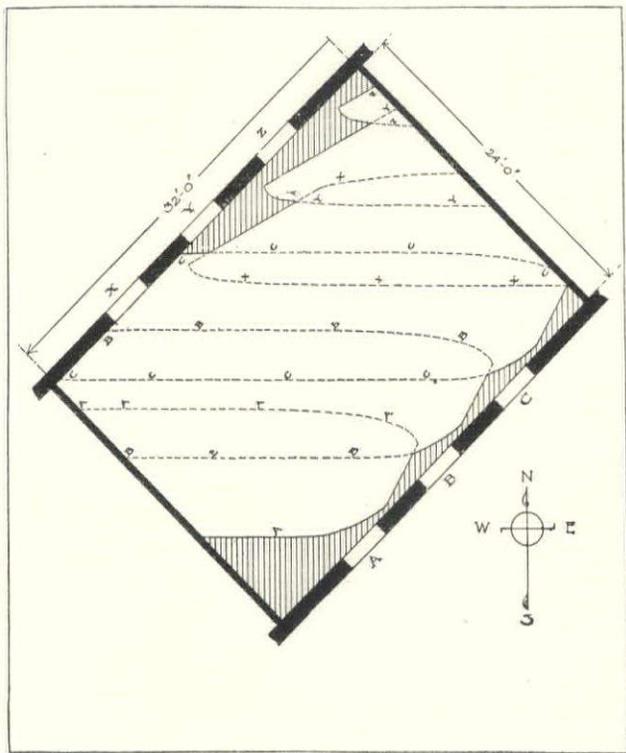


FIG. 6.—WINDOW ILLUMINATION.

Representing the floor area of an apartment 24' wide and 32' long, lighted by three windows on each side, facing northwest and southeast, respectively. Size of windows as in the preceding diagram. The letters indicate the area illuminated by each window. Latitude in Boston, Mass. Time: March and September.

there are two matters to be considered, sunlight and skylight. The direction of the street affects the sunlight particularly; the height of the buildings upon it affects both the sunlight and the skylight. Skylight comes from all directions of the heavens; sunlight from only one direction. The English have appreciated the value of both for a long time. I have recently been studying the "Law of Ancient Lights," so called; it dates from a period far back in the time of the Richards. In 1623 Parliament passed a statute in regard to this matter, which provides that if an owner or tenant of a building has enjoyed light for a space of twenty years he thereby acquires a right in the property of his neighbor over which that light comes. "*Cujus est solum ejus est usque ad caelum*" is an ancient maxim of English law, and in the words of an English writer, "An interference with the space superincumbent on a man's land is an injury for which the law provides a remedy." As an example of the way in which the law works in England, I will describe a typical case:

The plaintiff, a sculptor, had a studio on a narrow lane in London, Mill Hill Street, 37 feet wide. He had occupied this studio for twenty years, and his lease had still six years to run. Across the way was a building 37 feet high, occupied by a firm of silk-merchants. The latter, to provide more room for their business,

were preparing to add another story to their building. But the sculptor brought suit on the ground that his light would be seriously interfered with, and succeeded in obtaining a perpetual injunction against the silk-merchants forbidding them to increase the height of their building, and the judge, in delivering his opinion, spoke as follows:

"The case is proved, in my opinion, on behalf of the plaintiff. He has proved a statutory right to the enjoyment of his light undiminished. In my opinion, they have no more right to take away the light which the plaintiff has been enjoying than they have to take away the front wall of his house."

Now this may seem very strange doctrine to Americans, but it is well for us to ponder it. The English are very jealous of the rights of the individual owner in these matters. One reason for this may be the custom of having long leases in England. Now in this country when a man has an office down-town he very seldom takes a long lease of it. If his neighbor puts up a tall building across the way and shuts off his light, he rents another office somewhere else, generally in a new skyscraper, where his

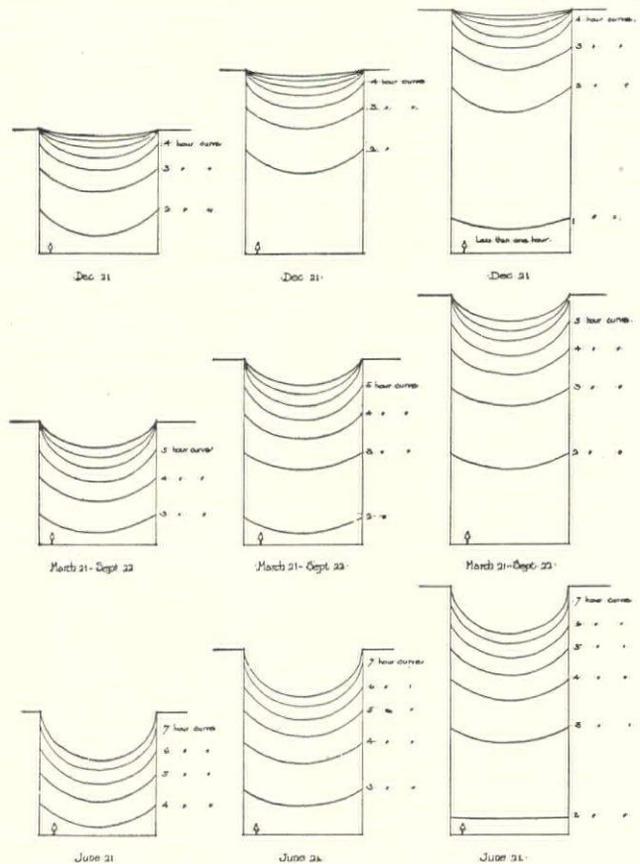


FIG. 7.—STREET ILLUMINATION.

Representing the cross-section of a street running north-and-south. In the left-hand column the height of the buildings is equal to the width of the street; in the central column one and one-half times the width of the street; and in the right-hand column twice the width of the street. Latitude of Boston, Mass.

light will probably not be interfered with for several years, at least.

As in the forest those trees flourish best which overtop their neighbors, so in our American cities the skyscraper enjoys an advantage of light and air at the expense of the lower and more ancient buildings.

We will now proceed to investigate the distribution of sunlight in streets running in various directions and of different sections.

The next three slides (Figs. 7, 8 and 9) illustrate the distribution of sunlight in streets running north-and-south, east-and-west, and southeast-and-northeast, respectively, for the four typical periods of the year, and for streets in which the height of the buildings is in various proportions to the width of the street.

The amount of sunlight in the street is represented by means of curves, and the method of obtaining these curves I shall describe later on. Each curve represents a series of points in the cross section of the street, each of which is in sunlight a given number of hours. The curve is a convenient way of representing the amount of sunlight. It enables us to present in a single diagram a result combined from a great number of separate diagrams.

Now in the first place we can see that the street running east-and-west is the very worst of all in winter. Notice the direction of the sun's rays at noon. They penetrate a very small distance overhead, the street gets a great deal more sunlight. It is a street of extremes, cold in winter, hot in summer. The diagonal street is very much better off. The north-and-south street receives in winter the greatest amount of sunlight; at other times of the year the diagonal street is pretty nearly equal to it. I wish you to observe that in a system of streets running at right angles to each other the best method is to lay out on the diagonals southeast-northwest and southwest-northeast. In most American cities the streets are laid out north-and-south, east-and-west. I suppose this is because the engineer first runs his meridian, and then plans the streets to follow it. Unfortunately, the principal streets of our Back Bay run pretty nearly east-and-west; the cross streets north and south.

The method of obtaining the light curves I will explain by the next slide (Fig. 10). This is a cross section of a street. Here is the direction of the sun's rays at nine a. m.; here, eight hours later, at five p. m. This point (at the intersection) comes

onals was pointed out many years ago by Horace Bushnell in an essay on the planning of cities, but his teachings have apparently been forgotten.

In studying the problem of tall buildings we have to consider, not the effect of one building only, because that is insignificant, but we must consider the street as if built up to a uniform height equal to that of the tallest building. This diagram (Fig. 11) will show us the effect of ground which would be built on in December by a single skyscraper which would be built on the site of the Hotel Bristol, across the street. This imaginary structure is supposed to be 300 feet high. That represents a fair average height for a modern New York skyscraper, of course much higher than any building we have in Boston. We are indebted to Mr. Minot and the others who drew up our original code of building laws that we have been spared such an infliction.

Two things are to be observed. Of course you understand that if that building were half as high these shadows would be just half as long. You will note that the shadows extend across Commonwealth Avenue. In other words, if the north side of Boyls-

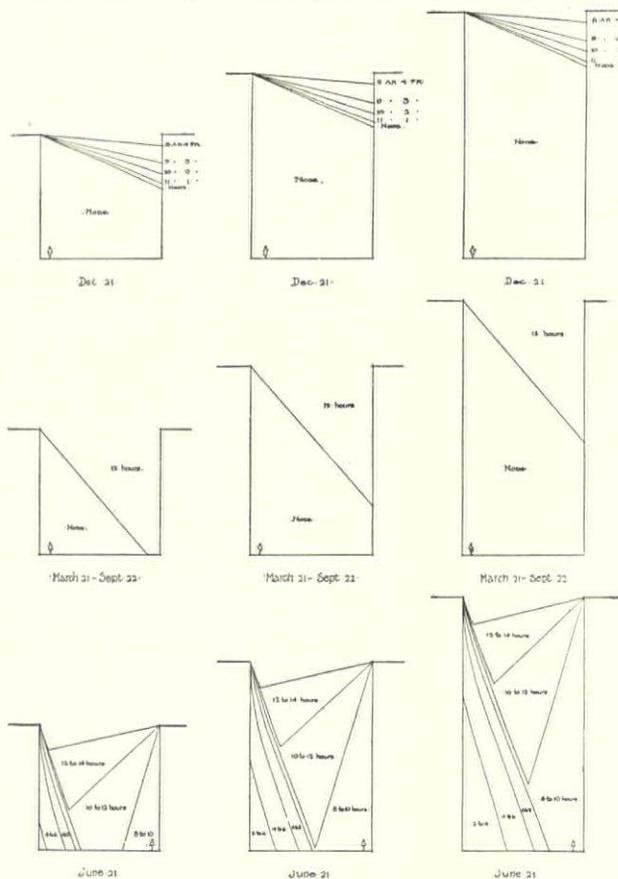


FIG. 8.—STREET ILLUMINATION.

Representing the cross-section of a street running east-and-west, looking west. The height of the buildings bears the same relation to the width of street as in Fig. 7. Latitude of Boston, Mass.

into sunlight at nine o'clock and into shadow at five o'clock. In other words, it has been in sunlight for eight hours. If we connect a series of such points we shall have our curve, in this case the eight-hour curve.

Where the buildings are high in proportion to the width of the street the light at noon comes only a short distance down from the top. Where the buildings are equal in height to the width of the street during the year, at the time of the equinoxes, in a street running east-and-west the sun's rays will fall upon the ground surface at about the edge of the sidewalk. That explains, I suppose, one reason why, in a great many European cities, that proportion has been deemed to be the proper one for the height of buildings. Of course, as the latitude varies the diagrams will vary, these all being drawn for the latitude of Boston. In England, although in summer the days are very much longer, the sun travels very much nearer the horizon than it does with us. That may be one reason why these questions have been considered of more importance there than in this country. As we go south, of course, the sun travels nearer the zenith.

The superiority of a system of streets running on the diag-

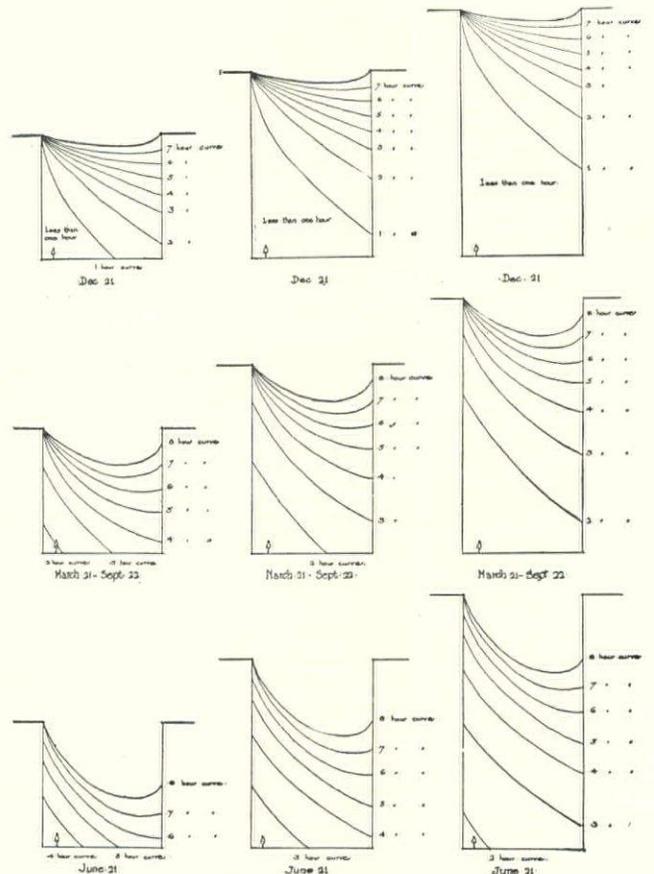


FIG. 9.—STREET ILLUMINATION.

Representing the cross-section of a street running southeast-and-northwest, looking northwest; or of a street running northeast-and-southwest, looking southwest. The height of the building bears the same relation to the width of the street as in the two preceding diagrams. Latitude of Boston, Mass.

ton Street were built up solid with buildings of this height the whole of Commonwealth Avenue would be in shadow at all times during the day at this period of the year.

We must not consider these tall buildings separately. We must consider them as if the whole street were built up with them, because that is the condition to which we are rapidly coming in cities in this country. In making building laws and regarding streets we should look into the future and not merely regard the present. I have a great respect for the American engineer. He has accomplished a great many wonderful things in the construction of tall buildings. Ways have been devised for preventing corrosion of the steel in these buildings, for making them safe against fire; and even if the fire-engines, for not throwing their streams to such a great height there can be standpipes to make them perfectly safe. If the buildings are large enough to have two staircases, they can be planned in such a way that if they take fire there is a good chance for every one to escape before they burn up. All difficulties have been overcome except one—the American engineer has not yet invented a way of making these buildings transparent, and I do not believe he ever will.

The next slide is a view of the Tremont Building. Not a skyscraper in the sense in which the word is generally used, but for Boston a tall building. What I wish to point out is the shadow cast upon this building by Tremont Temple across the way. If the block to the east of Tremont Temple were built up to a height equal to that building, this shadow would extend out to the edge of Tremont Building and completely shut out the light from these stores at the hour of the day at which this photograph was taken, which I judge was some time during the forenoon in summer. Passing this building at a quarter past ten the other morning, I noticed the shadow cast by the Paddock Building farther east, and it extended up to the top of the seventh story windows and across nine of them in this direction. The point to be emphasized is that tall buildings materially interfere with each other's light. The Tremont Building is placed opposite a permanent open area, so it will never suffer from that direction, but all buildings are not so fortunately placed as this one.

A bill has recently been introduced into the legislature, on petition of Professor Wm. T. Sedgwick, which proposes to limit the height of buildings in the State of Massachusetts outside of Boston. Outside of Boston very few buildings have been built exceeding 100 feet in height. I suppose they could be counted on one's fingers. Therefore if such a law should be passed now it would not work injuriously; it would bear equally upon every one.

Such is not the case in Boston. Here we have a condition, not a theory. In the down-town section we have a great many high buildings; in the residential section but a few. Therefore the problem is a very difficult one. It is hard to frame a law which will not do injustice to some one. It is commonly considered impracticable further to limit the height of buildings in the down-town sections, because so many of them are already built up to 125 feet; but last winter a law was passed, the "A and B law," so called, which empowered the Mayor to appoint a commission to divide the city into two sections, residential and business. In the residential section no building is to exceed 80 feet. The commission have drawn a line. It is, of course, impossible to divide the residential district from the business section by a hard-and-fast line. In reality there exists no line such as this. The division is more gradual. The business district shades off imperceptibly into the residential. Therefore the drawing of such a line must produce more or less dissatis-

I believe it to be entirely practicable to make an amendment to that law which will eliminate to a large extent the dissatisfaction. It is possible to frame a law which will shade down that limit of height imperceptibly from 125 feet in business districts to 100 feet in residential districts. Several ways have been suggested of doing this, and doubtless they will be brought to the attention of the legislature this winter. Uncertainty in build-

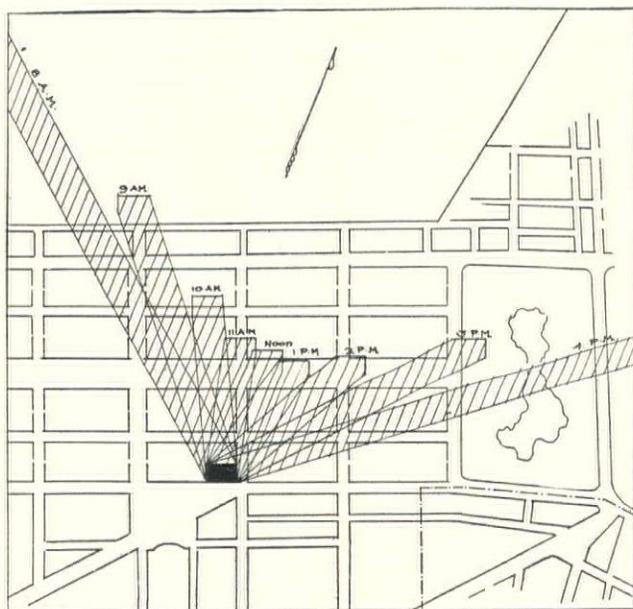


FIG. 11.—SHADOWS OF A SKY SCRAPER.

Representing the shadows which would be cast in December by a building 300 feet high, erected on the site of the Hotel Bristol, Boston, Mass.

ing laws produces bad conditions in business, and it is to be hoped that, this winter, the legislature may arrive at some plan which will eliminate all special legislation, which can be made permanent and satisfactory to every one. We have been trying for some years, groping in the dark, as it were, to solve this question, and the results have not been particularly fortunate. The Copley Square law gave a great deal of dissatisfaction—

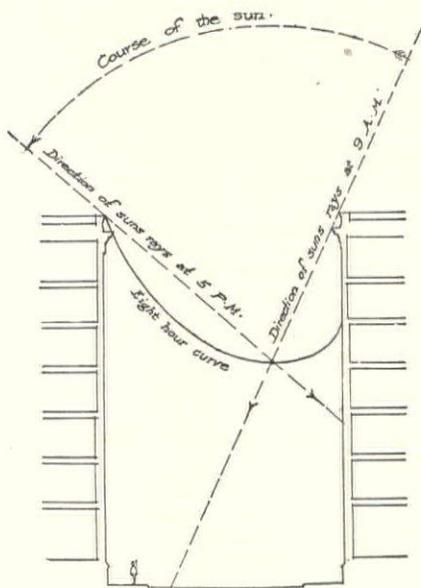


FIG. 10.—STREET ILLUMINATION

Illustrating the method of obtaining the light curves of the three preceding diagrams. Street running southeast and northwest, looking northwest. Latitude of Boston, Mass. Time: June 21.

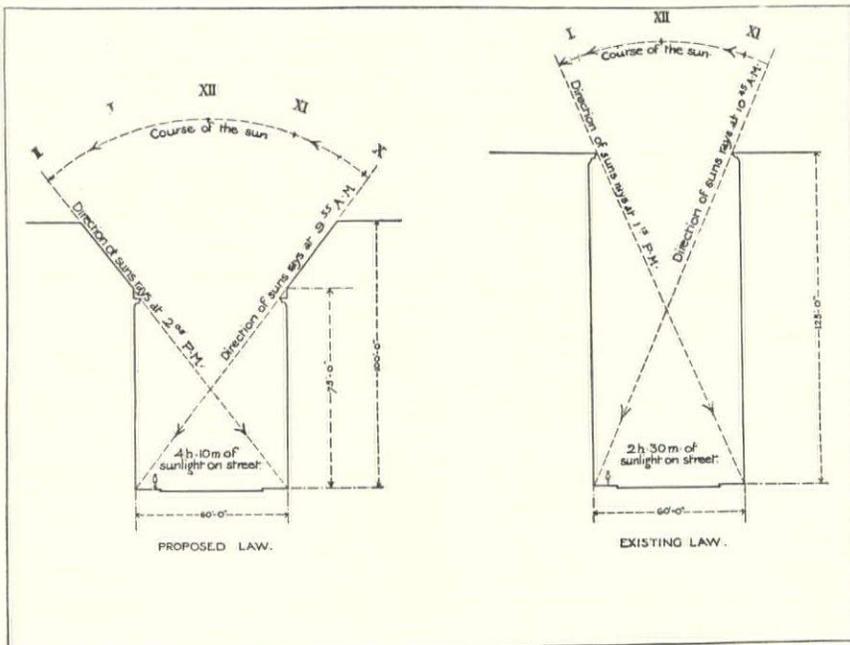


FIG. 12.—HEIGHT OF BUILDINGS.

Contrasting the existing law in Massachusetts with the proposed new law. Representing the cross-section of a street running north and south. Latitude of Boston, Mass. Time: March and September.

faction. Where it passes through the centre of a street a building on one side cannot be above 80 feet; where it passes through a block the owner on the business side of the line can go up 45 feet higher than his neighbor on the other side. This, of course, produces dissatisfaction in the mind of the owner who is on the wrong side of that line. The commission have recommended that the limit of 80 feet is too low, and that it should be raised to 100 feet in some parts of the residential districts. That will make the disparity of conditions less.

100 feet on one side and 90 feet on the other, with no very good reason for it. There is another law which empowers the Park Commission to restrict to 70 feet on the parkways, and yet there is no place where a tall building looks so well as upon the borders of a park. It is to be hoped that both of these laws may be repealed this winter, and some uniform law be made to take their place.<sup>1</sup>

We can learn something in this matter, I think, from the bill

<sup>1</sup>See Appendix B for legislation of 1905.

which has been introduced into the legislature on the petition of Professor Sedgwick. That proposes for the State a maximum limit of 100 feet, and a further limitation for the façade of buildings of one and one-fourth times the width of the street upon which they are built. (See Appendix A.)

This diagram (Fig. 12) contrasts the existing law in Massachusetts with the proposed law. It represents in cross section of a street 60 feet wide running north-and-south. The direction of the sun's rays is shown at the moment when they first reach the surface of the street and again when they leave the surface, at the period of the equinoxes.

The proposed law provides in effect that no portion of the building, excepting chimneys and other similar constructions, shall be built beyond a sloping line, drawn from the opposite side of the street and rising at an angle of  $1\frac{1}{4}$  to 1 (about 52 deg.).

In its general form we believe this law to be correct. I think every one will admit that the height of a building should bear some reasonable relation to the width of the street upon which it is placed. It also should be recognized that it is the upper part of the front wall of the building which is most effective in cutting off the sunlight from the street.

The working of this law would naturally result in the adoption of the sloping roof, or in the stepping-back of the building in this way, or in some cases of the whole building being set back from the street line. The sloping roof has not been used very much in Boston, inasmuch as the present building laws do not allow an elevation of more than 20 deg. in pitch. The views which follow will illustrate some of the sloping roofs in different cities in Europe and how beautiful they can be made architecturally. Here is a hotel in Paris. The next is a street in Marseilles, which illustrates very well the sloping roof and the comparatively reasonable height of the buildings, which in this case I should judge was about one and one-fourth times the width of the street. It also illustrates another point, the broad sidewalks which they enjoy in those European cities. Few things are more wearing to the nerves than to hurry through our narrow Boston sidewalks "after a train," pushing along through the crowd. It is really a serious matter, and in Boston we suffer more from narrow sidewalks than from narrow streets. New York is very much better off in this respect.

In Boston we have suffered from narrow streets and narrow sidewalks, but these errors are mistakes of the past. It should be the work of the present, profiting by experience, to build buildings and plan streets so that they shall not shut out the fresh air and the sunlight from the Boston of the next generation.

#### APPENDIX A.

House Bill No. 775, Accompanying the Petition of William T. Sedgwick for Legislation to Provide for the Protection of Streets and Property Owners Against the Encroachments of High Buildings upon Light and Air. Cities, January 26, Commonwealth of Massachusetts, In the Year 1905.

An Act to provide for the Protection of the Public Health and of Streets and Property Owners against the Encroachments of High Buildings upon Light and Air.

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:

Section 1. The following restrictions shall apply to all buildings hereafter erected or altered in the State of Massachusetts outside of the City of Boston, with the exception of grain elevators, coal elevators, standpipes, water tanks, sugar refineries and buildings located more than 50 feet from any public way, street, park or adjoining property line.

Section 2. No part of any such building, save the exceptions enumerated in Section 4, shall be erected to a height above the grade of the street nearest to and opposite such part exceeding one and one-quarter times the least horizontal distance of such part from the farther side of said street: *Provided, however,* that no part of any such building, save the exceptions enumerated in Section 4, shall be erected to a height exceeding 100 feet above the grade of the lot vertically below such part. But in the case of a building having a corner frontage upon two or more streets of unequal width, the limitation of height first above described shall be made as if all of said streets were of a width equal to that of the widest of them.

Section 3. In the application of this act, all streets of less width than 40 feet shall be considered as of a width of 40 feet, and all streets or portions of streets upon which buildings may be erected upon one side only shall be considered as of a width of 80 feet.

The term "street," as used in Section 2 of this act, shall not apply to any private way, nor to any public way for the use of foot passengers only, nor to any public way constructed and used principally as a means of access to the rear entrances of the buildings built upon it.

Section 4. The limitations of height above described shall not apply to steeples, towers, domes, cupolas, belfries or statuary, not used for purposes of habitation; nor to chimneys, open balustrades, skylights, ventilators, flagstaves, railings, weather-vanes, soil-pipes, steam-exhausts, signs, roof houses not exceeding 12 feet square or 12 feet high, nor to other similar constructions such as are usually erected above the roof line of buildings.

Section 5. The Supreme Judicial Court or the Superior Court shall have jurisdiction in equity to enforce the provisions of this act and to restrain the violation thereof.

Section 6. This act shall take effect upon its passage.

(This act failed of passage.)

#### APPENDIX B.

Commission on Height of Buildings in the City of Boston.  
(Order of July 21, 1905.)

The undersigned having been appointed on May 25, 1905, by the Mayor of the City of Boston, under the provisions of Chapter 388 of the Acts of

1905, members of a commission to determine, in accordance with the provisions of said act, the height of buildings within the district designated by the Commission on Height of Buildings in the City of Boston as District B, in accordance with Chapter 333 of the Acts of 1904, and having given notice and public hearings, hereby determine and order that in any of the Districts B, as designated by said Commission on Height of Buildings, in its order of July 5, 1904, as amended by its order of Dec. 3, 1904, the said orders being recorded with Suffolk Deeds, Book 2976, page 45, and Book 3008, page 129, respectively, buildings may be erected on streets exceeding 64 feet in width, to a height equal to one and one-quarter times the width of the street upon which the building stands; and, if situated on more than one street, the widest street is to be taken, the height to be measured from the mean grade of the curbs of all the streets upon which the building is situated, and not exceeding 100 feet, in any event.

If the street is of uneven width, its width will be considered as the average width opposite the building to be erected.

The width of a street shall be held to include the width of any space on the same side of the street upon which a building stands, upon or within which space no buildings can be lawfully erected by virtue of any building line established by the Board of Street Commissioners or the Board of Park Commissioners acting under general or special laws.

All streets or portions of streets upon which buildings may be erected on one side only shall be considered as of a width of 80 feet as to that portion upon which buildings may be erected on one side only.

In the case of irregular or triangular open spaces formed by the intersection of streets, the width of the street shall be taken as the width of the widest street entering said space at the point of entrance.

No building shall, however, be erected on a parkway, boulevard or public way on which a building line has been established by either of said Boards acting under general or special laws to a height greater than that allowed by said general or special laws, nor otherwise in violation of Section 3 of said Chapter 388, Acts of 1905.

No building shall be erected to a height greater than 80 feet unless its width on each and every public street upon which it stands will be at least one-half its height.

Nothing in this order shall be construed as affecting any condition, or restriction imposed by deed, agreement or by operation of law on any property in said Districts B.

The said Commissioners further provide that buildings may be erected to a height not exceeding 125 feet in that portion of the District B as established by the Commission on Height of Buildings in its order dated Dec. 3, 1904, recorded with Suffolk Deeds, Book 3008, page 129, which lies 50 feet westerly from the boundary line running from Columbus Avenue to the center of Boylston Street, separating said District B from District A, as established by said order; *Provided, however,* that said portion of District B is owned by the same person or persons who own the adjoining premises in District A.

In witness whereof, the undersigned, being a majority of said commission, the third member (Nathan Matthews) being in Europe, hereto set their hands, this 21st day of July, 1905.

JOSEPH A. CONRY,

HENRY PARKMAN,

Commission on Height of Buildings in the City of Boston.

Boston, July 21, 1905.

Then personally appeared the above-named JOSEPH A. CONRY and HENRY PARKMAN and acknowledged the foregoing instrument to be their free act and deed. Before me,

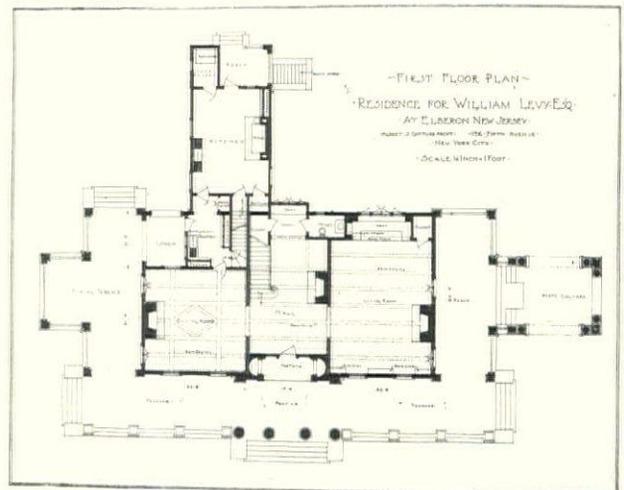
JOHN S. ADAMS, Justice of the Peace.

## ILLUSTRATIONS.

HOUSE OF MRS. ———, GERMANTOWN, PA. MESSRS. COPE & STEWARDSON, ARCHITECTS, PHILADELPHIA, PA.

GARDEN FRONT OF THE SAME.

HOUSE OF WILLIAM LEVY, ESQ., ELBERON, N. J. MR. ALBERT S. GOTTLEB, ARCHITECT, NEW YORK, N. Y.



MAIN FRONT OF THE SAME.

RENAISSANCE CAPITALS: PLATES 57-64.

Additional Illustrations in the International Edition.

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ENTRANCE TO PROSPECT PARK, BROOKLYN, N. Y. MR. J. H. DUNCAN, ARCHITECT, NEW YORK, N. Y.

# The American Architect and Building News

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THE officers of the New York Chapter, A. I. A., send out notice that "as there is not sufficient business to warrant it being held" the stated monthly meeting of the Chapter will be postponed! Less metropolitan Chapters will, we imagine, find such an announcement fairly inconceivable. We will venture to suggest that it would be very good "business" to put two and two together and, in the light of Mr. Atkinson's admirable paper on the height and orientation of buildings, published in our last issue, and the filing of plans for the Singer Building, which is to rise 593 feet into the air, consider whether some practicable way cannot be devised by which the erection of "high buildings," except upon a limited area of the centre of each block, may be absolutely prohibited. If we must finally adopt the system of Babylonian terraces, the sooner we do so the better it will be for the sanitary condition of dwellers in the metropolis.

THANKS to some one's thrift and good sense, New York City, or rather the National Government, has taken advantage of the building of the subways so as to increase the usable real estate that falls within the metropolitan area. By building sea-walls and filling in behind with the spoil from the tunnels, the area of Governor's Island has been, or will be, practically doubled, and the success of this undertaking has prompted two other bodies, the municipality itself for one and Columbia University for the other, to attempt something of the same kind, hoping to utilize the material which must be taken from the new tunnel works when they are taken in hand. Columbia University, whose students are practically without a playground, is seeking to obtain permission to create a playground, to the west and abreast of the University buildings, by filling in behind a sea-wall, carried out

as far into the Hudson River as the established bulkhead line will permit. Upon the territory so created, it is proposed to erect a large stadium enclosing an "athletic field," flanked upon either hand by smaller playgrounds to be used by certain preparatory schools, both public and private. The scheme is to treat the ground architecturally, with landings, water-gates, stairs and other features which shall make the group a fitting adjunct of the fine University buildings on the hillside above and a not unseemly neighbor for the Grant Monument nearby. The announcement of the scheme, whose execution will call for the outlay of over a million dollars, brings to light the fact that Dock Commissioner Bensel has been considering the possibility of widening Riverside Park by filling-in to the bulkhead line the entire distance from Seventy-second to One Hundred and Thirtieth Street, a length of waterfront now unavailable. The concurrence of both these schemes would seem to make their execution all the more practicable. The broaching of this riverain playground project makes all the more understandable the University's anxiety that all the now unoccupied land to the west of it—the site of a Revolutionary battle—should be bought by the city and added to Riverside Park.

THE factor that makes so long a stretch of waterfront useless for all merely utilitarian purposes is not the presence of the park, but that of the tracks of the New York Central Railroad along the very brink of the river and over which trains are constantly passing. The country is old enough now, and we have had enough difficulties of various kinds in connection with riparian-rights, for some one with a constructive mind to try and make the powers that be take a fair look ahead into the future and see if there be not some practicable way of preventing the evils we are carelessly drifting into. Theoretically, since this is a free country, it should be the privilege of every citizen to pass out of the country at any point it may please him to select. Practically this is no longer possible, since no inconsiderable extent of the country's boundaries, so far as sea-coasts are concerned, has passed into private ownership, and at the rate that sea-shore property is being acquired by those who are rich enough to maintain seaside residences for occasional use, it will not be very many years before the millions will find themselves practically debarred from sight and enjoyment of salt water in its natural state, and when that time comes we do not believe that the people will allow such condition to continue. Fancy the sort of socialists that such a condition would make out of the thousands of Westerners who would vainly seek the sea, as they now do yearly with some success! What has happened in New England, along the north and south shores of Massachusetts Bay, should be a lesson. Little by little, the shore lands have been bought up by wealthy "cottagers," and all of a sudden the natives, who had always enjoyed access to beach and water, have found themselves shut out from them by the laws of private ownership.

THE National Government, for the sake of protecting its people in their rights, asserts sovereignty over the waters within a league from shore, and it would be an admirable and justifiable thing if, for precisely the same purpose, it or the governments of the sea-coast States should assert a similar sovereignty on the landward side of the shore-line for a distance of, say, at least five hundred yards. A National or State sea-coast "reservation" would be in future years a public possession of measureless value, and it is a possession as well worth preserving as the Yosemite Valley, a sequoia grove, or Niagara itself, and it is just as certainly now at risk of extinction as they were, or are, not through absolute extinction, but through equally absolute private sequestration. Apart from the personally and intentionally selfish action of the private owner, the public rights are being unintentionally absorbed and wasted by those railroad corporations which have built and operate the various "shore lines," delightful roads for the traveller, but hated with a deadly hatred alike by the would-be "cottager" and the native who would like to have free access to his sea-front. A proper littoral reservation, within whose limits the right of private ownership could only be exercised so as not to preclude altogether public enjoyment, would be a most civilized and sensible undertaking for any government to set afoot.

IT is a great pity that architects have such a knack and passion for needlessly putting themselves in the wrong, as the public looks at things. For a long time past, the builders and architects of New York have felt that their interests suffered because of the antiquated provisions of the existing building-law, and so have urged its revision with much insistence. Recently, the Board of Aldermen took the matter in hand and appointed a commission to take charge of the revision—a commission that was fearfully and wonderfully compounded, since it was to consist of one architect, one engineer, one bricklayer, one carpenter, one doctor, one plumber, one sanitary engineer and a few other single representatives of sundry callings, evidently picked out with the idea of conciliating the trade-unions. It was patent that this was not the proper sort of body to charge with so important and delicate a task, and the four architectural societies of the city very properly united in protest and recommended that, in place of the membership suggested, it should be made to consist of three architects, two engineers, two members of the Master Builder Employers' Association, one member from the staff of the Building Bureau and one lawyer. The make-up here suggested is good, although we think the fire-underwriters and electrical engineers should have representation also. But why should it have been found advisable to notify the aldermen that "unless a thorough revision of the Code undertaken by such a commission as we propose can be provided for, we are of the opinion that the Code, as it is in its present state, had best be permitted to stand"? As no arguments are adduced, the aldermen, and the public, will note only that the architects demand more places than they accord to other people, and that, if they cannot get them, they will then decline to help the doctor and the plumber and the bricklayer to better the existing state of things. The petitioners are right enough in their appeal, but most unfortunate in the

manner of presenting it to super-sensitive officials.

WE fancy that a good many persons will find unusual, if not altogether unprecedented, the bestowal upon Sir Lawrence Alma-Tadema, of the Royal Gold Medal for the current year. There are few more honorable distinctions in the realm of art than this medal, and it has been a matter of no little heart-burning that Her Majesty and, now, her son have so often been advised to bestow it upon a foreigner rather than a British-born recipient. There is no exact rule or method governing the award, and this makes its bestowal a matter of much interest and preserves to the bit of gold so real an aroma. In a general way, it is understood that the Medal shall be awarded to a foreigner frequently enough to establish the fact that the Royal Institute of British Architects takes notice of all that is done in architecture anywhere and, inferentially, singles out at each occasion the individual really most deserving of the honor. The second Royal Gold Medal, awarded in 1848, went to a foreigner, Luigi Canina, an Italian architect and archæologist, and since that time it has been awarded nine times to Frenchmen, four times to Austrians, thrice to Germans, twice to Italians, twice to Americans (United States) and once to a Hollander. We hardly know whether to consider Sir Lawrence, the recipient of the fifty-seventh medal, as an Englishman or as the second Hollander. With the exception of Lord Frederic Leighton, who received the Medal in 1894, he is the only painter who has been so honored, and we cannot help feeling that, great as his reputation and deserts are, his selection is difficult to account for, while Lord Leighton, to his own individual merits, could add the courtesy claim of holding at the time, as President of the Royal Academy, the primacy of English Art.

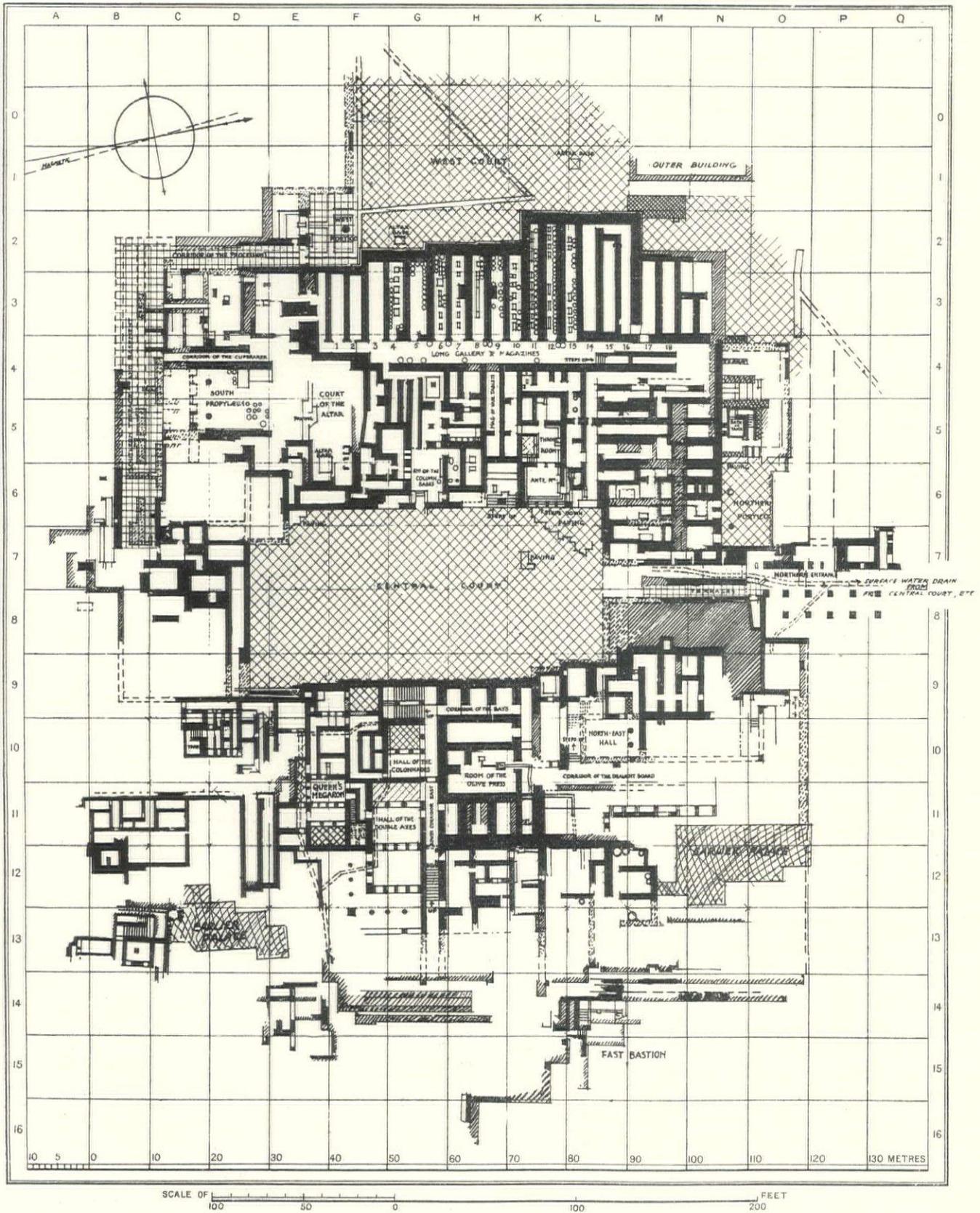
IN scanning the list of fifty-six names—names which every one would readily grant are really distinguished—we have been struck by one peculiar fact. In very nearly half the cases the honor has been bestowed in recognition of work done not as a practising architect, but as a writer upon architectural subjects. The medal is thus shown to be a token of gratitude for services rendered to the entire profession and the world of art, rather than a personal decoration indicative of individual prowess as a creative artist. Some of these men, Schliemann and Lanciani, for instance, never were architects, while others like Fergusson were architects so slightly that no one knows what, if any, buildings they ever created, and others like Viollet-le-Duc and Daly were such indifferent practitioners that one hardly thinks of them as actually fee-hunting professionals. Besides those just mentioned, the list of Medallists enumerates Hittorff, Owen Jones, the Rev. Robert Willis, Texier, Sir Henry Layard, the Marquis de Vogüé, Aitchison, Choisy, Cockerell, Lesueur, Wyatt, Ferrey, Sharpe, Penrose, Newton—names all rather connected with the literature than with the practice of architecture. The bestowal of the Medal on George Godwin, in 1881, long time editor of *The Builder*, shows that even the patient and tireless labor of the conductor of an architectural weekly journal has been found to deserve grateful recognition.

THE PALACE AT CNOSSUS.

OUR knowledge of early building in Greek lands has recently been greatly increased by the excavation of the Mycenaean palace at Cnossus in Crete. When Schliemann astonished the world with his discoveries at Tiryns and Mycenae, archaeologists for the first time became aware that great palaces were built in Greece hundreds of years before the historical Greeks

as Mycenae itself, but the name "Mycenaean" is retained for convenience's sake to describe the period.

It has long been known that there were remains of an early period on the site of Cnossus, a town lying about three miles from the north coast of Crete and midway between its eastern and western extremities. Pieces of wall could, in fact, be seen protruding from the soil, but the Turkish owners of the land



SKETCH PLAN OF THE PALACE OF CNOSSUS.

had developed as a people. Because the civilization to which these buildings belonged seemed to centre about Mycenae, the name Mycenaean, which it has since retained, was given to it. Recently evidence has been found which proves that Crete has quite as good a claim to be the source of Mycenaean civilization

forbade excavation. Schliemann and others tried in vain to get permission to dig, and it was not until Turkish rule had come to an end in the island that Mr. Arthur Evans got possession of the whole site and could carry on his excavations on a large scale. The result of his work has been the uncovering of the

largest and richest palace of the Mycenaean period yet found.

Figure 1, taken from one of Evans's reports, gives a good idea of the ground plan of the building. Its walls were built of heavy blocks of gypsum about three feet high for the first course, then above this a rubble wall with its surface covered with stucco. In the interior of the building this stucco was painted with ornamental designs such as rosettes, or with scenes from everyday life, or, again, with landscapes, so that the rooms and corridors must have presented a brilliant appearance. These wall-paintings, as might be supposed, furnish valuable evidence for the reconstruction of the life of the people of their time.

In the middle of the building was a great court, about which the palace was built. It measured about 91 by 228 feet, was paved and open to the sky. In general the rooms lying to the west of it were store-rooms, living-rooms and what might be called state-rooms; while those to the east included the quarters of the women and probably the sleeping-apartments. This was the general arrangement of the building.

Beginning at the southwest corner of the palace was a corridor about 11 feet wide which turned the corner to the east and ran as far as the great central court. The walls on either side were painted with life-size figures marching in a procession. Only the feet are still preserved, but one figure could be reconstructed from fragments found upon the floor. This corridor was paved with limestone, with a border of blue slate once covered with red stucco. From this corridor one could enter the long series of rooms on the ground floor, or mount a broad stairway to the suite of large rooms on the second floor. These last-named rooms must have been the largest and finest in the palace. They were, in fact, the state-apartments, and the remains of rich decoration found below them must have come in large part from these rooms.

On the ground floor at the western side of the building is a series of eighteen long, narrow store-rooms. They could be entered only from a corridor which passed along their eastern end. These rooms were filled with *pithoi* or large jars in which grain, wine, oil and other things had been stored. An interesting feature in them was the line of rectangular cists found in the floor of several. These cists, which were constructed of slabs of stone with close-fitting joints, once held oil and perhaps wine, and were covered with wooden lids. Thus the servants of the palace could secure oil or wine without having recourse to the large jars. Underneath these cists a most interesting discovery was made. It was found that below them was a second set, very carefully made, and so constructed that they could not be opened without taking up part of the pavement. Almost all of these were filled with rubbish, but fragments of gold-foil found in them proved that their contents must once have been of value. After this discovery it was decided to take up the pavement of the corridor from which the magazines were entered, and a similar series of twenty-seven more receptacles was found. These, too, contained bits of gold-foil, and pieces of crystal and faience for inlaying. It seems likely, therefore, that here the treasures of the palace were once kept, but that they were removed by their owners before the destruction of the building.

An interesting room on the ground floor is the throne-room, entered through an antechamber from the northwest part of the great court. On the south side of the room is a sort of tank or cistern with steps leading down to it; and along the edge of this tank and on the north and west sides of the room are stone benches. In the middle of the north wall is a stone throne with a high leaf-shaped back. The seat, which was about 8½ inches above the level of the benches, was hollowed out to suit the

form. The back of the throne was painted with an elaborate pattern in red, as was the front below the seat. The benches and the pavement of the room were once covered with red and white stucco and the walls adorned with landscapes. Many fragments of an especially rich character were found here and there in the room to attest its importance in the building.

The rooms on the east side of the great central court are especially interesting because of the light they throw upon the arrangement of the upper stories of the palace. Part of a second story was actually found still in place, with stairs leading to a third story and indications of a fourth. Nothing like this has been found anywhere else, or even supposed to have been possible in this early age.

Because of these upper stories light had to be introduced into the inside rooms by means of light-wells.

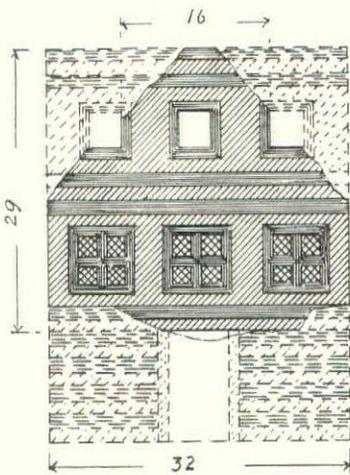
One of the most surprising features of this part of the building was the drainage system. There was a large stone conduit about three feet high and half as wide covered with slabs, probably used chiefly to carry off surface rain-water. But into it opened several stone shafts which ran up through the building to the roof. Connected with these shafts were latrines arranged with flushing pipes so that they might be flushed either with rain-water from the roof or by hand. The height of the shafts made ventilation possible.

There are two other features of the palace which deserve mention and those are the *agora* and the theatre. West of the palace is a large paved court, and along the west wall of the building and facing this court is a row of stone benches. It has been suggested that here was the meeting-place or *agora* of the people of Cnossus, and here the king was wont to address his subjects. A similar paved area was found lying west of the Mycenaean palace of Phœstus in southern Crete, but there rows of benches like the seats on a baseball field closed the court at its northern end.

Northwest of the palace and at a short distance from this court was found what seems to be a sort of theatre. There was a rectangular paved area about 33 by 42 feet with seats on three sides. On the east side there were eighteen rows, on the south six and on the west three. A paved footway crossed the area from east to west and another ran from the western end diagonally across part of the southern seats. The principal entrance was from the south. There can be no question as to the general character of this building, which may, in fact, be called the earliest extant example of a theatre. It was not well suited to bull-fights, the favorite amusement of the ancient Cnossians, so that the uses to which it was put must remain conjectural.

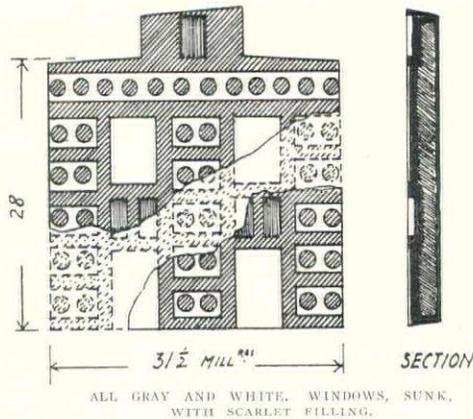
Some idea of the way the palace looked when still standing may be had from an interesting series of faience plaques found in the course of the excavations. They were once probably attached to a chest and they represent houses of two, three and four stories with one or two doors and windows of four or six panes (Fig. 2). Such houses naturally indicate a long period of civic life. Of course, the palace was a much larger building than any represented on the plaques.

A theory has been advanced by Evans that the palace is really the famous labyrinth known to be at Cnossus. He points out that the double axe, the sign of the Cretan Zeus, is found everywhere in the palace; that the double axe was also sacred to the Carian Zeus Labraundos, so called from the Carian word *labrys*, meaning axe. He argues, therefore, that *labyrinthos* is connected etymologically with *labrys* and means the palace where Zeus was worshipped. The great number of rooms in the palace gave rise to the later meaning of the word labyrinth. This is interesting and possible, but by no means certain.



DARK GRAY GROUND, WITH CRIMSON STRIPES AND WINDOW FRAMES. UPPER WINDOWS OPEN RIGHT THROUGH LOWER WINDOWS, SUNK, WITH SCARLET FILLING.

MEASUREMENTS IN MILLIMETRES



ALL GRAY AND WHITE, WINDOWS, SUNK, WITH SCARLET FILLING.

SECTION

Who these people were who lived at Cnossus for at least a thousand years prior to 1200 B. C., or what language they spoke, we do not know. We call them "Mycenæans" and the ancient Egyptians seem to have called them "Keftiu." Many tablets in their language were found in the palace, but these cannot as yet be deciphered. Whether they were Greeks or not, we cannot now say; but at least they were a people who attained a high degree of civilization at an early time, and from them much seems to have come down to the Greeks of the historic period.

WILLIAM N. BATES,

Director at American School of Classic Studies, Athens.

#### RAILROAD STATION ROOFS.<sup>1</sup>

THE roof of New-street Station, Birmingham, with maximum span of 212 feet, may be regarded as the prototype of what is here termed the Charing Cross type. The Birmingham roof, designed in 1851 by Messrs. Fox & Henderson, with the assistance of the late Mr. R. M. Ordish, is a magnificent specimen of early engineering skill in serviceable condition. About the same time Mr. Berkeley built the Fenchurch-street Station roof, with the span of 106 feet, and presenting the praiseworthy feature of duplicate tie-bars, to which incidental reference has already been made. Charing Cross and Cannon-street Stations followed in quick succession, and among other well-known examples of kindred design may be mentioned the roofs of London Bridge Station (L.B.S.C.R.), Blackfriars Station, London, and Lime-street Station, Liverpool. Two of these roofs are worthy of special remark, for the reason that the main tension members were duplicated. The Blackfriars Station roof, now taken down, was of excellent design, and the employment of duplicate tie-bars gave that element of security which is so much to be desired. The extension of the Lime-street Station roof, completed in 1875, has a span of 191 feet, and is a very fine example of practical construction which it would be difficult to improve upon in the present day. Apart from its other meritorious features, the roof is quite safe from any accident such as that which overtook the unfortunate structure at Charing Cross, as with four solid-forged links in each length of the main tie, one or two bars in every link might break without involving the collapse of the roof. Another form of design, generally resembling that adopted at Charing Cross, although differing in points of detail, is represented by the roofs of Victoria Station (S.E. and C.D.), London, the Central Station, Liverpool, and Queen-street Station, Glasgow. But in these three roofs single tie-bars are relied upon to take the thrust of the principals; which, in view of the fact that the spans measure 129 feet, 160 feet and 170 feet, respectively, cannot be regarded as a satisfactory feature. The foregoing are only a few of the numerous roofs that have been built in the United Kingdom of design similar to that of the Charing Cross roof, and it is a significant and reassuring circumstance that the latter is the only structure of the kind that has developed any serious defect.

The Paddington Terminus, London, may be mentioned as the first railway station to be covered by wide and lofty spans not requiring the employment of tie-bars. The roof was built from the designs of Brunel about 1856, and includes three arches, a central span of 103 feet 6 inches, and two side spans of 70 feet and 68 feet respectively. King's Cross Station, London, was really the first railway station to be arched over, but the original structure consisted of timber ribs. These were erected in 1851, the two spans having been replaced by wrought-iron ribs of similar design in 1869 and 1870 respectively. St. Pancras Station, London, built in 1867 under the direction of Mr. W. H. Barlow, F.R.S., from the designs of Mr. R. M. Ordish, represents a type that may be considered as arch or girder construction according as the thrust of the main rib is resisted by abutments or by horizontal ties. At St. Pancras, the clear span of the roof is 240 feet, and the ribs are connected by horizontal ties below rail level, but the thrust is almost entirely resisted by the abutments. Two noteworthy examples of similar design in America are the roof of the Pennsylvania railroad station, Pittsburg, erected in 1902, and the Baltimore Armory, built in 1904. The former structure has a span of 255 feet, a height of 110 feet, and is of the three-hinged type, the ends of the main ribs being connected by horizontal ties between the ends of the main ribs. It is interesting to note that when the ribs of a roof such as these are adequately tied, the whole construction really constitutes a bowstring-girder of gigantic proportions, and when applied to a railway station the public are actually inside the girders, and

walk with perfect safety upon the bottom chords, which rest upon solid ground, instead of being at the mercy of girders mounted high above their heads on lofty walls, as in stations of the Charing Cross and some other types. St. Enoch's Station, Glasgow, with a span of 198 feet, and the Central Station, Manchester, with a span of 210 feet, are fine examples of similar construction, except that they are built as genuine arches in which the thrust is resisted entirely by the abutments. While referring to arched roofs of wide span, the roof of Olympia in London should be mentioned as the finest example of the type in which the main arch, with the span of 170 feet, and two side arches, each of 40 feet span, are connected so that the whole forms a compound structure. This roof was built in 1887 from the designs of Mr. A. T. Walmisley and Mr. Max am Ende as joint engineers. The manner in which the horizontal thrust, the arch, and the horizontal wind-pressure are taken up is distinctly novel. The whole of the gallery on each side acts as an abutment, and as the columns are fitted with ball-and-socket joints at top and bottom, these members are always under axial load, whatever may be the wind-pressure or the irregularity of the gallery loads. Arched roofs, such as those mentioned above certainly represent the safest forms of construction for long-span roofs, because their stability does not depend upon the strength of a single tie-bar, or even upon ties in duplicate. They afford ample space for traffic without intermediate supports, and the chief objection to their employment is the heavy cost involved in construction.

To secure unobstructed space in railway stations at the lowest possible cost is a problem that has exercised engineers for many years past. One of the most successful attempts in this direction was made more than 40 years ago by Mr. Jacomb Hood when designing the roof of the Victoria terminus of the London, Brighton and South Coast Railway, where continuous girders, extending from side to side of the station with one line of intermediate columns, support small roof trusses of the queen-roof type. The use of girders in this manner makes it possible to place the supporting columns wherever they may be most convenient and free from the risk of injury from derailed rolling-stock. Two stations in Glasgow are spanned in a somewhat similar manner by deep latticed girders, the more remarkable of these being the Central Station, where the transverse girders are 213 feet long by 20 feet deep, and carry ten ridge-and-furrow roofs of 35 foot span. Apart from their other advantages, roofs of this character do not involve great risks, for the failure of the tie-bar or any other member in one principal of a small span would not be followed by serious consequences, and possibly would not even cause the failure of the truss affected.

Indications are not wanting in the present day that the fashion for monumental roofs is distinctly on the wane, so far as railway stations are concerned. In several of the most recent designs for such roofs small spans have been adopted, and it is probable that the tendency to reduce initial expenditure, and the disadvantages of huge spans, will finally lead to the practice of simply covering the station platforms, leaving openings above the lines for the free escape of steam and other destructive gases from locomotive engines. The roof of Marylebone Station, London, is a good example of modern steel construction. The platforms, lines, and promenade are covered with light steel roofing, carried by built-up stanchions and arched girders of the Linville type. The total width of the roof is 155 feet, made up of two trussed spans of 50 feet and 40 feet respectively, and a 15 foot cantilever span. This roof is of unpretentious character, and owing to the elegance of its construction, and the absence of high side walls, the station is one of the most cheerful and best lighted in the Metropolis. The new roof under construction in connection with the extensive widening operations at Victoria Station (L.B.S.C.R.), London, is an admirable illustration of sound engineering design, complying alike with the requirements of traffic and the safety of the public. The total width covered, from Buckingham Palace-road to the South-Eastern and Chatham Railway, is about 320 feet, and the roof is divided into five spans of varying width and height. The main principals are spaced 16 feet 8 inches apart. Every third principal is carried on one of a series of cast-iron columns, spaced 50 feet apart, and the others on latticed girders connecting the columns, the latter being arranged along the centre lines of the platforms, where they are safe from accidental injury. The following are typical dimensions of the chief members of the roof trusses: The main rafters are formed of two 18 inch by 3 inch channel-bars; the main tie-bar consists of two 6-inch by 3-inch tie-bars in each end-length, and two 4½-inch by ½-inch flat bars in the centre-length; in the bracing the struts consist of channel and angle bars of different dimensions, single or dupli-

<sup>1</sup>Extracts from a lecture by Mr. W. N. Twelvetrees, M. I., Meech. E., A.M.I.E.E., before the Manchester University Engineering Society.

cate according to positions; and the vertical tie in the centre is a 1¼-inch diameter eye-bar, provided with a screwed turn-buckle for purposes of adjustment. This roof is being erected from the designs of Mr. Charles L. Morgan, M.Inst.C.E., to whom the author is indebted for the foregoing particulars. A design presenting features of decided novelty is that prepared for the Marine Station, Dover, in connection with the proposed widening of the Admiralty Pier, to provide adequate accommodation for the increasing Continental traffic of the port. The station is to be 800 feet long by 200 feet wide. Three rows of cast-iron columns spaced 26 feet apart, centre to centre, carry the roof structure, the outer rows each supporting one end of the transverse lattice girders, with the span of 100 feet, which meet at the centre row of columns placed in the middle of a platform 60 feet wide. These girders are 10 feet deep, and are divided by vertical struts into panels 10 feet wide, having a double system of diagonal ties, the height from rail-level to the under-side of the girders being 20 feet. The columns are continued above the bearings of the girders and incorporated into the ironwork of the double cantilever-roof principals, which form 25 foot roof-spans, and somewhat resemble the cantilevers of the Forth Bridge in outline. The cantilever arms project 12 feet 6 inches, and their ends carry the roof-gutters which discharge through the centre row of cast-iron columns. One side of each roof-ridge is covered with sheet-copper laid over felt and boarding, and the other side is glazed. All the purlins are of timber, a material selected instead of iron, owing to its immunity from injury by the steam and gases emitted from locomotives, and for the same reason wrought-iron was specified instead of mild steel for the roof-work generally. The New Marine Station was designed for the Dover Harbor Board by Mr. A. T. Walmisley, M.Inst.C.E., by whom particulars and drawings have been furnished for the purposes of this paper. The three types of design described above are sufficient to demonstrate the reaction that has set in against roof spans of exceedingly large proportions; and the drawings for the new station at Charing Cross serve to emphasize the same characteristic. On the recommendation of Mr. Percy Tempest and their consulting engineers, the railway company decided in December last to remove the existing Charing Cross roof, and to substitute a new roof of modern type at a lower level; and the work of demolition is now nearing completion. The new roof is designed on the "ridge-and-furrow" system, the ridges running at right angles across the station. The principals will be carried by latticed girders extending from side to side of the station; and these girders will be supported by the lowered side walls and by two lines of columns placed in the middle of the platforms. The total height of the roof will not be more than about 35 feet to 40 feet above rail level, and as the side wall will be considerably reduced in height, abundant provision will be made for the admission of light, to say nothing of the other manifest advantages of the new structure. Mr. Tempest's reason for adopting this type of design was, that it will be possible to construct the transverse girders in such a way that the columns may be moved within reasonable limits to suit any rearrangement of the platforms that may become necessary, and thus to save any alteration to the structure of the roof in case widenings should be undertaken on either side of the present station. At the same time the new roof will conduce to the safety of the public, and give increased facilities for maintenance, for the direct escape of steam and corrosive gases, and for the dispersion of sound-waves.

#### LONDON'S NEW BUILDINGS.

THE new War Office has lost its outer garment of scaffolding and we may now examine it. Curious it is that, in spite of half a century's ridicule lavished upon the dome and "pepper-boxes" of the National Gallery, that same style of architecture should return to us. The new Admiralty rejoices in a dome, St. Paul's in miniature, and pepper-boxes; the new War Office has only the latter, two-storied square turrets upon the circular base of the rounded corners of the building. The principal doorway is mean; the "ornament" in the semi-circular pediment, the royal arms! A row of columns upon the first story is presumably an effort to bring the new work into harmony with Inigo Jones's fine fragment hard by.

Now may we not wonder why Jones's plans for Whitehall Palace were not utilized, at all events for the façade? Surely the interior of the building might have been adapted to modern uses? It is a pity. The Banqueting Hall stands out nobly as a dignified building—grand in its simplicity. With the exception of the Foreign and Home Offices which are also excellent specimens of simple dignity, the whole of the Whitehall buildings

leave London where it was—a city of mere scraps architecturally.

Along the Strand hoardings still prevail. We wander up a street named Aldwych, between desert wastes. The Crescent is but a roadway. The Gladstone memorial is jammed against Wren's old church of St. Clement Danes, presumably that it may not be in the way of cars and omnibuses. The church of St. Mary-le-Strand is divested of so much pavement that it seems to have been shaved off on each side. A few trees would correct this; but trees would interfere with traffic. Alas, will the improvement of London never be a properly organized scheme? Paris years ago determined how to develop itself; London is all haphazard—tinkering; it is characteristic of the British race. In France everything is a well-studied organization; in England, the last new idea of the newest in office, just what may be best for the time being. However, after foreign travel, all Englishmen and women rejoice when they return to their haphazard manners of luggage management. In France, everywhere on the Continent, half an hour often does not suffice for claiming luggage. Here it is chucked out of a van, we poke it with our umbrellas, a porter picks it up, it is lifted onto a cab and off we go in three minutes! And the marvel is we never lose it—we may miss it, but it always turns up. Blessed methodless land! But luggage is not architecture. S. BEALE.

#### "SLOWING-UP": RESTRICTION OF OUTPUT.

A REPORT has been prepared by Dr. J. H. Gray on the "Regulation and Restriction of Output" in the United States and Great Britain. The following example is given as an illustration of the methods of the British workman:

One of the most interesting cases investigated was that of a co-operative society organized to do work as a building contractor. This society, organized nearly a decade ago, and having about 600 members, a share capital of £4,500 and a loan capital of £1,000, undertook to find the capital and to construct about 50 working-men's cottages for a group of its own members who were organized into another co-operative society for the sake of holding and occupying these dwellings in joint ownership. The contracting society was to have 12½ per cent. above the actual cost of labor and materials for finding the capital and doing the work. The cottages were to be built in blocks of from seven to nine dwellings, each dwelling or cottage to consist of six living-rooms, a scullery and other conveniences—no basement, except for coal—a bath-room and water-closet upstairs and closet downstairs, and were to be constructed of ordinary London stock brick, 4,350 to a rod. Nearly all the members of the society for whose use the buildings were to be constructed were also members of the co-operative society which took the contract. These buildings are situated just outside of London. The first block of nine houses was begun and the workmen were dillydallying so much that a general controversy arose between the contracting and the tenant society. After a heated controversy the foreman and one or two of the ringleaders of the workmen were dismissed. The tenant society obtained a release from the contract after the first nine houses were substantially complete except as regards the plastering. Then the tenant society itself, largely with the same workmen, but with a new foreman—a man who had previously been a union man and now had become a small contractor—undertook to build the second block of seven houses. The workmen demanded that the new foreman join the union. This he refused to do, and after a while induced the workmen to proceed with the second block of seven houses. On the second block of houses the foreman received £2 10s. per week as a working bricklayer and £1 as foreman. The bricklayers on the second block of houses were paid 11d. an hour, whereas on the first block they were paid 10½d., which was the standard union rate. They worked nine hours per day. The brickwork in each house amounted to nine rods.

The second block of houses was built immediately adjoining the first, according to the same specifications and of exactly the same material, and largely by the same workmen. The brickwork of the first series cost £86 per house and that of the second series £43 per house. Deducting the cost of the scaffolding, estimated at 5s. a rod, and two-fifths of the remainder on the first series for laborers who received 7d., against 10½d. for the bricklayers, and seven-eightieths of the remainder on the second series, where the laborers received 7d. against 11d. for the bricklayers, and remembering that the bricklayers worked nine hours a day, an easy mathematical calculation leads to the conclusion that the average number of bricks laid per day on the

first series of houses was about 307, and on the second series of houses was over 648.<sup>1</sup> That is, this same body of workmen working for a co-operative society of which they were members and on exactly the same kind of work, under similar conditions, laid twice as many bricks per day on the average on the one set of houses as on the other. A somewhat larger force was employed on the first series, there being regularly eight bricklayers and eight laborers, whereas on the second series there were but four laborers and four bricklayers. In a discussion with the workmen on the occasion of the completion of the second series of buildings they at first stoutly denied any restriction of output, but afterwards acknowledged that in the building trades at least there was a feeling that the men did not get as large wages as they deserved; that striking did not pay; and that a restriction by general understandings was the policy adopted to get even with the builders. When asked plainly why they carried the policy so far as to practice it when building for themselves, their answer was that they could not afford to do more work when building for themselves than when building for private contractors, or else they would give their case away. They further admitted that it was the policy in that district at least for the different workmen to do a uniform amount of work. It took an hour or two to get this admission out of them, but the leading carpenter and also the leading joiner, both of whom had been especially prominent in the controversy between the two societies, finally admitted that, while they had no formal rule requiring uniform wages or a uniform amount of work, practically speaking they enforced both, for the simple reason that none of them proposed to be driven, and that, if the better men set a pace that the less efficient were unable to keep up with, the later would drop out of the union and would be ready to act as "blacklegs," and thus injure the union when any controversy should arise between the employed and the employer. After much time spent with the president of the co-operative society which owned the houses (he was the chief factor in solving the difficulties between the two co-operative societies), and also with the foreman and workmen on the second series of buildings, the figures for the number of bricks per day on the two series were worked out and submitted in writing to this foreman. In reply he writes: "I find you are quite correct in your figures *re* brickwork in the — houses. We are building the brickwork of the second series at half the cost of the first. The sizes of the bricks we use are 9 by 4½ by 2½ inches. The outside walls are 9 inches thick, the main party-wall between houses 9 inches, the walls dividing rooms are 4½ inches thick; the foundations are one course 8 inches, one 14 inches thick under the 9-inch walls, and 14 inches and 9 inches under the 4½-inch walls. It takes longer to build facing work than inside—I should say about one-third. We work Flemish bond and use greystone lime, one-third (one part) lime to three parts sand."

Although, as will be understood from the foregoing statement, there is much calculation even in this case, the facts, while not capable of accurate statistical determination, are sufficiently plain to throw a flood of light on London building methods. It ought to be remarked in regard to the foreman on the second series of buildings that, although he had been a member of the union before he became a small employer, or pieceworker, as they call it in England, he is clearly of the opinion that there is restriction of output, and not only refuses as foreman to join the union, but expresses the opinion that the union is injuring the country by slowing up on the rate of work. It was also learned in this connection from the president of the co-operative society, the foreman of the buildings and the chief plumber on the second series (the chief plumber on the first buildings was dismissed for dillydallying) that the cost of the plumbing in the house was reduced more than 42 per cent, the major part of which was saved in the cost of labor, although the foreman stated that there had been a great deal of material wasted on the first series. The plumbing convenience in the two series of buildings was absolutely identical. According to the foreman, the previous foreman had used very much more water-pipe than was necessary in reaching the bath-tubs. It seems that the shaking-up that the different sets of workmen of these buildings got affected the whole working force. While figures could not be obtained for the carpenterwork, painting and plastering, it was the universal story of the men doing this work (and they were largely the men who did the work on the first

series) that the cost had been very greatly reduced on the second series.

Although it may be true that co-operative building is not typical in general of building by private contractors, after interviews with nearly every workman on those buildings, the president of each of the co-operative societies involved, and the foreman, the conclusion was reached that there was great and deliberate restriction of output in the various branches of the work, and that, too, under circumstances which in and of themselves, in the self-interest of all the parties concerned, would have led to the greatest possible economy of time and the putting forth of the highest effort consistent with health and comfort. The only explanation for the unquestionable facts in the case is that the men were doing on this first series of buildings what they were accustomed to do in large measure on public works and under independent contractors.

## COMMUNICATIONS.

### THE HEIGHT-LIMIT IN BOSTON.

TO THE EDITORS OF THE AMERICAN ARCHITECT:

Dear Sirs:—Apropos of my lecture on "The Orientation of Buildings and of Streets," published in your last week's issue, one of the practical results of my work has been the new regulation regarding the height of buildings in "District B" of the City of Boston. A flat limit of 80 feet had been imposed upon this district by the commission appointed by the Legislature of 1904. The Legislature of 1905 gave the commission authority to exempt certain portions of District B, and in such portions to allow buildings to be erected to a greater height than 80 feet, but not exceeding 100 feet. The commission asked for suggestions and the result was that they adopted mine, which was to allow buildings exceeding 80 feet in streets of 64 feet in width and over, the height of such buildings not to exceed 1¼ times the width of the street. The scientific law, limiting height by a slanting line, instead of by a flat limit, we have not yet succeeded in getting adopted, as the mind of the average legislator is too dense to permit of his understanding a simple geometrical proposition. Yours truly,

WILLIAM ATKINSON.

### VENTILATING NEW YORK PUBLIC SCHOOLS.

TO THE EDITORS OF THE AMERICAN ARCHITECT:

Dear Sirs:—*The American Architect* of January 27, 1906, had an editorial note criticising the ventilation in the New York City public schools, and from the wording of said article it is quite evident that no attempt was made to verify the statements made in the article, the result being that a false impression is given, which casts discredit on the city and causes parents to be afraid to send their children to school.

The article was, without doubt, based upon the letter sent to *The New York Times* by a graduate of said training-school, who was so anxious to create a sensation that she omitted part of the truth.

The facts of the case, which can easily be verified by a visit to the building (Public School 159, 119th Street, near Third Avenue, Manhattan), are as follows: The building has been occupied for several years by a teachers' training-school and a primary school in connection therewith.

Out of the thousands of young ladies trained in said building the Principal knows of only ten deaths since the school opened. Of these ten, two died during the summer vacation—one from accident (having fallen to death), and one from fever. Of the other eight, five were in the class of the aforementioned author, and as they are reported by her to have died from consumption all in one year, it is reasonable to suppose that they got their consumption from contagion and, from the absence of any other reported consumption deaths among the students of other years, it is almost unquestionable that the sanitary conditions in said school are so good that not only did said students not get their disease in said school, but that others were prevented from contracting the disease from the sick ones.

As to dust. If volumes of dust really soared to the fourth story windows as reported, how would permission to open the windows better the conditions? Would not the dust enter the windows more easily than through the small air-spaces between the parts of heating stacks, through blower, ducts and wire screens?

The writer visited this building on the Monday morning after the letters appeared in *The Times*, and found a handful of news-

<sup>1</sup>Assuming that in neither case did the amount properly chargeable to superintendence (that is, in the case of the latter series of houses, for instance, the £1 per week allowed to the foreman in addition to his pay as a bricklayer) enter into the total cost of the brickwork.

papers lying in the courts *but no papers or other refuse* on the screens before the three fresh-air intakes.

Dust, like the poor, we have with us always, whether on street or indoors, else why should the good housewife need a broom and duster? But there is no visible dust entering the class-rooms in said building and the dust on the desks is mostly dust from the scuffling of feet of the forty to fifty pupils in each room and from the crayon used on blackboards.

It is an actual fact that the open windows permit the entrance of much more dust than is brought in by the warmed fresh air, delivered in quantity equal to thirty cubic feet per minute to each pupil, by means of blowers located in cellar. The air is taken in from four to eight feet above the pavement of the courts at a distance of at least sixty feet from street through wire screens, is heated to a temperature of from sixty-five to seventy-five degrees Fahrenheit to suit the outdoor conditions, and is delivered to the rooms through galvanized iron ducts and flues, with wire screens in the class-room openings. The vitiated air is forced out of the rooms through other flues gathering together into hoods above roof.

Several tests with Dr. Wolpert's testing device showed the amount of CO<sub>2</sub> present in the *vitiated* or outgoing air of the many class-rooms tried, to be about seven to eight parts in ten thousand, which is very little more than is found in the surrounding outdoor air.

Smoke tests tried in several rooms showed that fresh air entering near ceiling traveled across the room, dropped to level of pupils, and then swept back around pupils and into the vent outlet, and the air in occupied portions of rooms was entirely changed in from five to six minutes, as was shown by the entire clearing out of smoke from the breathing space in that time after smoke tests started.

The system of ventilation used is the same as in the best modern theatres, except that as the air sent into the school rooms is heated only to the room temperature instead of being heated, as is done in theatres, to double the room temperature, the school room air is not overheated and made lifeless; but whoever suggests the opening of windows in a modern high-class theatre? Such a one would be laughed to scorn.

In regard to filtering the air before sending it into rooms, while such a procedure is entirely practicable and is often done where even the ordinary dust brought in through open windows is a source of trouble, as in a library or a department-store, making much dusting necessary, yet the very considerable expense entailed in the filtering of air is so serious a question that in a school-room, where much more dust is made by the occupants than could possibly be brought in by the air, it is believed by the best engineers (and is so stated by Professor R. C. Carpenter, in his text-book, on heating and ventilation) that air filtering is inadvisable except in extreme cases.

As to taking air from so near the ground, it is sufficient to recall the fact that most of us, especially the school children, breathe air taken from a level lower than four feet whenever we walk or ride through our streets, and few of us filter such air before breathing it, yet it is a well known fact that persons who are out of doors constantly are the healthiest. Can the air at breathing level be so very bad?

The entire question of ventilation of our schools arose from the fact that the principals of our schools misunderstood the intention of a circular letter sent to them regarding the opening of windows when "plenum (forced) ventilation" was in use, and from the fact that the majority of the janitors in charge of the schools did not understand how to regulate, or did not appreciate the necessity for regulating, the heating systems so that rooms would not be overheated by the direct radiators in the rooms.

The janitors seem to have relied upon the automatic (thermostatic) temperature-regulating devices installed in all class-rooms, but not in halls, toilets, etc. Unfortunately, automatic devices are not able to meet all conditions which may arise and, owing to our very mild weather this winter, the unassisted thermostats have been unable to cope with the situation. The halls, etc., where the janitors should give personal attention, have been allowed to get up to eighty-five and ninety degrees Fahrenheit, whereas they should be kept at about sixty-five degrees. The entire amount of direct radiation in class-rooms has been allowed to remain in service, where one-half the surface should have been shut off, not being needed except in really cold weather.

The heat of the bodies in rooms, the heat of the steam bottled up in radiators when the supply of steam to said radiators has been shut off automatically by the action of the thermostat, the

heat of the sun beating into the windows and the heat from the overheated halls—all have acted to raise the room temperature from sixty-eight or seventy degrees Fahrenheit, at which the thermostat acted, to seventy-eight or eighty degrees Fahrenheit in many cases, and the *system* has been blamed, where, if it had been properly handled, everything would have been entirely satisfactory.

I do not blame the teachers for complaining under such conditions, and windows must needs be opened when temperature goes above seventy-four degrees Fahrenheit.

A second order was sent to the principals explaining that they did not go contrary to the rules governing them if they opened windows when *necessary*, but that such necessity should be at once reported to the Superintendent of School Buildings for correction. The system used in our buildings is not a patented system, but is the combination of direct radiation for heating and steel plate blowers delivering tempered air into all class-rooms for ventilation only. This is conceded by the most eminent engineers and architects to be the very best means of heating and ventilating school buildings.

In closing, I may add that the chief medical inspector of the Brooklyn Board of Health visited a school similarly heated and ventilated, and after careful study of the conditions there existing, he reported in favor of the heating and ventilating system which we are installing in all new buildings of more than four class-rooms.

I have also to refer to an article which appeared last November in several of the heating trade papers, dealing with heating and ventilating in this country as viewed by a prominent English engineer; wherein he states that he visited many schools and theatres in many cities during a recent tour of the United States, and that, in his judgment, the schools of New York are the best ventilated and heated in this country.

FRANK G. McCANN.<sup>1</sup>

[If we were disposed to be merely captious, we could suggest that the placing of the right of the inanimate contents of libraries and department-stores on a higher plane than those of school-children is quite as grave a sanitary solecism as it is to argue that, because children carry dirt and dust into class-rooms on shoes and clothes and create it out of crumbled chalk, it is quite immaterial how much more "matter out of place" is introduced by improperly installed ventilating devices. Further, we could point out that when, in the open street, we meet a dust storm we turn our backs to it and do not wilfully inspire all that our nostrils can gather. We are glad to have Mr. McCann's explanation, although he fails to satisfy us that the fresh-air inlet in question is judiciously located.—EDS. AM. ARCHITECT.]

## ILLUSTRATIONS.

ARMORY OF THE SEVENTY-FIRST REGIMENT, N. G. N. Y., PARK AVE.,  
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PLANS AND ELEVATIONS OF THE SAME.

SECTION OF THE SAME.

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SECTIONS OF THE SAME.

DETAILS OF ENTRANCE PORCH OF THE SAME.

HOUSE OF H. K. BLOODGOOD, ESQ., NEW MARLBOROUGH, MASS. MR.  
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Additional Illustrations in the International Edition.

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PROVIDENCE, R. I.

GATE-LODGE, STACKLEFORD COMMON, ENGLAND. MESSRS. HUBBARD &  
MOORE, ARCHITECTS.

## NOTES AND CLIPPINGS.

ART GALLERY FOR KANSAS CITY.—Col. Thomas H. Swope, who a few years ago gave to Kansas City 1,300 acres of land, now known as Swope Park, will early in the year give to the city a magnificent gallery of art which will cost \$450,000. He will also give an annuity of \$20,000 for the support of the gallery.—*Exchange*.

<sup>1</sup>Engineer in charge of Heating and Ventilating and Electric Work in Public Schools of New York City.

# The American Architect and Building News

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THE architects of San Francisco are in a state of indignation over the impending passage of an ordinance which they seem to fear will affect their dignity and their pockets as well. The ordinance appears to establish the office of "supervising architect," a person who is to have charge of the construction of all new public buildings, consequently architects invited to design public buildings—whether in competition or by direct invitation—are, on the acceptance of their drawings, to be nominated merely "consulting architects," the actual superintendence of operations being entrusted to the official or "supervising" architect. Doubtless the germ of the idea is borrowed from current practice in the matter of erecting national buildings, but the local practitioners evidently feel that the city has not the same reason for treating them with distrust that the National Government may properly have in dealing with a larger and more variegated body of professionals. This is as may be. Further, the proposed ordinance is displeasing, in that it provides that when the building is to cost one hundred thousand dollars or less the fee of the consulting architect shall be three per cent., while that of the supervising architect shall be two per cent.; but that when the cost of the building is to exceed one hundred thousand dollars then each architect is to receive two and one-half per cent. The proposed division of commission is obviously unfair and wholly to the advantage of the supervising architect who gets his commission net, while the unfortunate consulting architect, the originator of the design, the man upon whom falls most of the work, has to meet out of his share the cost of draughtsmen, office-rent, expenses and so on. We apprehend, however, that the ordinance was prepared with the best and fairest of intentions, and so incline to believe that the San Francisco Chapter will not find it difficult to procure its modification so as finally to be acceptable to the really reasonable members of the profession.

FOR several years, as architects know, the Forestry Bureau of the United States Geological Survey has been carrying on at St. Louis, in the main, a series of investigations into the properties of building materials, which, in spite of rather inadequate equipment and very limited appropriations, have produced results of great value to the country's building interests. It first concerned itself, mainly, with timber, the investigations being carried on under Professor Johnson at Washington University, but during the years 1902, 1903 and 1904 it took up the investigation of cements and concretes and the properties of their constituent materials. At the close of the St. Louis Exposition, the Bureau fell heir to the Cement Pavilion and the cement-testing apparatus therein installed and operated by the Cement Manufacturers' Association, and also to another building of good size. The Bureau has, therefore, a satisfactory *locus standi*, a fair equipment and a trained force of operators and observers, but lacks means. It, therefore, now comes to Congress and asks for a larger appropriation than it has ever been favored with before and yet an appropriation incredibly modest in view of the magnitude of the service it will be able to give in return. It asks for only one hundred thousand dollars—one-third of one per cent., that is, of the selling price of the Portland cement produced last year in this country. If any of our readers have any influence with Congress we trust they will exert it in favor of the request so modestly preferred.

PERCEIVING the vast good that might result from these investigations, yet realizing the limitations that must surround and control the experience and intelligence of a small band of specialists, the Director of the Geological Survey has suggested that the various societies and technical bodies of the country might be willing to appoint from their membership those most fitted to serve on a joint committee which should hold towards the active investigators a consultative and advisory position. As may be supposed, the suggestion was readily acceded to and the President has approved the plan and has appointed the members so elected to be the National Advisory Board for Fuels and Structural Materials. The members representing the American Institute of Architects are Messrs. George B. Post and W. E. Eames, while the Supervising Architect, Mr. J. K. Taylor, represents the architectural interests of the Government. Altogether, seventeen technical bodies are already represented in this Board, to whom must be added representatives from various Governmental Departments and Commissions which have to do with building construction—thus constituting what should be a most intelligent and efficient body of coadjutors.

WE do not clearly know what weight American courts accord to the decisions of French courts, but where the matter turns rather upon principles than upon the letter of mere enacted statutes, we believe they are ready to accept a certain amount of light, no matter

whence it comes. At any rate, replies recently made to a series of questions by M. Ravon, secretary of the Comité de Jurisprudence of our contemporary, *La Construction Moderne*, has such close application to the current contention over the Brooklyn Municipal Building that it seems worth while to quote them at length. M. Ravon says: "Architects are entitled to their commission, according to the established schedule, for plans and specifications prepared according to order, even though they may not be executed. If the schemes are in a condition to be carried out, that is if they show that serious work has been done upon them, it makes no difference whether they have or have not been approved.<sup>1</sup> But the abandonment of a project by a town does not give an architect a claim for damages. A town may abandon a project at any time, on paying the commission legally due the architect for the work he has done.<sup>2</sup> Plans and specifications prepared by an architect without formal authorization do not give him any claim for commission.<sup>3</sup> The sum due an architect for plans and specifications for public work which have been ordered by the mayor but without the concurrence of the municipal council must, since the town has profited by their preparation, be paid for one-half by the mayor and the other half by the town."<sup>4</sup>

IT would be curious if, just as the English property-holder and his architect were experiencing a little relief from the tyranny of the law of ancient lights, thanks to the decision in *Colls vs. Home and Colonial Stores*, their American congeners should have to begin to have misgivings as to whether they have been right in believing that, in the matter of easements of light and air, the principle of the greater rights of the dominant over those of the servient tenement did not prevail in this country. As the United States Supreme Court, in the case of *Muhlker vs. the New York Central Railroad* decided a year ago and confirmed by four other decisions recently rendered, appears to hold that light and air are property rights which cannot be destroyed without compensation, it will be just as well for architects and their clients, when confronted with doubtful conditions, to take competent legal advice before they go ahead and injure the owners of abutting properties. In the cases at bar—cases made because of the elevation of the railroad-tracks on Park avenue, New York—the matter of light and air was not the only one to be considered, as there was combined with it the question of nuisance, due to the increase of noise owing to faulty construction of the viaduct.

THE suggested removal to this country of the great Galerie des Machines of the 1889 and 1900 Paris Expositions lends added interest to the recent death of its designer, M. Charles Louis Ferdinand Dutert, at the comparatively early age of sixty. M. Dutert, who won the Grand Prix de Rome in 1869, was also the architect

of the interesting new buildings of the Natural History Museum in the Jardin des Plantes, Paris.

AS the chances are rather against them in favor of the placing of works of art upon the free list by the current Congress, it may be worth while to point out to the American Free Art League that their bill [H. R. 15268], referred to the Committee on Ways and Means on February 20, is needlessly vague and incomplete. As it stands, it would not be possible under its terms for a sculptor to bring untaxed into the country his own model, whether in clay, plaster or wax, even though he intended to have the piece of sculpture cut or cast by good American protectionists. Again, though sculptures in the round and in relief are covered, no mention is made of intaglio carving, nor is the possibility that an active-minded appraiser might classify a piece of composite sculpture as "buttons," for instance, because a bit of mother-of-pearl had been used here and there, sufficiently provided against. Moreover, although etchings and engravings are removed from the taxable schedule, the bill does not make it possible for an artist-etcher or engraver to bring in his own matrix plates, except by paying twenty-five per cent. *ad valorem*, as now, and finally lithographs seem still to be left at the mercy of the tax-gatherer. The League's bill seems to have been too hastily drawn: it is not sufficiently general in scope.

THE British Fire Prevention Committee is evidently a believer in the old saw: "As the twig is bent, so the tree inclines" and, noting that many fires are caused by children, recently offered prizes—a gold medal and twenty pounds—for "the best fable for children, calculated to serve as warning against the danger of playing with matches or fire." Although the competition—organized through the generosity, it is not surprising to know, of a Canadian—resulted in bringing out not fewer than two hundred and eighty-six "fables," the committee did not find one deserving of the main prize and only distributed minor rewards. The idea is ingenious and sensible and as the Committee disseminates its reports unstintedly, it probably will do likewise with the prize-winning fables, which may actually reduce the total of fires now charged against ignorant or mischievous childhood.

IF at any time within his span of life an outbreak of typhus fever or cholera in Chicago should be followed by similar epidemics in the towns bordering the Illinois River and in St. Louis, we fancy that Mr. Justice Oliver Wendell Holmes would keenly regret that circumstances forced him to write the opinion of the United States Supreme Court that has just put an end to the famous "Chicago Drainage-canal" case. Having digested the pleadings and testimony—said to be documents more technical and voluminous than had ever been brought before the Court—the Supreme Court now decides that St. Louis has not proved its case; hence Chicago is free to discharge its sewage through the drainage-canal and finally into the Mississippi River above the intake of the St. Louis waterworks.

<sup>1</sup>Conseil d'Etat, July 11, 1867, Ville de Cannes; Dec. 5, 1873, St. Maixent vs. Veuve Vallet; Jan. 9, 1874, Allaux vs. Arès; Aug. 8, 1882, Jory vs. Trouville; May 2, 1884, Dufils vs. Saint-Etienne-de-Vauvray; March 27, 1885, Esquié vs. Toulouse; March 19, 1886, Mesure vs. Hyères.

<sup>2</sup>Conseil d'Etat, March 27, 1885, Esquié vs. Toulouse.

<sup>3</sup>Conseil d'Etat, Jan. 20, 1882, Chireus vs. Genest.

<sup>4</sup>Conseil d'Etat, April 13, 1883, Philippon vs. Lauvernaïs and the town of Saint Saulge.

TESTS OF CEMENTS.<sup>1</sup>—IV.

## RETARDED INDURATION.

THE induration of cement may be delayed for intervals of hours or even days, by keeping the material in a state of agitation, after which it will acquire a certain degree of strength. A retarding effect will also result from the use of excessive quantities of water in gauging.

Hydration progresses during these initial intervals and would eventually attain a state of completion and cementitious properties become exhausted, if sufficient time was allowed. Continued agitation disturbs the relative positions of adjacent particles before cohesion is established between them, and an excess of water tends to keep them in a state of mechanical suspension. By each of these means may the so-called setting of cement be delayed.

Chemical reactions, once inaugurated, tend toward completion, hence the retarded setting or "second set" of cement, as commonly understood, can hardly occur. Induration of the mass may be held back, it may be interrupted and allowed to renew itself, but no suggestions in experimental inquiry appear of a return of the material to its primitive state, the residual cementitious properties constituting those which are available at any given stage.

It has been shown that hydration is accompanied by a reduction in specific gravity, that such changes are progressive, the finer particles being the first to experience a marked increase in volume. Although the interval during which hydration takes place, in general, marks the period within which cementitious properties are available, still it is difficult to establish an exact interval when cement should be used in order to finally attain maximum strength. It is an intermediate stage, occurring after the finer and more active portions have become hydrated, and before the medium and coarser ones have reached an advanced state toward chemical repose.

Immediate use of the gauged material is not usually necessary. Ample time may generally be allowed between the time of gauging and using to meet practical requirements, without detrimental influence on final strength. It is recognized that waves of popular fancy occasionally appear concerning the use of constructive materials, and that present tendencies take the direction of demanding the prompt use of cement after gauging. Perhaps needless rigor may at times occur in consequence of this popular tendency.

Tests were made at the Watertown Arsenal for the purpose of ascertaining the limit of time which might safely be allowed, between gauging and using, without detracting from the final compressive strength of the cement. The inquiry was also extended far beyond the limits of practice, several days elapsing before all of a given batch of material was in place and permitted to remain undisturbed thereafter, until the time arrived for making the tests for strength.

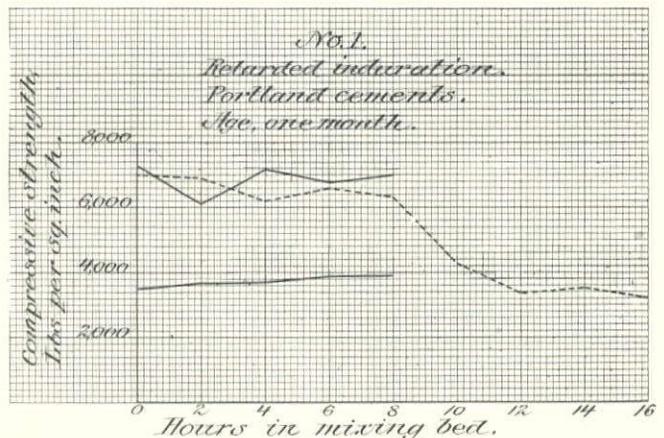
Batches were made containing sufficient material to furnish a number of test cubes. Some of the cement was taken out of the mixing-bed immediately after gauging and tamped in the moulds. Other samples were successively withdrawn at intervals thereafter, generally of one or two hours' duration. This method was followed for eight hours with each kind of cement examined, while with a few brands one or more days elapsed before all of the material was in the moulds.

Some batches were kept in a state of agitation, by the constant use of a hoe, others were reworked at such times only as samples were withdrawn. No marked difference in final strength was noticed between cement which was allowed to stiffen in the mixing-bed and that which was agitated.

Water was added when needed to keep the material in a plastic state or to restore plasticity when withdrawing samples. The several brands did not behave alike in respect to the quantity needed nor to the time when required to maintain plasticity. Some remained plastic for an interval of several hours and then required the addition of considerable water, after which period very little more was needed. One brand of Portland cement displayed this avidity for water during the interval between 4½ hours and 7 hours, another during the interval between 4 and 24 hours after the original time of gauging.

The samples were set in air, and tested when about one month old. The results of three Portlands are shown on Diagram No. 1, where it may be seen that no material loss in compressive strength was occasioned by keeping the cement in the mixing-bed for a period of 8 hours. One of the three chanced to show

even a slight increase in strength the longer it remained in the mixing-bed. Other brands were examined which gave results similar to those here illustrated, although there were cements which progressively lost in strength after an interval of three or four hours' retarded treatment.



Since it cannot be known, from present information, how a given brand will behave, it would appear prudent to limit the interval to not more than three hours when the cement should be in place after gauging, but generally no anxiety need be felt for Portland cement which is used during the working-day it is mixed.

As to the question how long this retarded interval may continue before all cementitious value is lost, the experiments were not sufficiently prolonged to demonstrate, notwithstanding the intervals in the mixing-bed were extended to several days' duration. Two batches were kept in a state of agitation for 4¼ days before the last sample was withdrawn. When 30 days old these samples displayed a compressive strength of 700 to 800 lbs. per square inch.

These cubes were very light in weight, in consequence of their treatment. After 102 hours' retardation the cement, when hardened, weighed only 83 lbs. per cubic foot. The specific gravity corresponding to this weight is 1.33, which compared with 2.60, that of hydrated material, may be taken to indicate the presence of numerous voids in the cubes. Diminished strength attends low density in structure and the reduced strength of these samples is consistent with their pronounced lightness in weight.

It is of interest to note, after such unusual manipulation, that untested samples retain their integrity, a period of 4 years having now elapsed since the cement was made into cubes. Some fluctuations in strength have taken place in the meantime, but in general the strength has been fairly well maintained.

By reason of its porosity, this material was capable of enduring much permanent compression in volume. A cube, of 102 hours' retardation, subjected to a load of 30,000 lbs. per square inch cubic compression, was permanently reduced in linear dimensions nearly 9 per cent., the reduction in volume being 25.8 per cent. The cube was encased in a thin, water-tight, sheet brass envelope and placed in an hydrostatic press when thus loaded. The compressed cube is now hard and seems to have retained the strength which it possessed before upsetting.

Another Portland, freshly ground, and very active in respect to setting promptly, retained its strength practically unchanged after 4 hours' retardation in the mixing-bed. This cement was allowed to harden undisturbed for a period of 6 days 2 hours. At the end of this time the hardened cement was broken up with a pickaxe, reground in a mortar to pass a 100 mesh sieve, then made into test cubes and the strength determined when one month old. The compressive strength was then found to range from 650 to 700 lbs. per square inch.

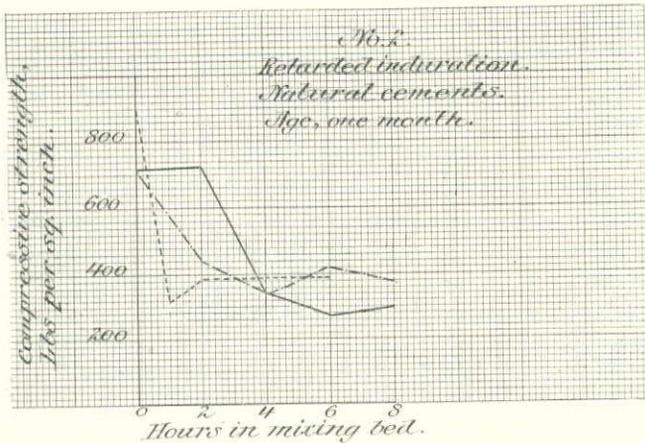
Grouts were made at the end of one day's work and used the following morning. A Portland cement, gauged with 44 per cent. of water, thus treated displayed a compressive strength of 3,500 lbs. per square inch, at the end of 30 days. This was about one-half the strength shown by the cement when mixed to the consistency of an ordinary mortar and immediately used. Other Portland grouts furnished substantially the same results.

Natural cements did not, as a class, retain their strength as well as the Portlands, after corresponding intervals of retardation. The results of three brands are shown on Diagram No. 2. Two of the batches it will be seen had lost decidedly in strength

<sup>1</sup>Continued from page 72, No. 1523.

at the end of the first or second hour after gauging. The third lost rapidly after two hours' retardation.

Grouts in this class of cement behaved in a similar manner to the Portland grouts, that is, dropping to about one-half the nor-



mal strength of the cement when mixed as a plastic mass and immediately used.

The acquisition of strength by cement subsequent to intervals of long duration in the mixing-bed, and its rehardening as a mass in the case of reground and regauged material, taken together with the progressive changes in specific gravity, direct attention to the fact that cement, as it ordinarily reaches the market, is composed of grains of different sizes, from less than  $.0001$  to several hundredths of an inch in diameter. These several sizes hydrate and acquire cementitious properties at different times, some of the finer particles doubtless nearly or quite completing their chemical changes before the reactions of the coarser ones have far advanced. Without considering possible variations in chemical composition, differences in size of grains seem adequate to account for much of the behavior witnessed in these tests.

At different stages different parts are utilized, whence it follows that not all of this aggregate of heterogenous grains is available at any one time. The earlier stages after gauging are favorable for utilizing the greater part of the cementitious value of the material, the experiments, however, showing that an interval of several hours' duration then occurs at any time in which Portlands may be used and attain substantially the same final compressive strength.

JAMES E. HOWARD.

#### THE WINDOW IN ITALIAN ART.—I.

IN all times there has been the greatest diversity of treatment of the window—as to motive, line and color. Greek and Latin art concerned itself less with these than did antiquity, deferring their interest in the matter to the revival of Classicism in the fifteenth and sixteenth centuries, and the mediæval period anterior to these is the subject of our present curiosity. They concerned themselves less, Greek and Latin art, or to speak more correctly, Greek art concerned itself less, since superposed orders, or rather private buildings of several stories, such as were common at Rome, were not used by the Greeks. Rome, daughter of Athens, distinguished herself here and devised an element which belongs peculiarly to her, the superposed orders—Roman *par excellence*—which give to our architecture its real *cachet*. And yet Greek genius always accompanies the Latin, but from the standpoint of this study Rome is richer than Athens. Greek and Latin art are nevertheless the art of the column, for never was there an architectural style anywhere that made such use of columns as did these. The Egyptians with their trabecate construction, to be sure, made considerable progress in the use of columns, but the influence of Rome has been far more extraordinary than that of Egypt, and a comparison would here be useless. Consider how Rome to-day, clinging to her character, beholds up-growing the national monument to Victor Emmanuel, which one could call "the monument of columns" academic and dry though it be, it is still the object of the veneration of all those in the Peninsula who have faith only in architects who copy the accomplishments of the past. The history of the column might be written in Athens and Rome—the greater part in the latter place. But the history of the window is far from being confined to the countries of Pericles and Augustus.

The genius of the Middle Ages is, one might almost say, a

modern discovery. Once, no one was willing to admit the beauty and the grandeur of that genius, but, in the name of the immortality of Classic art, the work of the Mediæval designers was criticised and condemned. At that time our history of the window would have had to forego its chief source of inspiration and supply, for the window throve gloriously everywhere during the Middle Ages—that is, during the times of the cathedrals and the mighty palaces of civic liberty. And although the window of the private house gained amplitude, it could never have attained the richness it reached in the cathedral and town-hall. Do not believe, however, that Italy cannot show in private buildings windows worthily exciting our curiosity. On the contrary, we shall see presently that it would be possible to illustrate our story wholly from the windows of private buildings, but it is plain one could not expect to find in such a study the variety which the windows of public buildings offer us.

One might feel that the "promised land" for us would be France rather than Italy, since it is especially in France that the power of the Middle Ages so gloriously affirmed itself in the splendid Gothic cathedrals which represent the might of the anti-Classic style. Nor, in a general way, can exception be taken to this, for if we turn to the Italian cathedrals we do not find such splendid windows as the French cathedrals are famous for. We do not, in Italy, possess those superb fenestrations of the clerestories that form the glory of the religious monuments of France. Our Gothic windows are far more modest, and this fact has its curious side: in comparison with France, Italy is a southern country; it should then have an architecture where the voids triumph over the solids. But it is the reverse that obtains, and in this matter it is France that takes its place and triumphs over Italy. France is the country of the true Gothic, and Italian Gothic, child of the French, held at the very baptismal font by Frenchmen, has never been able to wean itself from Classicism. Yet this does not prevent the Peninsula from having Gothic monuments; quite the contrary, it enables it to have a style altogether Italian, with a system of decoration of its own which Frenchmen hardly know at all. I refer to pictorial decoration, which enabled Giotto and his glorious school, and Duccio and the Siense school of the fourteenth century to enrich the walls of our Gothic edifices with storied paintings and create there an inexhaustible source of aesthetic delight. Nothing of the kind is to be found in France, but we do find there the dazzling beauty of the great stained-glass windows, whose colors would have killed any painting that might have been done within upon the walls. Two countries: two different kinds of beauty! and that is worth more than the cosmopolitanism in art of to-day.

Going farther back, Italy could show the windows that belong to the Romanesque period, but the variation would not be as great as one might expect. Here, far more than in the Gothic work, the Peninsula showed a preference for the solid over the void and the beauty of the window is almost wholly manifested in the form of circular or rose windows, where the architectural lines blend with the ornamental in a, sometimes, very delicate and knowing manner. Certain parts of the Peninsula (Apulia and Abruzzi) less explored than others can exhibit rose-windows well worth knowing. The Cathedral of Troja offers a very curious example of Romanesque circular window, and in central Italy we find an exquisite rose at the Abbey of Pomposa: an openwork ornament here takes the place of the columns and small arcuations usually found, and at Troja columns and arcuations are united by an openwork geometric pattern quite unusual with us. We come upon good windows now and then in the Romanesque, even in the Byzantine, styles, e. g., the little windows of S. Gregorio and the windows of a house at Bitello, but the windows which really give us joy belong to the Gothic style, as we are going to see.

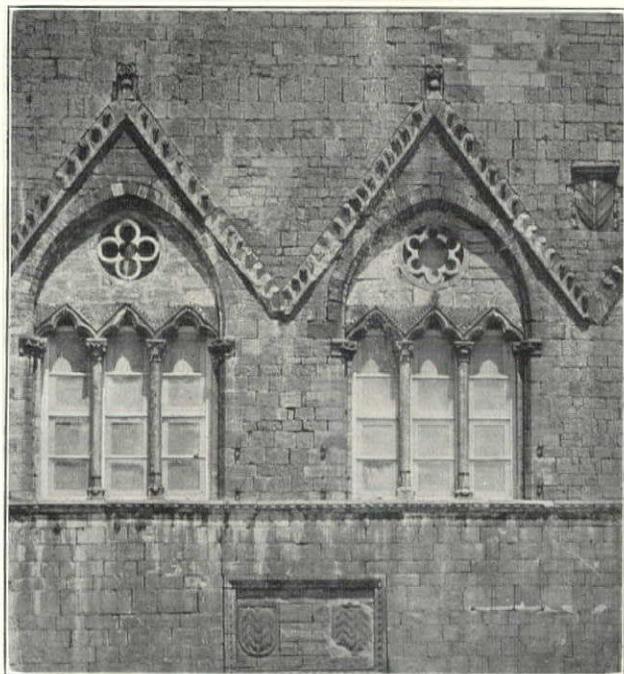
Here my discourse is going to pick up the French thread temporarily dropped, for the most majestic assemblage of windows in Italy is characteristically French. I refer, of course, to the apsidal windows of the cathedral at Milan.

Nicola de Bonaventis or Bonaventuris, engineer in chief of the church, who appeared amongst us in 1389, is the architect of the apse and its windows. Only a French architect, his eyes filled with the effects of the great French windows, could produce for Italy such a spectacle as the Milanese cathedral. So these *magna trahunt*, even without the effect of brilliant glass, are miracles of audacity and beauty, all the more beautiful to those who have not seen Paris, Chartres, Rheims, Troyes, Bourges, Rouen, Amiens and even certain English churches.

It is needless to say that the internal aspect is less picturesque than the external. Although the great Milanese windows have

long lacked their ancient glass, they recall names eminent in the history of glass-painting, as, for instance, Stefano da Pandino, who should not be confounded with Antonio, perhaps his son. Briefly, the apsidal windows of the Cathedral of Milan are the largest in Italy, measuring 9.9 x 23 metres, and their architectural decoration is charming. Master Niccola de Bonaventura must have been mindful of the work of some master glass-stainers in France. One fact no longer surprises the student to-day, and that is that, generally, where there are notable windows there we come upon the name of a foreigner: at Bologna it is the German Giacomo da Uima and at Arezzo and Cortona it is the Frenchman Guglielmo Marcillat, both of them fathers of S. Dominic and foreigners.

To whichever side the thought wings its way, nowhere in Italy do we find windows having the amplitude of these at Milan. Perugia, the fair and lordly Umbrian city, does, however, contain a window that approximates them in size, since it measures 9.13 x 21.39 metres. It is Gothic and is found in the apse of S. Domenico, filled with glass that exhibits the skill of a contemporary master, Francesco Moretti (the modern glass at Milan is the work of the atelier Bertini). Signor Moretti here attempted to recompose the ancient artistic harmonies of a master glass-stainer of the fifteenth century, father Bartolomeo di Pietro da Perugia.



FROM THE PALAZZO DEL POPOLO, PERUGIA.

But the Domenican window is far from equalling in interest the singular windows of the Palazzo Comunale with their pointed pediments.

Perhaps the Basilica of S. Petronio at Bologna can give us more important models; in fact, the windows of this colossal church are grand, yet comparison of them with those at Milan and Perugia is out of the question. Lightness, that is the merit of the windows of S. Petronio, but that is no especial merit in our eyes, since lightness is the very spirit of the Gothic style. Maestro Antonio di Vincenzo, who studied the Cathedral of Milan, at its birth (1390), made drawings for the windows which should have had the greatest richness if money had not lacked: the beginnings, when money was plenty, are rich enough, but the poverty of their finish is significant.

But beauty draws us to Venice more than elsewhere, Venice, city of art and architecture, with its own peculiar *cachet*. The Gothic of this city, as of all Venetia, is tinged with Oriental influences and colored as poetically as the walls of its palaces, those palaces that seem built for art-lovers exclusively. They resemble one another in their architectural lines, and their loggias, treated like window-openings, seem to invite one generously—the Ducal Palace, the Ca d'Oro, the Palazzo Foscari, those jewels of the Lagoon, to say nothing of the great window on the north side of the Basilica of St. Mark, a bit of architecture of enchanting grandeur. In the Venetian palaces one rarely finds twin windows or those divided by several mullions, as is common in the Gothic style. The openings of the Venetian loggias are

separated by columns, but nowhere are the minor arcadings embraced within a single arch, as is so often seen elsewhere. The loggia of the Ducal Palace is a classic in this respect, as is also that of the Ca d'Oro. But all this is well known, and it is better worth our while to look elsewhere in Venetia.

Vicenza is one of the towns that makes demands on the levers of Venetian architecture. The birthplace of Palladio, of Trissino and of Valerio Belli is adorned with a remarkable collection of palaces, the window-like openings of whose loggias, as well as the windows proper are extremely interesting. The Palazzo Fiorasi, formerly Garzadori, Schio, formerly the "Casa Aurea," Muzzan, formerly Navarotto, Longhi, Thiene-Braschi and Fabris, formerly Sangiovanni, afford us unexpected varieties for our study. But none of these buildings can interest us as does the Palazzo Pigafetta, the windows of which offer beauties of an unusual type, as is shown by the illustration elsewhere. It is a work of the fifteenth century in a transition style which, though strongly Gothic, still attracts one because of its Classic forms and details. Venice and Venetia are particularly rich in monuments belonging to this style, so uncertain in its forms and yet withal so picturesque.

In the matter of windows in the transitional style, I will call attention to the one above the "Porta della Carta," alongside the Ducal Palace at Venice, with its three many-lobed openings separated by colonnettes. The famous Bartolomeo and Giovanni Bon, or Bveno, were the sculptor-architects of this doorway, one of the most beautiful compositions of the kind in Italy, as we may discover when I have time to take up the matter of doorways.

Padua, Udine (the Palazzo Comunale, called "the Loggia") and other places in Venetia possess specimens which deserve attention, only the grayness of uniformity obscures their charms. It is best therefore to turn from this region to Emilia, Tuscany, Lombardy, Sicily and Piedmont, for it cannot be too often repeated that Italy has a great variety of provincial architectural styles which cause Italian architecture of the same epoch to present very different faces.

Let us return to Bologna, where the use of terra-cotta encouraged a peculiar style of decoration, quite unlike that to be found in Tuscany, in Florence, for example, which, quite unlike Siena, never adopted terra-cotta. We thus see that in the same region stylism pursued two different ways and this makes it impossible to institute a comparison between Florentine and Siennese monuments, if one aims to establish correspondences which do not exist. The windows of the Palazzo Vecchio, of Orsammichele, of Sta. Maria del Fiore—church and campanile—of S. Croce, and of Sta. Maria Novella vainly find their echo in the Cathedral of Siena and numberless palaces still speak the Gothic tongue in that city sacred to the Virgin. The windows of the Siennese palaces, divided into three openings rather than two—the Palazzi Bonsignori, Tolomei, del Capitano, Grottanelli, Mandoli and degli Saracini, to say nothing of the famous and elegant Palazzo Comunale—are sobriety itself, for almost always brick gives the color to these palaces and their windows. And this leads us to a little town near Siena, S. Gimignano, which is rich in palaces, and consequently windows, in the Gothic style. So those of you who seek the Gothic window where parsimony chants, as it were, the hymn of beauty, do not forget Siena and S. Gimignano, where you will find the vigorous but sombre Palazzo Comunale, built in 1288, with its severe, or rather threatening, tower and the Gothic palaces of the Pesciolini, the Pratellisi, the Borgheresi, the Tinacci and the Moronti; and you will find satisfaction before the Rocca, as well as before the Palazzo Comunale at Pistoja, whose construction was directed in 1348 by a Siennese, Michele di ser Memmo, a building as sombre as the one at S. Gimignano and of which the stone windows, with their double and treble divisions, have none of that joyous air that belongs to the beautiful window of Sta. Maria della Rosa at Lucca, near Pistoja, built of highly decorated terra-cotta in the fourteenth century.

We find terra-cotta again in Lombardy, in the Ospedale Maggiore and in the Castello Sforzesco at Milan, especially while we are studying Gothic work; and near Milan, at Cremona, on one side and at Piacenza on the other, whose palace, called "Gotico," offers models of windows which should figure in any account of that feature.

I also will speak of the abbey at Chiarvalle d'Arda with its very original windows of highly wrought brickwork, which leads us to the fields of Sicilian abundance (Palermo, Messina, Catania, Taormina, Siracusa, Randazzo) after first having taken a glance at Piedmont; for this sub-alpine region which, like Sicily, lies at one of the ends of the Kingdom is well worth a visit. Its

castles (Verrés, Fenis, Issogne) and the private houses at Montalto, Strambino, Ozegna Settimo Vittone and Carignano speak a language which make us return to the point from which we set out—France. While Gothic taste prevailed, the Piedmontese architecture of the fifteenth century was in this region quite French in character—a sash window here seems altogether an element of French architecture. But we must not draw hasty conclusions, for Italy used windows of this description in the more modern period of the Renaissance.

ALFREDO METANI.

(To be continued.)

#### THE SAFEGUARDING OF LIFE IN THEATRES.<sup>1</sup>—IV.

SCENES are painted on a strong linen canvas weighing about 6.6 oz. per sq. yd. Heavy cotton sheeting is sometimes used for the cheaper temporary productions. The gauze used for skies and transformation scenes is of cotton, of texture like mosquito netting. Frames and battens and profile backings are of white pine. The canvas is first stretched on a frame and stiffened by a coat of glue-size applied warm with a broad brush. Next, it receives a priming coat of whiting and glue size and is then ready for the scene-painter. The mineral colors used are mixed with water and glue, and many tests prove that the painted canvas is somewhat less readily combustible than the unpainted, and the heavier the coat of pigment the more the flame is retarded.

The fireproofing of scenery canvas and other cloths and fabrics has from time to time during the past fifty years engaged the attention of many talented men, and one who consults only the articles in books and technical pamphlets may be led to believe that this can be accomplished by brushing the surface over with either of several solutions of chemicals.

After reviewing whatever I could find in print, after consulting with several experienced scenic artists, and after making tests myself and later enlisting the friendly assistance of several experienced chemists to carry on independent investigation of all solutions prominently recommended for the fireproofing or flame-proofing of fabrics, I regret to conclude that the best that is possible in this line is far from satisfactory, that the petty tests that have satisfied certain distinguished chemists are very misleading as guides to what will happen when the same process is tested on the larger, practical scale, and that the best we can hope to accomplish is to "flame-proof" a fabric so that it will not ignite from a match, an electric-spark or a gas-jet, or so that if ignited it will not burst into flame.

This much of protection is of great value and worth all that a good process costs, if it can be accomplished in practice without injury to fabric or colors; for if we can thus prevent the little flame from quickly spreading we have removed perhaps nine-tenths of the danger of a fire starting on the stage, but it falls far short of what many have believed was within easy reach. Once get the gauze and canvas and pine on the stage enveloped in flame, nearly everything "fireproofed" would burn to total destruction with substantially as great a rush of flame and suffocating smoke as with the untreated material. Indeed, the chemicals may make the fumes worse.

After having investigated the question of fireproofing the scenery faithfully, I am led to believe that we must after all rely on the safeguards of the engineer rather than those of the chemist.

The efficient fireproofing of the great quantity of white pine used in frames, battens and profiles (8,000 sq. ft. in the case of the Iroquois) appears to be a practical impossibility. The eleven miles of manila ropes cannot be "flame-proofed" without too great a sacrifice of their strength.

I have already intimated that phosphate of ammonia has given the best record in fire-retardent quality of any of the many chemicals and mixtures tested. Theoretically, we should expect it to, for its chemistry fulfils the above conditions. First, it has a little tendency to gather dampness, and to dry this out absorbs a little heat. Next, as the heat rises, ammonia is given off, and the thin film of this repels the oxygen of the air. When the ammonia is gone, we have left the ortho-phosphoric acid, which in liquid form covers the surface and preserves it from oxidation under increasing heat. At 300 to 400° F. this decomposes, giving off its water; at higher temperatures gives off its remaining water. In all of this dissociation it absorbs some heat until we

have left at full red heat fused meta-phosphoric acid as a liquid film surrounding the fixed carbon remaining from the destructive distillation.

On the other hand, the phosphate of ammonia has its disadvantages. A manufacturing chemist, perhaps of widest experience of any in this country in the practical chemistry of the phosphates, warns me that for its best efficiency it must be applied in a strong or saturated solution; but if very strong it may in time disastrously affect the strength of the fiber; that it is somewhat deliquescent, has a tendency to develop fungous growth; that in time it may part with a portion of its ammonia, becoming the acid ammonium phosphate which has a tendency in presence of moisture to attack metals, while in a warm atmosphere the free phosphoric acid attacks some colors.

After some preliminary trials with the assistance of the chemical engineer of the Inspection Department of the Factory Mutuals and conferences with the experienced scenic artists, Burrage, of Chicago, and Story, of Boston, and after reviewing the probable effect of various solutions upon the fabrics and upon the ordinary colors used by the scenic artist with some of my personal friends who were of wide experience as chemists of textile factories and chemical works, I enlisted the constructive genius of my friend, Mr. Geo. C. Whipple, Consulting Engineer, Director of the Mt. Prospect Laboratory in Brooklyn, and of Mr. Irving W. Fay, Professor of Chemistry in the Brooklyn Polytechnic Institute, in the hope that, starting with the theory of the successful action of ammonium phosphate as stated above, we could find some substance of equal value as an antipyrine that would be less likely to injure fabric or colors. Sundry theatres and scenic studios were visited by Mr. Whipple to learn the practical conditions. The bibliography of the subject was again reviewed. Standard methods for testing the comparative efficiency were worked out, and tests were made with substantially all of the substances that had been recommended by good authorities.

Nothing was found better than, or so efficient as, the phosphate of ammonia, known to be efficient for the past fifty years. Nothing was found that would prevent the instant burning with a rush of flame when the test was made with a strong blaze on closely hung sheets of canvas, but many substances were found that would make gauze and canvas proof against ignition by a match, flame, gas-jet, a cigarette or an electric-spark.

The general results of the investigations by Messrs. Whipple and Fay may be summed up as follows:

- (1) Phosphate of ammonia was found the most efficient antipyrine.
- (2) Tungstate of soda, so often found recommended in the text-books, was found to possess very small value.
- (3) The various proprietary solutions when analyzed were found to be all based on one or another of the ammonium salts, commonly the phosphate but frequently the cheaper sulphate, substituted in whole or in part.
- (4) Linen canvas or cotton cloth, fireproofed in the best manner possible by any of these solutions could be quickly burned to total destruction if a sheet were rolled in a loose coil with the axis vertical and a space of perhaps ½ in. between the folds, and a fire then lighted with a small wad of excelsior at the bottom of the roll; this method of test serving to confine the radiant heat and the gases distilled from the fiber. This was of special interest since strips of the same cloth tested in the manner that has satisfied previous experimenters by holding the strips of treated cloth vertically over an ordinary Bunsen flame could not be ignited and appeared almost perfectly flame-proof.
- (5) The most efficient part in the fireproofing of fibers was found performed by the covering of the fiber with a non-volatile liquid that excluded the oxygen. Phosphoric acid proved better for this purpose than any other substance tested, but obviously could not be applied alone, because of its corrosive action on fibers and colors.
- (6) The ammonium in combination with it in phosphate of ammonia was found of value chiefly in locking up the corrosive quality of the phosphoric acid until released by the heat of the fire, and thus giving a comparatively harmless compound for application to color and fabric.
- (7) The method of application of the fireproofing solution to the canvas was found to have great influence on the degree of fire-protection secured. One of the best solutions, when brushed cold over the back of old scenery, penetrated the fiber so little as to be of no value, but when applied hot was efficient. Under some conditions the linen canvas is repellent of water, as one finds on trying to dry the hands on a new crash towel,

<sup>1</sup>Extracts from the annual address of Mr. John R. Freeman, President of the American Society of Mechanical Engineers. Continued from page 51, No. 1572.

When the liquid is applied rapidly to a vertical surface with a brush linen cloth does not absorb it readily. Hot application of the solution adds much to its efficient penetration of the fiber. For new scenery probably the best method is to saturate the canvas between rollers in a bath. The next best method is to mix the chemicals with the water of the glue-size.

(8) Tests of the tendency of the various chemicals to induce decay were made by sowing some of the treated samples with mold spores. Other tests were made by adding various percents of phosphate of ammonia to nutrient gelatine and to mixtures of the glue-size and incubating these for tests of bacterial growth.

(9) The effect of the solutions on the colors ordinarily used by the scenic artist were not found bad, except in case of some of the more delicate blues and greens, but a greater length of time would be necessary before positive statements about this can be made.

(10) When canvas that has been flame-proofed is actually burned, as it may be under practical conditions, it gives off fumes that may be even more dense and suffocating than those from the untreated canvas.

Since the pine framework of the set-pieces and wings presents a greater quantity of fuel than the canvas itself, it would be desirable to flame-proof this wood. A simple brushing over with phosphate of ammonia or other chemical solutions is found inefficient.

Various processes for making wood fireproof have long been known and have been used on wood for interior finish and trim of fireproof buildings, more here in New York City than almost anywhere else, because of certain favoring clauses in the building laws. The various tests made by Prof. Norton, of the Massachusetts Institute of Technology, and others, have shown that although the wood is much less readily ignited after treatment no real fireproofing results. Previous tests have covered this matter so thoroughly and have shown the loss of strength and tendency to gather moisture and other objectionable qualities that follow treatment so that I gave little attention to testing this matter further, but rested on the tests of previous experimenters. I obtained sundry specimens of wood that had been fireproofed in the commercial way from two prominent shipyards that had war vessels under construction and made a few simple tests.

Fireproof wood was at one time much used on the war vessels of the navy, but has been almost wholly abandoned, by reason of its gathering moisture badly and the lessening of strength and the increased difficulty of working it. The frames of scenery require to be particularly light and strong, and that the wood possess its maximum strength, and that it should not be liable to warp. I soon concluded that in the present stage of the art it was too much to expect that the wood flame-proofed by any of the ordinary commercial processes would come into general use for battens, frames, profiles, etc., of stage scenery.

Fireproof paints are sometimes required by law to be applied to woodwork about the stage. The underwriters' laboratory at Chicago had a short time previously made an extensive series of tests of all of the prominent ones in the market. The unpublished records were placed at my service. These tests had shown that none of these paints had any noteworthy value in flame-proofing wood, but for confirmation I requested Messrs. Fay and Norton to make tests of a few of those most prominent in the market. They purchased commercial samples and made chemical analyses of several; each was found to be mainly a sort of white-wash consisting of slaked lime, finely pulverized asbestos, with also a little alum, gypsum and glue. The paint adhered well when applied to canvas, but was quickly proved by test to have almost no flame-proofing quality whatever. It is difficult or impossible on precise scientific grounds to see how these paints can have any noteworthy value against anything but a very small blaze, like that of a match or spark.

Several subjects remain which we have scant time to discuss. The most important is the fire-escape. I will take time only to call attention to a source of fatality that had not been foreseen until the Iroquois fire.

A type of fire-escape has been developed under the Building Laws of Philadelphia primarily for use in factories, which is so remarkably efficient and so far ahead in safety of anything else that exists that we may wonder why it has not been copied in other cities. True, it is somewhat expensive, but the safety it gives is well worth the extra cost.

The fundamental idea is that the stairway tower is absolutely cut off from the various rooms and floors which it serves. One

must go out from the room into the open air and then enter the stairway. Once within this, he can proceed without danger to the bottom. The same idea can be applied to the fire-escapes from a theatre.

The great lesson out of all the theatre-fires as to the danger to those in the gallery should not be forgotten in designing the stairways and fire-escapes. The area, the total number of stairway-exits, and the total width of stairway per hundred persons, should be two or three times as great for the gallery as for the other parts of the house, and all exits should run in such a direct and obvious course that with a person once in them he could not fail to find his way to the bottom, although in total darkness. The flights of stairs should be each of the fewest steps practicable with frequent landings on which one can steady himself and with good, simple, continuous handrails that can be followed down each side and a strong centre rail, continuous all the way, where wide stairs are necessary.

A sad loss of many lives occurred in the Iroquois, by reason of a blind passageway from the gallery, which led nowhere in particular, but which led out from the main exits in such a way that those rushing outward naturally took it as a line of escape. A few blindly located steps caused some to stumble; others tripped over them until there was quickly a crowded and confused mass of men, women and children caught in this cul-de-sac and doomed to suffocation.

As to the aisles and exits, a great deal of cutting out and enlarging of aisles and removal of seats was done immediately after the Iroquois fire, apparently without reflection that to deliver the crowd from the seats at the doorway with too great a rush increased the danger of crushing on the stairs. I question indeed whether the width of the aisles near the stage might not reasonably with advantage be made much narrower than the law now permits, thus increasing the number of good seats and the earning capacity of the house enough to pay good interest on the cost of making it safer and providing more numerous aisles, exits and stairways at the rear. The narrowest aisle permitted in a theatre, even close to the stage, is commonly 30 in. In a Pullman car and in the ordinary railway coach 22 ins. and 20 ins. is found ample for a crowd of people moving along with all necessary speed in single file.

It is far better to introduce additional aisles at the expense of making all the aisles narrower, thus lessening the tendency in a mad rush, for people to try to crowd past one another and giving better chance for those who are not strong to steady themselves by holding on with their hands to the seats on both sides the aisle as they go along toward the exit.

Another feature that is worthy of note before closing is that it is not essential for safety that a theatre should stand in an open lot. Some of the worst theatre-fires in history have happened where the theatre was open on three sides or four sides. It is far more important that attention be given to the details of fire-walls and to providing passages. It should, however, always be the effort that channels of strongly arched masonry, passageways roofed almost as strongly as for a fortification, be provided running in opposite directions, so that if a fire from explosion or other unusual cause be developed in the street or along the main façade of the theatre, all of the audience could easily find exit in an opposite direction to the alley or to the adjoining street.

#### PRICES PAID FOR SOME PAINTINGS.

“L’AFFAIRE Rokeby-Velasquez,” says a writer in the last issue of the *Art Journal*, “has raised in acute form that most difficult problem as to how far a nation is justified in expending large sums of money on ‘things of beauty’ which are a joy forever at the very moment when hundreds, through no fault of their own, lack the wherewithal to keep body and soul together. The issue is not one which can be usefully discussed in this place. We must be content to take refuge in the true paradox that there are two rights, apparently mutually destructive. Alas! if we waited till the canker of poverty was healed—as soon or late it must be healed—to make further purchases for our National Gallery, most of the fine pictures still available and required to round off the collection would have drifted out of our reach. Meanwhile, many are seeking details of the noteworthy amounts already spent on our public picture treasures. Gifts and bequests apart—and they have been numerous and munificent—the assemblage of British and foreign pictures now in Trafalgar Square and Milbank have cost something like \$750,000, some ten per cent. of which has been contributed

by private persons or come from various funds bequeathed for purposes of purchase. The most memorable purchase was that in 1884, when £87,500 was paid to the Duke of Marlborough for two renowned pictures from Blenheim. From all sides the government was pressed to buy the 'Ansedei Madonna' of Raphael, valued by Sir Frederick Burton at £115,500. The Royal Academy promoted an insistent memorial, and even Members of Parliament were moved to affirm that 'their constituents and the whole nation will approve and applaud' a departure from 'the hard line of severe economy in order at one stroke to raise to a higher level the collection of pictures of which the whole nation is proud. In the issue £70,000, equal to about £14 per square inch, was paid for the Raphael, and Mr. Gladstone used to say in that connection that 'I have saved the taxpayers £45,000 by not listening to the advice of the Director of the Gallery.' A few years ago Mr. Pierpont Morgan gave £100,000 for the 'Colonna Raphael,' which for the present hangs near the 'Ansedei' in the Umbrian Room. The second picture was, of course, the equestrian portrait of Charles I., by Van Dyck, valued by Sir F. Burton at £31,500, whereas it was acquired for £17,500. This is the masterly work which fetched £150 at the dispersal of Charles I.'s treasures in 1649, when so many priceless things, now in the Louvre, Vienna and other public galleries abroad, left this country for ever. The next highest sum was the purchase in 1871, for £75,000, of the seventy-seven Dutch pictures and eighteen drawings brought together by Sir Robert Peel. Obloquy was heaped upon those responsible, yet in 1884, when there was some idea of getting the Rubenses from Blenheim, Sir William Gregory offered to buy the Peel pictures for a quarter of a million sterling, and to-day even that sum does not represent their value.

"The foundation-stone, so to say, of our National Gallery was laid in 1824, when the thirty-eight pictures of John Julius Angerstein, which for some years thereafter were exhibited at his house in Pall Mall, were secured *en bloc* for £57,000. In 1890 very little short of this sum, £55,000 to be exact, was paid for three works from Longford Castle, now among the most highly prized in Trafalgar Square. They are the wonderful 'Ambassadors' of Holbein, 'Admiral Pulido-Pareja' by Velasquez and the 'Italian Nobleman' of Moroni. Parliament granted £25,000 of this sum, while the remaining £30,000 was subscribed in equal proportions by Messrs. N. M. Rothschild, Sir Edward Guinness, now Lord Iveagh, and Mr. Charles Cotes. In the next place comes the 'Darnley Titian,' secured last year, through Sir George Donaldson, at £30,000, made up of a special grant of £9,000 and £21,000 given by Lady Wantage, Lord Iveagh, Lord Burton, Mr. Waldorf Astor, Mr. Alfred Beit and Mr. Pierpont Morgan."

## ILLUSTRATIONS.

UNITARIAN CHURCH, LANCASTER, MASS. CHARLES BULFINCH, ARCHITECT.

ITALIAN WINDOWS: FIVE PLATES.

See article elsewhere in this issue.

REINFORCED-CONCRETE STABLE FOR THE ROBERT GAIR CO., WATER AND MAIN STS., BROOKLYN, N. Y. MR. WM. HIGGINSON, CONSULTING ARCHITECT, NEW YORK, N. Y.

This stable, as well as the adjoining warehouse, built after the same method, was erected by the Turner Construction Co.

The general plan provides a clear first story for the storage of wagons, with access to the second or stable floor by means of an outside runway, also of reinforced concrete. To secure an unobstructed first floor, the second-floor girders are suspended at the middle by a tie-rod from the roof truss.

The first floor is of plain concrete, with granolithic finish. The second floor was made by first setting in place the reinforced-concrete girders and floor-slabs and laying upon them, a few days later, a finished floor of concrete, with troweled cement finish, having a minimum thickness of 2½ inches, graded to gutters at rear of stalls and grooved to prevent slipping.

The stall partitions, shown as of wood in the drawings, were actually constructed of reinforced concrete.

ELEVATIONS OF THE SAME.

PLANS AND ROOF TRUSS OF THE SAME.

SECTIONS OF THE SAME.

Additional Illustrations in the International Edition.

ITALIAN WINDOWS: THREE PLATES.

TOMB OF CASIMIR-PÉRIER IN THE CEMETERY OF PÈRE LACHAISE, PARIS. ACHILLE LECLERC, ARCHITECT; J. P. CORTOT, SCULPTOR.

TOMB OF MARSHAL PEIXOTO, SECOND PRESIDENT OF THE REPUBLIC, IN THE CAJU CEMETERY: MORTUARY CHAPEL OF THE JANNUZZI FAMILY. THE JANNUZZI BROTHERS, ARCHITECTS, RIO DE JANEIRO, BRAZIL.

TOMB OF MARSHAL BITENCOURT; MONUMENT TO THE SAILOR PIO TORELLI, CEMETERY OF S. JOAO BATTISTA, RIO DE JANEIRO, BRAZIL. SEHNOR A. MORALES DE LOS RIOS, ARCHITECT.

TOMB OF COL. SENNA MADUREIRA, CAJU CEMETERY; TOMB OF SEHNORA ———, CEMETERY OF S. JOAO, BATTISTA, RIO DE JANEIRO, BRAZIL.

DOORWAY OF THE GEWERBEHAUS, BREMEN, GERMANY.

## NOTES AND CLIPPINGS.

**DUTY ON STATUARY.**—In a decision by Judge Waite, the Board of United States General Appraisers lately overruled a claim filed by St. John's Hospital, of St. Louis, regarding the customs classification of marble statuary intended for use in the chapel of the hospital. The statuary was assessed for duty at the rate of 15 per cent. ad valorem under the terms of the reciprocity treaty with Italy, and was claimed to be free of duty. Judge Waite denies the contention of the hospital on the ground that the statuary could not have been imported, under the terms of the Dingley tariff law, for an institution established "solely for religious, educational, philosophical, or literary purposes," as provided in Paragraph 649.

**FRENCH CATHEDRAL ARCHITECTS IDENTIFIED.**—A piece of news of profound importance to the history of Gothic architecture is published in Paris, says the *Liverpool Mercury*. Of all lands outside Italy, the spoiled child of the arts, it may be said of all the great mediæval cathedrals that they stand as mighty creations of the unknown, since no man can name the great architects and sculptors who gave them their being and their beauty. So far as France is concerned, this can be truly said no longer. Mystery has yielded before the patient research of history. In a communication made to the Antiquaries of France, M. De Mely present photographed facsimiles of sixty-three of these intellectual wonders of the past, whose very names were unknown but yesterday. All are men of the twelfth and thirteenth centuries.

**BIRDS AS GAUGES OF ATMOSPHERIC IMPURITY.**—A curious test of the atmosphere was tried in the French Senate recently. General Billot complained of a headache at a recent session and attributed it to gas given off by the heating apparatus. The engineer was unable to find any defect in the apparatus. Recourse was had to a "bird test." Bengalee birds are reputed to be very easily asphyxiated. One was hung in a cage for eight hours over the fauteuil in which General Billot contracted the headache. As the bird was lively at the end of that period the atmosphere was pronounced pure.—*N. Y. Tribune*.

**STATUES OF PRINCE BISMARCK.**—Bismarck has come to be about the most bestatued figure in nineteenth-century hero worship. The monuments erected in Germany to the "man of blood and iron" are not less alarming in number than they are, doubtlessly, low in any real art quality. Up to the present the number unhappily completed is 204, and there are still 39 to be inflicted on an already much-Bismarcked people. The kingdom of Saxony leads with 54 monuments. Germans dwelling in the wild continents are also in the race. One Bismarck statue confronts, in an attitude of becoming defiance, the savages of the South Seas, in the Bismarck archipelago.—*N. Y. Tribune*.

**WOMEN ENGINEERS IN EUROPE.**—The first European woman to adopt engineering as a profession is Cecile Butticar, a Swiss, twenty-four years old, who recently passed her examination with honor at the University of Lausanne.—*N. Y. Tribune*.

**DISCOVERY OF MORE MAYA REMAINS.**—Count Maurice de Perigny, a French archæologist, has discovered in the Peten District of Guatemala evidences of what he claims to be an immense ancient city of the Mayas, which will take months to properly investigate. He will return to this continent next year to complete his investigations.—*Exchange*.

# The American Architect and Building News

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ALL Boston is very much worked up just now over the hearings that are going on at the State House upon several bills now before the Legislature looking to the matter of dealing with the riparian treatment of the Charles River Basin. It is a matter of course that the embankment on the Boston side shall be parked, but it is a debated question whether this shall be done by the Boston Park Commission or by the Charles River Basin Commission, and whether, as contemplated by the act of 1903, the filled-in strip shall have an average width of one hundred feet or whether, as the Mayor urges, this width shall be increased to one hundred and eighty feet. The Mayor does not seek a wider and better landscape treatment, but quite the reverse, since his scheme is to reduce the width of the park to eighty feet and sell for house-lots the inner hundred feet, the ostensible object being to add at least five millions to the city's taxable property, while a less-acknowledged object may be the "getting even" with the inhabitants of the present Beacon-street houses who, to a considerable extent, are really citizens of "Cold Roast Boston," that is, they move out of the city, to Nahant or elsewhere, before May Day, and so avoid paying taxes on personalty to the city. While we feel that to adopt the Mayor's scheme would be to treat these people very shabbily, if not very unfairly, we conceive that they have only themselves to thank for their predicament. They have long given public notice of their indifference to the real value of their properties, partly by turning their backs upon the river, but still more by the scandalous way in which they have kept up their back premises and the private road that runs along between them and the present retaining-wall. Should a new row of houses finally be built, shutting out the old ones from the river view, we presume it would estop the city from assessing betterments upon the owners of the old buildings, and that

may assuage their irritation. The situation, which, so far as we know, is quite without parallel, would seem to offer an unusually good chance to determine how far a view can claim the protection of such law of ancient lights as is accepted in American practice.

WHAT the attitude of the Boston Society of Architects towards the Mayor's scheme really is, we do not know, but its various committees have abundant occupation just now in promoting or opposing sundry schemes for public improvements. For instance, closely related with the Charles River Basin improvement is the suggestion to extend the subway system by tunneling Beacon Hill, issuing through a feeder to be built within the lines of the proposed Charles River Embankment. Next they are pressing again for a new laying-out of Copley Square, apparently on the lines of the simple solution of the problem proposed by Mr. C. H. Walker, which received the first prize in the Society's competition more than a dozen years ago. As this plan involves the crossing of the square by two great diagonal roadways, one in constant use, since it definitely leads somewhere—to Huntington Avenue, that is—while the other, at right angles to it, leads nowhere at all, it is a great pity that Mr. Wm. Atkinson's admirable scheme for a boulevard connecting Copley Square with South Boston cannot be carried out, as this would give the second diagonal roadway an excuse for being, and would, moreover, cause the elimination of the decapitated Westminster Chambers Building, which now defaces the neighborhood, but which good citizens cherish with great regard, holding it as one of the best object-lessons in good citizenship and respect for the law that is to be found within the city's limits. Besides these undertakings, the Society stands ready to lend a hand to the reinstated School-house Commission, as certain disgruntled parties have brought bills before the Legislature seeking, one, the abolition of the entire Commission, and another merely its reduction to a single member. All in all, we question whether there is another architectural body that has as much influence in its own community as has the Boston Society of Architects.

THE interesting account of the "conference" recently held between practical tin-roofers and the manufacturers of tin roofing-plate, which will be found in another column, makes a curious commentary on the braggart talk indulged in by the Republican politicians and editors at the time the McKinley tariff inflicted so cruel a wrong on the innocent workers in the tin-plate mills of Wales. The Republican prophecy has been realized: the iniquitous McKinley bill has brought into being a tin-plate industry of large dimensions, absorbing a large amount of capital, employing very many deserving voters and producing an output huge in volume and imposing in negotiable value. Was the game worth the candle? We never thought it was, and it was only under the most positive compulsion from the then publishers of this journal that

the editors abstained from expressing themselves with entire frankness on the subject. The recent conference at Baltimore shows clearly that, nowadays, we are not the only ones who think the price paid for the candle was vastly too great, for, in face of overwhelming testimony, the tin-plate makers had to confess that they were marketing American tin roofing-plates that were immeasurably less lasting than the plates imported from Wales before politicians undertook to overturn the natural laws of trade.

THE holding of this conference was a most sensible undertaking and it can hardly fail of yielding beneficial results. Without doubt a large, perhaps the largest, part of the trouble is due to the unwillingness of the consumer to pay for anything but the cheapest plate the manufacturer can produce. But the assertion of the manufacturers that they can produce a good and lasting plate, if the consumer will consent to pay for it, seems hardly believable, in face of the fact that the manufacturers, while acknowledging that their output was not satisfactory, could not agree as to what causes were responsible for the defects. For our part, we have always felt that the trouble probably lay, much more than is believed, in the pickling, or rather in the imperfect way in which the plates are washed after pickling. If the manufacturers had chanced to be amateur photographers and so had had their souls wrung when they found cherished negatives had not "kept," because of imperfect washing, we believe they would have come to the understanding that they were not using enough running water to soak off all trace of the pickle, and that unless every trace of even this mild chemical is absolutely washed away pin-holes must inevitably follow in lapse of time.

THE Municipal Art Society of New York, which for a long time has been collecting the necessary money by persistent solicitation, has just instituted a rather novel form of competition—a "progressive competition," it might be called—for the mural decoration of the vestibule of the Morris High School in that city. Competitors must submit their several designs, on stretchers thirty by forty inches, on or before May 15 next, unsigned, of course. A jury of fifteen, the majority of whom are artists, will award as the first prize a commission to execute at full size "a detail" of one of the compositions, paying the competitor therefor the sum of five hundred dollars. If the jury should be dissatisfied with the effect of this "detail," that ends the matter; but if the contrary should result and the jury find the handling as satisfactory as the scheme, then a commission for the execution of the entire decoration will be awarded and the prize-winner will receive a total compensation of three thousand dollars. Second and third prizes of two hundred and one hundred dollars are to be awarded in the original competition. The panels to be decorated measure eleven feet by eight, and the subjects selected are for one an address by Gouverneur Morris, and for the other the signing of a treaty between the Dutch and the Indians. Full particulars may be secured by addressing Mr. William Walton, Secretary of the Society, 37 West Thirty-fourth Street.

THE American Institute of Architects, which is to celebrate next year the fiftieth anniversary of its organization, has to yield the *pas* in point of age to the Verein Deutscher Ingenieure, which celebrates a similar anniversary this year at Berlin. Although the two bodies are similar in that they are nearly of an age, they are dissimilar in one very important matter. While the American organization, though small, is certainly not the smallest of technical bodies, the German society is, we believe, certainly the largest, as its membership exceeds twenty thousand. This difference in so important a dimension, this discrepancy of growth during an identical period, is extremely curious and can only be accounted for by taking into consideration a variety of causes. In the first place, architecture is everywhere a more youthful profession than engineering, and in a new country there are naturally fewer professionals than in an old one, and in the second place the management of the American Institute of Architects during the first thirty years of its existence was not such as to encourage growth. We incline, however, to attribute a good share of the difference in growth to the purely physical difference of compactness of population in the two countries, and fancy that if the German cities had been as far apart as Boston, Chicago and San Francisco, the membership of the German Society would have been very much less than it is.

THE beneficial effect upon English practice of the decision in *Colls vs. the Home and Colonial Stores* is instanced in a case just heard in an Irish court. The complaint was laid by a dealer in ready-made clothing who sought relief because the light he had hitherto enjoyed had been reduced by an insurance company's building, which had been erected at a cost of over three hundred thousand dollars. Mr. Justice Barton ruled that, before ordering that the insurance building should be torn down to the height-level of the old building it replaced, an attempt should be made to remove the cause of complaint by facing certain of the adjacent walls with white enamelled tile, in the hope that the gain in reflected light would compensate for the loss of sky light.

POVERTY where no coal-bills have to be met would seem to lose half its sting, and the traveler in southern Italy or Mexico rarely associates the idea of real misery with the lazy vagabonds who beset him, as he does with the unfortunates on our own "East Side." But the poor have human affections, even if they have no money and the rate of mortality amongst them is inequitable, even in warm climates. This fact seems, of late, to have impressed the authorities of the City of Mexico, where, in the poorer quarters, the death-rate runs as high as fifty-two to the thousand, and they are now formulating a scheme for the sanitary improvement of the poorest quarter of the city, tearing down the old disease-planted houses and replacing them with model tenements. Although we question whether, even after so many years under the enlightened rule of Porfirio Diaz, the Mexican lower classes are fitted for caring for model tenements, we believe the projected improvements to be judicious, if only for the sake of the rest of the community.

ARCHITECTURAL FASHIONS.—I.

THE ORIGIN OF ARCHITECTURAL FORMS.

IN these days of Portland cement and steel beams, of electric lights and refrigerating machinery, elevators and telephones, it is curious to reflect that, while the science of construction is in a state of continual development, by the introduction of new materials and new processes, and by incessant efforts to satisfy new wants, the artistic forms in which construction is clothed, and by which it is decorated, still remain almost wholly matters of tradition. It is quite probable that, at some future time, the artistic decoration of buildings will be changed, in correspondence with the transformation in their construction and organization; but, in the meantime, the study of the descent of the architectural forms which we see around us is not without interest and profit.

Nearly all the decorative features now in use in secular buildings are based on Classic models. Practically, this means on Greek models, for, although the prototypes of most of our current architectural forms are

found in Rome, they were executed there by Greek slaves, an occasional lash with a whip, administered by his master to a lazy sculptor, constituting, in general, the sum of the participation of the Romans of the Imperial period in the fine arts. It is true that men of high intellectual training, like Julius Cæsar or Agrippa, may have pleased themselves by suggesting the grandiose plans of the buildings carried out in their names, and the construction of these buildings was, to a great extent, dictated by the military engineering practice of the time; but the detail was left wholly in the hands of the despised menials, and the dressings with which they trimmed their doors and windows, the cornices with which they terminated their walls, and the ornaments with which they decorated the inside and the outside of the structures, were substantially the same as those invented by their forefathers in Hellas and Ionia, six or seven hundred years before.

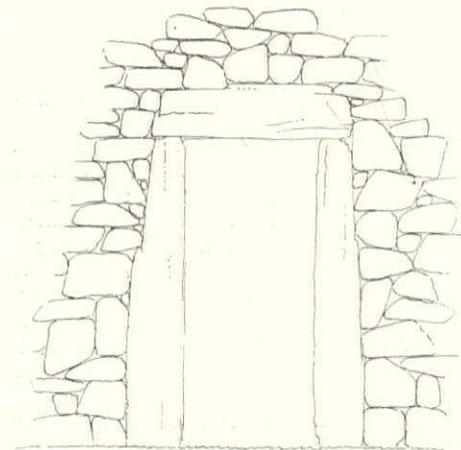


FIG. 1.—ROUGH ARCHITRAVE AND SIDE POSTS, OF WOOD OR STONE.

The most singular part of the matter is, however, that we, after nearly two thousand years, have not been able to improve upon these forms, and any one of us, who will take the trouble to look about his own house, can find in its mouldings and ornaments a little epitome of the history of Grecian architecture. If, for example, he examine the door of the room in which he sits, he will see it surrounded by a moulding known to builders as an "architrave." The word itself is half Greek and half Latin, and means the "main beam." As this indicates, the architrave was originally the beam, either of wood or stone, which spanned an opening. To strengthen and finish their rough walls at the sides of the opening, and to give a firm attachment for the doors, the

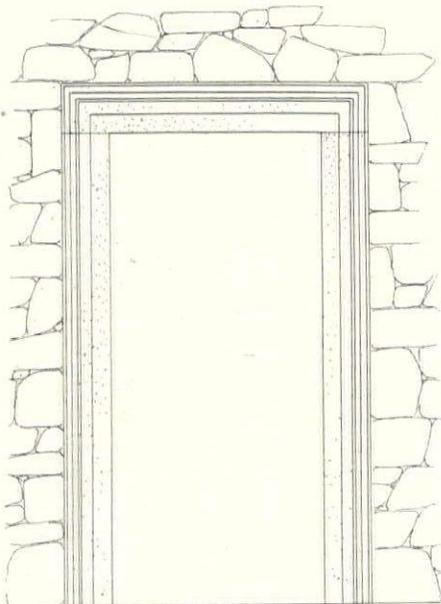


FIG. 2.—FINISHED ARCHITRAVE AND SIDE POSTS.

ancients usually set up a long piece, either of wood or stone, on each side of the opening, under the architrave (Fig. 1), and, as their resources and skill improved, they adorned these solid pieces, in their more important buildings (Fig. 2), with mouldings

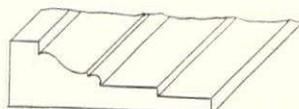


FIG. 3.—SECTION OF ANTIQUE ARCHITRAVE MOULDING.



FIG. 5.—PANEL MOULDING.

carved by hand (Fig. 3), and practically identical with the most elegant of those now "stuck" with a machine on the thin slips of wood which our carpenters nail up to imitate the laborious stone-carving of the sixth century B. C.

A careful observation of the door trimming will probably show it to consist of a large moulding at or near the outside,

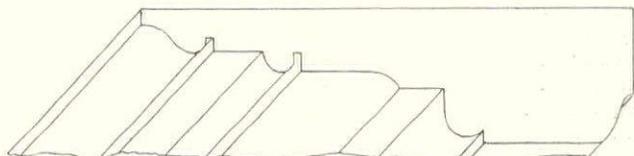


FIG. 4.—SECTION OF MODERN ARCHITRAVE MOULDING.

and a smaller one, or "echo," inside of this (Fig. 4), leaving a small plain "margin" next the opening; and the mouldings around the panels of the door itself will, very likely, show a principal member, accompanied by a smaller one (Fig. 5). This system, of combining a principal moulding with an echo, is derived through the Greeks from the Egyptians, and is older than the Pyramids.

If the reader should begin to fear that his house has not quite kept up with the times, he may, perhaps, console himself by inspecting the lower part of the side portions of the door architrave. If the house is a modern one, he is likely to find that the mouldings on these portions, instead of continuing down to the floor, stop eight or ten inches above it, on a "plinth-block," which is a plain, or more simply moulded piece (Fig. 6). The earliest examples of plinth-blocks are found at Baalbek, so that this fashion has only been current for seventeen hundred years.

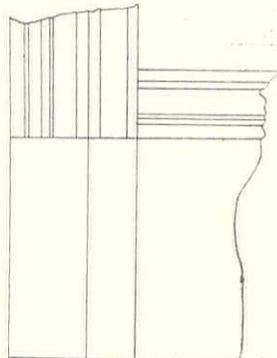
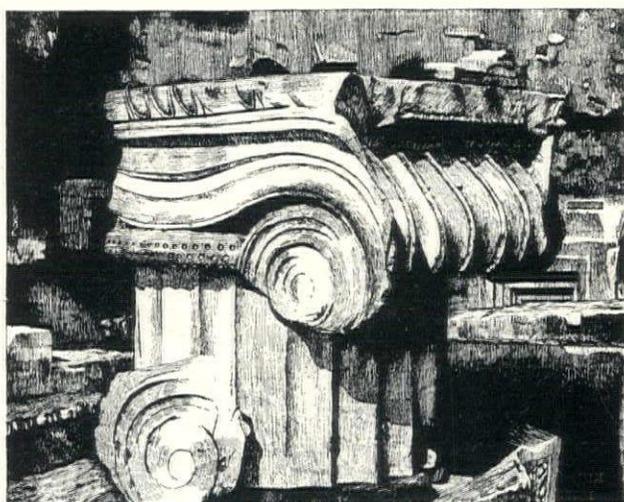


FIG. 6.—MOULDED ARCHITRAVE WITH PLINTH-BLOCK.



A CAPITAL FROM THE ERECTHEUM, ATHENS.

FIG. 7.—A GREEK IONIC CAP.

Supposing that the reader's view embraces a mantel, or a

sideboard, he will probably be able to study in them other Grecian traditions. The mantel will have, very likely, Ionic pilasters, since the Ionic capital, while "neat," to use the language of specifications, is easily executed in the putty which forms the usual modern material for such works. If this is the

case, the beholder may contemplate in its volutes (Fig. 7) either the "beau-catchers" of the Grecian damsel of the period before the Persian wars, or, as some prefer, a reminiscence of the curled shavings which were allowed, for the sake of ornament, to accumulate about the head or a wooden post, in shaping it to carry the roof-beams of a peasant's hut of a period still more remote.

Probably we shall find the shafts of the columns or pilasters of our mantel fluted, and in connection with this fluting a little story is told by the ancient writers. It is known that the Greek quarrymen cut out the "drums," or sections of the columns ordered from them, as nearly round as possible at the quarry itself, and then drilled holes in the ends, into which they drove plugs of wood, leaving a portion of the wood projecting. By slipping loops of leather over the projecting pieces of wood, a team of oxen could be harnessed to the block, which was thus drawn, like a wheel, to its destination. When all the blocks had arrived they were placed one above another, and smoothed off into the desired form, which was, at first, nearly that of a cylinder. In course of time it was observed that when gentlemen came to join in festivities in houses where columns of this kind were used for supports, they were frequently obliged, finding the walls obstructed by the benches for the company, to lean their spears, which they usually brought with them in case of need, against the columns; and, unless the spears were accurately applied to the smooth surface, they were apt to fall down, and make an unpleasantly suggestive noise on the pavement, or, perhaps, get in the way of promenaders. It occurred, therefore, to some inventive genius to cut vertical grooves in the columns, in which the spear-heads could rest securely; and this device met a want so urgent, and so widespread, that it was universally adopted, and is still in use, although it is about two thousand years since it ceased to be fashionable to carry spears to receptions.

If our mantel-piece has been made with any care, it will have

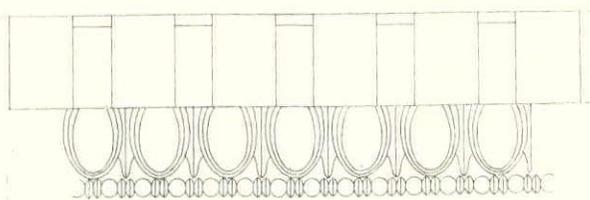


FIG. 8.—DENTILS, EGG-AND-DART AND ASTRAGAL.

a dentil cornice, and, probably, some egg-and-dart mouldings (Fig. 8), as indispensable parts of a correct Ionic design; and, if the egg-and-dart moulding is large enough, it will probably be accompanied by an "astragal," or "head-and-reel," moulding, just below it. The dentil ornament is said to have taken its origin from a row of small wooden cross-pieces, connecting the longitudinal timbers placed in pairs at the top of a wall of rough stone or mud, and helping to support the roof-timbers above. The origin of the egg-and-dart, the most beautiful of all antique architectural ornaments, is unknown, but the charming contrast that it presents of rounded surfaces with sharp points and edges has made it popular for twenty-five hundred years, and is likely to make it so for twenty-five centuries to come. The astragal, or head-and-reel ornament, is said to have been invented by little Greek shepherd girls,

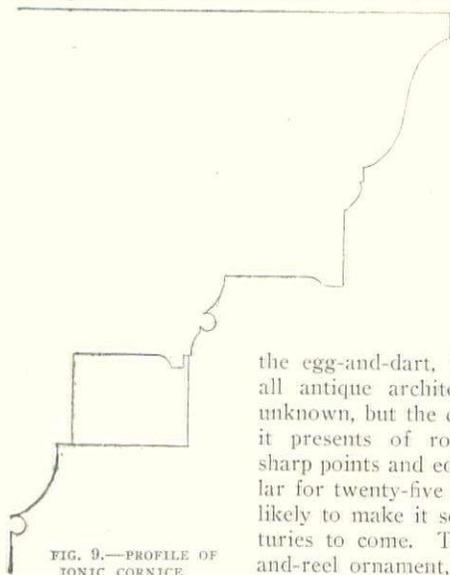


FIG. 9.—PROFILE OF IONIC CORNICE.

who picked up in the pastures the "astragals," or ankle-bones, of deceased sheep, and strung them on a string, alternating one long with two short ones, in the manner which has been perpetuated to this day.

To finish with our mantel: we shall probably find in its cornice (Fig. 9), above the dentil course, a "bed-mould," sometimes plain, sometimes carved into an egg-and-dart, or other ornament; and, above this, a projection, with a flat vertical face, over which,

again, is the "cyma," or "crown-mould," a moulding, as its Greek name implies, like a wave in profile. This cyma formed the gutter of the ancient marble cornices, as it does of many of the wooden and galvanized iron ones of the present day; and the "corona," or flat-faced projection just below it, was the "drip," by which water overflowing the gutter was prevented from working its way back to the wall of the building. If the corona had been simply right-angled in section, as it often is in the modern imitations, the water would, under the influence of a strong wind, have found its way back to the wall; hence the corona, in ancient buildings, and in modern ones properly designed, is always "throated," by cutting a groove in the underside, not far from the front edge. This "throating" prevents water from creeping farther back, and compels it to drip off, free of the walls.

#### RUG PATTERNS.

But the sheep-bone ornaments of the Greek shepherd girls, and the flutings made in columns for the accommodation of the spears of visiting warriors, are modern inventions in comparison with other fashions in architecture and decoration which are still in vogue. There is a story of a rug-salesman in New York, who objected to a Persian rug of unusual pattern, on the ground that the design of the central figure was "ugly." If he had said that it was old-fashioned he would have been quite justified, for it was nothing else than a large representation of the "Tree of Life," guarded by a winged beast on each side, just as it was carved, possibly by an ancestor of the rug-weaver, at the doors of the palaces of Nineveh, for the purpose of frightening away Satan and his host, perhaps a thousand years before the fair-haired Dorians settled in the Peloponnesus (Fig. 10). Even then the device was ancient, for we read in Genesis that, when Adam and Eve were sent forth from the Garden of Eden, the Lord "placed at the east of the Garden of Eden cherubim, and a flaming sword which turned every way, to keep the way of the tree of life." The Hebrew word "cherub," meaning a winged animal in general, may be etymologically allied to the Greek word from which the English "griffin" is derived, and the Biblical legend of the fall of man is probably commemorated alike in the figures of the sacred tree and its guardian beasts, carved on the alabaster wall-linings of Mesopotamia; in the much later "cherubim and palm-trees" with which King Solomon decorated the doors of his temple at Jerusalem, and in the conventionalized, although unmistakable pattern which the ignorant, but devoutly religious rug-weavers of Persia and Bokhara to this day knot into their most elaborate rugs (Fig. 11).

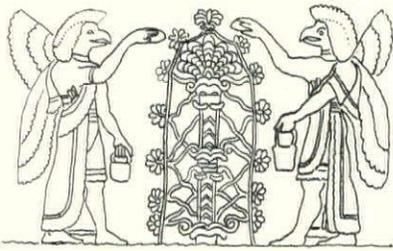


FIG. 10.—LATE ASSYRIAN VERSION OF THE TREE-OF-LIFE, WITH CHERUBIM. FROM KOYUNJIK.

Yet this figure, which has for countless ages reminded the

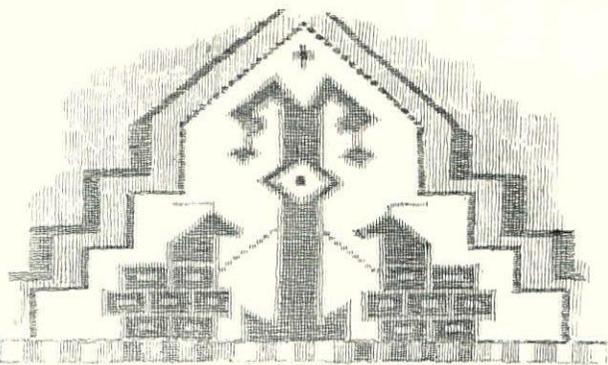


FIG. 11.—TREE-OF-LIFE AND ITS GUARDIAN CHERUBIM. FROM AN OLD BOKHARA RUG.

faithful of the expulsion of our first parents from Paradise, is probably no more ancient than many other patterns in common use in rugs. The device (Fig. 12) found in nearly all Persian rugs, which is known to Anglo-Saxon collectors as the "pear," and to native dealers as the "money-bag," is believed to be nothing else than a representation of the sacred flames with which Baal was worshipped; and the mingled flames and flowers with which the Persian delights to cover his carpets perhaps still

signify dimly to him, as they did more clearly to his ancestors, the joy of life, light and warmth proceeding from the sun, of which the flames of Baal were the consecrated representatives.

Another very ancient Persian figure, which sometimes occurs in rugs (Fig. 13), and sometimes in objects of other kinds (Fig.

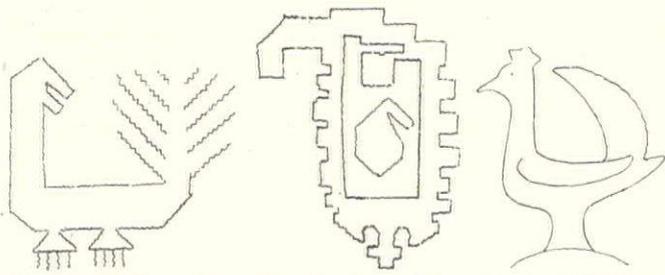


FIG. 13.—PEACOCK. FROM A PERSIAN RUG.

FIG. 12.—FLAME FIGURE. FROM A PERSIAN RUG.

FIG. 14.—PEACOCK FIGURE IN BRASS. FROM AN OLD PERSIAN LAMP.

14), is the so-called "peacock." Except for a dim tradition of its sanctity, no one knows what the ancient significance of this figure has been; but it is used in such a way as to indicate that some sort of talismanic influence was ascribed to it.

If we could interpret them, the more conventionalized patterns of the Daghestan rugs (Fig. 15), would probably be quite as significant as the peacock, the Baal flame and the Tree of Life of the Persians, for the "Mountain Kingdom" on the slopes of the Caucasus has hardly been disturbed by war or conquest since the Ark rested on Mount Ararat; but, for the present, the explanations of them are mere conjecture, and we

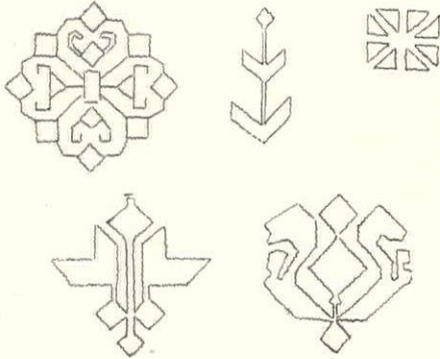


FIG. 15.—VARIOUS FIGURES FROM OLD DAGHESTAN RUGS.

can only say with confidence that the figures which the herdsmen's daughters weave into the rugs that form their little trousseau were ancient when Xenophon led his Ten Thousand through the mountain paths to the sea. In all probability they had originally some religious meaning, but there is now no clue remaining to a system of symbolism, the origin of which is lost in the depths of ages.

T. M. CLARK.

(To be continued.)

#### THE FOUNDATIONS OF THE NEW BREVOORT HOTEL, CHICAGO.

THE new Brevoort Hotel, Chicago, which is now being built on the site of the old hotel (torn down after a fire some months ago), will be a long and narrow building, thirteen stories high, with a frontage of about 50 feet on Madison street and a length of about 175 feet extending northward. It is of the modern steel-frame type of structural design, with deep concrete-pier foundations carried down through the softer clay to the hard-pan underlying it. This is in accordance with the general type of foundation now adopted for tall buildings in Chicago, and is in marked contrast with the earlier practice of building such structures on "spread" or "float" foundations on the surface crust of hard clay overlying the deep bed of soft clay. Along the front portion of the west side of the site, however, and separated from it only by a narrow alley, is the old Tacoma Building, twelve stories high, borne by the surface "spread" foundations above referred to.

In sinking the wells to form the concrete piers, the general practice is to excavate in "lifts" of 5 feet, lining each "lift" with vertical wood lagging before continuing the excavation. The lagging is braced by interior steel rings about 3 feet apart. In soft material subject to pressure, however, this method of excavating is liable to lead to movements of the clay body, as the excavation cannot be made to the exact size of the lining and any voids left outside of this will be filled by the clay closing in. Such movements may lead to trouble, if large buildings with "spread" foundations are within the sphere of influence of the movement, as was the case with the Brevoort Hotel. Owing to

the expense of deep-foundation work under such conditions, it was decided to omit the sub-basement under this end of the building, and to put down the piers for the columns along the alley, opposite the Tacoma Building, by some method which would prevent any movement of the clay from under it.

The plan adopted was to drive steel sheet-piling to form complete caissons passing through the soft clay and into the underlying hard-pan. Then the enclosed mass of clay could be removed and the concrete pier built within the protection of the steel lining, which would prevent any movement of the surrounding mass. Connecting these caissons were to be two lines of steel sheeting only reaching to a little below the level of the Tacoma Building foundations. The clay between these would be removed and concrete filed-in to form a retaining-wall for the protection of these foundations. The original plan was to use steel sheeting to form rectangular caissons, connected to which would be the same style of sheeting for the retaining-wall. This was afterwards modified by using the United States steel sheeting to form circular caissons, and also for the wall. The original intention was to have this work done first (as would have been natural), so as to form a complete division in the bed of clay before any other excavation was undertaken for the new building. The alley already mentioned, however, was almost the only means of access to the work, and the foundation contractors desired to keep this open as long as possible. The interior shafts on the site were therefore sunk first, and by the usual method, in short lengths with wooden lagging.

The five shafts along the alley and adjacent to the older building were then taken in hand and the interlocking steel piles were driven to form cylindrical caissons 5 feet in diameter and 30 feet deep. Unfortunately, however, not sufficient care was taken to ensure that the piles were driven truly vertical, and a pile-driver not specially adapted to the work was used in which the weight of the hammer pulled the leaders out of the vertical. On excavating the caissons it was found that every one was out of plumb, the amount of variation from the vertical differing in the several shafts. As it would not have been desirable to carry the steel work on inclined piers, some special remedy had to be devised. Each shaft was carried down as originally designed and planned, to a further depth of 35 feet, using the ordinary method with wooden lagging, as the clay was quite firm, and enlarging the bottom by a conical chamber with a base diameter of 10 feet. This was then filled with concrete, forming a 5-foot vertical pier 35 feet deep, with its top at the bottom of the inclined or sloping steel-lined shaft. Upon this pier were placed two courses of steel beams and a shoe for a heavy cast-iron column which was made in three lengths and the top of which was level with the top of the inclined shaft. This carried the shoe for the steel column of the building and in this way transmitted the load directly to the vertical pier 30 feet below. The inclined shaft was finally filled with concrete, in which the cast-iron column was embedded. The cast-iron column was also filled with concrete.

This peculiar construction is considered to have been necessitated entirely by lack of experience in the driving of the steel piling, and the deflection of the cylindrical caissons from the vertical would have been avoided had greater skill been exercised in driving the piles. Nevertheless the method pursued fulfilled perfectly its purpose of forming a caisson from which the clay could be excavated without any disturbance of the surrounding mass.

The steel piles used are single rolled shapes of special section; they resemble deck-beams, except that the straight flange of the latter is replaced by a curved or nearly circular flange forming a socket to receive the bulbous edge of the next pile, so that the piles are locked together and cannot pull apart or separate.

The architects for the Brevoort Hotel are Messrs. Egan & Prindle. The engineers for the structural work were Messrs. Purdy & Henderson, and the Wm. Grace Co. were the general contractors. The steel piling was supplied by the United States Steel Piling Company.

#### THE TIN-PLATE CONFERENCE.

THE conference held in Baltimore on February 21, under the auspices of the Trustees of the National Association of Master Sheet Metal Workers between its members and the manufacturers of plates for roofing purposes was characterized, says *The Metal Worker*, by a marked frankness on the part of the participants in the discussion. It was rather unique, in that the first session devoted to a somewhat drastic presentation of the

experience of the roofers, both by resolutions adopted at associations in different cities and by those in attendance, was listened to with extreme courtesy by the manufacturers. This side of the case was summarized in a series of questions. The afternoon session was devoted to hearing, just as courteously, the conditions confronting the manufacturers. The conference culminated in the appointment of a joint committee, composed of members of the Association and of the manufacturers, to take up the work of suggesting some method of securing better material and its more general use, this committee to report at the annual convention to be held in August at Indianapolis. This will afford the needed time for reflection and recommendation. In the meantime it seems clear that makers must be more careful, and roofers must use the better grades of plates more extensively and get the better price for their work necessary.

Communications were read from master, sheet-metal workers, as were also the resolutions adopted by the various associations, registering the experience with roofing-plates. These letters and resolutions all were to the effect that the tin plates now available for roofing purposes did not prove durable or render the long and satisfactory service that was given by the plates obtainable 15 or 20 years ago. Some expressed a desire for a charcoal-iron plate made by the old processes throughout. Others desired a reduction in the number of grades. The extent to which slag roofing had supplanted tin roofing had led some to take up that method of roofing and others to give up the tin-roofing business altogether. The experience with sheet-iron for conductor or eaves-trough and smoke-pipe, and for similar purposes, was said to be as unsatisfactory as the tin-plate for roofing. The galvanizing on steel plates was said to peel badly, and while the American Sheet and Tin Plate Company was said to have improved its product the difficulty has not been entirely removed. The elimination of private brands and the marking on terne-plate boxes the gauge and weight of the sheets and weight and character of the coating was recommended. The lasting quality was stated to be but one-sixth of that of the old English tin-plates, and no excuse existed for the poor quality of the material now sold to roofers. It was held that it was unsafe to give any kind of a guaranty. Gutters made of a high-grade plate were reported to have pinholed and become useless. The letters came from Atlantic City, N. J.; Cranbury, N. J.; Salem, Ohio, and Provo, Utah; the resolutions from associations in Philadelphia, Pa.; Kansas City, Mo.; Milwaukee, Denver, Brooklyn, Cumberland, Md.; Erie, Pa.; Indianapolis, and Saginaw, Mich.

The roofers then were invited to give their experience, avoiding the mention of brands or names of concerns. They were requested to use all possible courtesy in dealing with a subject that involved such vital interests and on which such strong feelings were entertained.

After many working roofers had given their evidence as to the wholly unsatisfactory nature of the roofing plate sold to them by American manufacturers, Mr. Wm. Martin, of New York, said: I am gratified to see so many manufacturers and dippers, and I wish that builders and property-owners were here to present their views. It is an important question, and we can answer it if we have to. We want a better plate, which is only a square deal. Tin-roofing is an American industry, and if you manufacturers have any patriotism, put it back where it was when we gave you our support. In Baltimore city 90 per cent. of the roofs that are being put on are of some other material than tin, and we need the business, and so do you. Why are you allowing 90 per cent. of the business you ought to enjoy to go to some other tradesman? Is that finance or sound business enterprise? We want to join you in building up the roofing business. Our interests are mutual. If our people will not use goods made in this country, is not the tariff which protects the tin-plate industry a highway robbery? You now note the feeling of unrest and we are hearing of a co-operative movement to take care of our interests. We don't want to do it, but don't force us to. If you mean to do what is the square thing, we are with you. Now I will present some questions for your consideration:

1. What is the difference between iron and steel sheets?
2. Which makes the most desirable plate for roofing, iron or steel in the lighter gauges?
3. What, in your judgment, are the best gauges for roofing-plate?
4. If steel is used, which is the better, Bessemer or open-hearth?
5. If steel is used, is not that made from new material preferable to that made from an uncertain mixture or scrap?

6. Hasn't the pickling of these plates something to do with the deterioration in service?

7. Does not the strong heated pickle used in cleansing plates have a detrimental effect on the base?

8. Was not the old way of using a very light pickle not heated preferable for light sheets?

9. Is there no difference in the lead used with the tin in the coating?

10. Is there any trouble with the tin used with the coating?¹

11. Are the roofers using chiefly cheap plates?

12. Is there a disposition to use better plates?

13. Do the best plates show better durability in proportion to their increased cost?

14. Has as much attention been paid to making durable plates as to making plates that were soft and tough to work well?

15. When were black sheets first made commercially in this country?

16. If the duty were taken off tin-plate, would more durable plates become available in this country and cheaper?

17. Would any advantage attend a reduction in the number of grades to four?

18. Should not tin-plate boxes be marked with the gauge of the black sheets, their weight and the weight of the coating?

19. Who profits by the use of private brands?

Secretary Barnard then read an extract from a letter of Dr. Charles B. Dudley, chemist of the Pennsylvania Railroad Company: "I cannot help feeling that the base plate is really at fault. While we do not understand the whole subject, yet—that is to say, while we have not probably touched absolute bottom—there is much evidence that if the manufacture of wrought iron had kept pace, from the mechanical standpoint with the manufacture of steel, it would still be a formidable rival of steel."

PRESIDENT SEABROOK: The roofers having presented their case in the morning, the afternoon session belongs to the manufacturers, in the hope that a remedy can be suggested. I hope you will refrain from the mention of brands.

W. H. GRIFFITHS:² There is no question in my mind but every maker is deeply interested in the question. Every one of us believes that his particular brand is the only one. You have made us defendants, and the evidence is of the most positive character. The questions here cover the entire subject. I am no longer a manufacturer of steel plates, and if you desire later, after my colleagues have had an opportunity of speaking, I shall be glad to answer these questions or any others.

MR. W. BANFIELD:³ I think no maker is prepared to say what is the trouble with the plates. We have to make what people will buy, and they buy mostly the cheapest plates, as one of my salesmen reports to me is his experience in Baltimore since I have been here. We cannot make the best plates we know how to make at the price the buyer is willing to pay, but we can make just as good plate here as can be made abroad, if you will pay for it. In answering these excellent questions, steel is a purer metal than iron and has less impurities, consequently is more quickly corroded. I think that when a 14 x 20 plate weighs less than one pound the danger side is approached. Open-hearth steel works better than Bessemer, but on a roof there is no difference in the wearing qualities. There is no advantage gained in using all new material.

Pickling is necessary, and if the pickle is not all removed it will cause pin-holing, and the coating of a heavily coated plate will not protect it from showing up when on the roof. This causes the pin-holes mentioned this morning. This is an imperfectly coated plate. They do not make plates by the old method in England now, and we do not make them as we ought to here. It will require co-operation from you with us to make good plates. You must buy the good plates if we make them and not patronize those who will sell you cheaper plates than you say you want, so that it is up to you. More of the cheaper plates are being used, but the better plates are coming more in demand. As to the relative durability of cheap and higher-priced plates, you can answer best. Makers are making sheets as tough as is necessary, and the durability is question of price. No change in price would occur if the tariff was removed, as the same methods are used abroad as we are using.

I think that a reduction of the number of grades would be an advantage, and I would make but three grades—12, 20 and 30 pound coating—and lighter coated plates should not be used. I think that the buyer can protect himself against light gauge and

¹Griffith's Charcoal Iron Mills, Washington, Pa.

²Follanshee Bros. Co., Pittsburgh, Pa.

light-coated plates by exercising care. The owner of the private brand profits from it.

Galvanized sheets can be made as good as they formerly were, and, as in tin-plate, the steel base is not to blame. Competition has led to the poor product you complain of. An iron sheet on a roof or in a smoke-pipe will last longer than a steel plate. Another trouble is that the jobber is making more tin-plate than the manufacturers and gives us directions as to what he will buy, and if we sell we must comply. Many of the jobbers' demands are all folderol.

MR. N. H. TAYLOR:<sup>3</sup> Mr. Banfield has covered the field so fully and ably that there is very little left for the maker to say. The difference between iron and steel has never been acceptably explained. A chemist who has analyzed both says there is no difference, except that iron has a certain amount of cinder that acts as a protection. Steel takes the coating more readily than iron. It is difficult to get perfect light-gauge plates, yet heavy plates cause trouble from expansion and contraction. Bessemer plates give a better appearance when coated with less coating than open-hearth steel. Open-hearth steel is more difficult to work in the mills and to pickle than Bessemer. Little scrap is used in making tin-plates, and that is selected and an advantage.

Pickling must be properly done to clean the sheets, and then carefully and entirely removed; then it has practically no effect. Open-hearth sheets are more easily pickled. The lead and tin used in coating high-grade plates is all good. In some sections cheaper plates are used, and in other sections the better plates are used and little complaint is made. More cheap plates are used, but there is a disposition to use more of the better plates. The higher-priced plates do show better durability. The working quality of black sheets has not been a cause for consideration in roofing-plates since steel has been used. Tin-plate is the same price on both sides of the water at this time, so the duty is a negligible matter.

The quality of tin can be told readily without the method of marking boxes suggested, as the process and the flux have a bearing as well on the quality. If jobbers' brands are referred to, the jobber certainly profits from his private brand. The tin plates imported previous to the enforcement of the McKinley law were made of mild steel, which is different from the steel made now. Roofs and gutters are now quite generally too flat and have a bad effect on the service of the plate. The American buyer does not seem to be willing to pay the price.

MR. C. R. WILLIAMS:<sup>4</sup> We will concur in any effort you may make to secure the use of higher-grade plates. The present situation is the outcome of economic conditions that are old. The differences between iron and steel are due to the refining process. We have made at our plant just what the market demands. In one place 8 pounds of coating will be asked; in other places 40 pounds. Of late specifications have shown a larger percentage for heavier coating. We will make whatever you will pay for. We will make charcoal iron if you want. We believe that there is a cause for the use of slag roofing in the place of tin-roofing. We have studied the chemistry to know for ourselves, and I believe in iron. In steel-making you cannot remove all the metalloids, manganese, sulphur, etc., and neither can you get charcoal plates at the old prices; wages are too high.

MR. T. A. GESSLER:<sup>5</sup> The manufacturers who have spoken before me have believed the picture painted here this morning was as black as it was painted. I do not. You said terne plates were going out of use. We have found that our sales of terne plates are increasing and the better grades in largest proportion. The experience given here is largely from large cities, which is hardly fair, as their plates are exposed to the sulphurous gases in the atmosphere. In correspondence with one of our jobbers I learn that our Government is using tin-plate largely on seaport buildings. I am glad that this conference has been held, and hope it will result in both the roofer and his customer realizing that good plates will require a higher price to be paid than is now the custom.

W. H. GRIFFITHS: There is a positive difference between iron and steel. The conferences with the best chemists tell me the presence of manganese, carbon and sulphur, in this order and importance in destructive effect, are the cause of the trouble with mild steel roofing-plate. The analysis of the Pittsburgh Laboratory can be had by you all. Those who had the analysis made were surprised, and had the work repeated. Chemists can tell the difference between iron and steel. The Government does use

American tin-plate extensively, and the experts have never objected to our goods. Mild steel is not adapted to the purpose you are putting it to in your work. Using a phrase, there is distress in steel. If you have consumption, putting on a heavy overcoat will not cure you. I believe that open-hearth steel is better for roofing-plates, and the Siemens-Martin process is the best for the purpose. Bessemer steel must have some manganese to work properly.

Pickling properly done and followed by annealing eliminates all trace of acid. It is cheaper for the maker to use only tin and lead in the coating. Antimony makes trouble—far more expensive than its use effects. You have indicated the remedy in suggesting a return to old conditions. I regard the coating as of little consequence, and numerous grades are not essential.

MR. J. J. O'CONNOR:<sup>6</sup> It grieved me very much this morning to hear all complaints, partly from their justice. Mr. Martin says give us a square deal, and I ask, give us a square deal. Does the trouble lie entirely with us? I say, no. From a profit point of view, we do not rely on the sale of bright plates and must depend on the roofing trade. We saw what we considered the trouble and we offered a charcoal-iron plate as a solution. We believe that the trouble was with the base material. I sold steel plates twelve years ago that are still in use. I think that poor application causes some of the troubles. We stand ready to co-operate in bringing the roofing business back to where it belongs, as we are in business for profit and will be glad to help you.

W. B. GODDARD:<sup>7</sup> I have had experience as a dipper and a manager of a tin-plate works. The whole matter depends on the base plate. One authority states that steel rusts, compared with iron, as 90 years to 190 years. Steel may be said to have a disease, and as yet the cure has not been found. I stand here as an advocate of charcoal iron with 30 to 35 pounds coating. A test for plate is to attach samples of iron and steel tin-plate to a board and then scrape the tin coating off, then polish it with emery paper, and a microscope will show no tin on the steel, while the grain of the iron will still show small particles of tin. Internal corrosion causes some of the troubles with steel plates.

Some of the Government departments demand an iron base, and there is no trouble in dealing with them. Other departments specify the coating must be 30 per cent. tin and 70 per cent. lead, and it is not always easy to satisfy their tests on this point. Near New York there is a great deal of trouble from rusting out on the seams and no explanation of the cause has yet been satisfactory. In my opinion it is impossible for enough of the white pickle of 2 per cent. to adhere to the plate to cause crystals to work destruction later, and I do not believe that pin-holes come from that cause. I believe the solution is to go back to the old charcoal-iron base.

ALEX. G. GROOME:<sup>8</sup> We maintain that a steel base plate heavily coated by the palm-oil process will give as good service as an iron-base plate. I do not believe the condition is as bad as indicated by this morning's expressions. There should be a greater tendency toward the use of the best plates that can be procured. All manufacturers are willing to co-operate with the roofers to better the conditions.

W. H. GRIFFITHS: The suggestion was made that the manufacturers were doing the roofers, but they are doing themselves. They are doing it by selling tin plates below cost.

W. U. FOLLANSBEE:<sup>9</sup> We find this afternoon that the doctors disagree. It is very clear that the sentiment here is in favor of charcoal-iron tin-plates. Now, why have you bought anything else? Why is it that these charcoal plates have gone to the bad and been replaced by roofs of steel plates? Charcoal iron plates cost more. I do not believe in jobbers' private brands. We can give the same goods that were made and gave satisfaction, but the jobbers will not pay the price and we cannot afford to sell them at the prices offered. I believe if this conference is to accomplish all that it should a committee of reliable and unprejudiced roofers should visit the tin-plate plants and see many things for themselves. I believe that you have got to buy plates that are guaranteed by reliable houses.

MR. O'CONNOR: I want to champion the cause of the poor, abused salesman. I believe in the guaranty, but the buyer must be sure of the house back of it. We bought what we believed were charcoal-iron tin bars, and found they were not, and to make our guaranty good we replaced these plates. We still guaranty our plates.

MR. BANFIELD: Better coated plates can be produced by the

<sup>3</sup>N. & G. Taylor Co., Philadelphia, Pa.

<sup>4</sup>Carnahan Tin Plate and Sheet Co.

<sup>5</sup>American Sheet and Tin Plate Co.

<sup>6</sup>The McClure Co., Pittsburgh, Pa.

<sup>7</sup>Meurer Bros., Brooklyn, N. Y.

<sup>8</sup>Merchant & Evans Co., Philadelphia, Pa.

<sup>9</sup>Follansbee Bros. Co., Pittsburgh, Pa.

acid flux than with palm oil, and there is no objection to the use of acid flux in my opinion. In the machine-made plates, on the rapid plan, the plates are not properly cleared for the coating or as well as they ought to be.

A resolution was adopted thanking the manufacturers for their attendance at the conference and the enlightenment given on the causes of trouble with the tin-roofing-plates.

## ILLUSTRATIONS.

NORTHEAST VIEW OF THE LADY CHAPEL: ST. PATRICK'S CATHEDRAL, NEW YORK, N. Y. MR. CHARLES T. MATHEWS, ARCHITECT, NEW YORK, N. Y.

BURNS'S RESTAURANT, 107 WEST 44TH STREET, NEW YORK, N. Y. MR. CHARLES I. BERG, ARCHITECT, NEW YORK, N. Y.

CHRIST CHURCH AND BABCOCK MEMORIAL HOUSE, WEST 36TH STREET, NEW YORK, N. Y. MESSRS. PARISH & SCHROEDER, ARCHITECTS, NEW YORK, N. Y.

CHURCH OF THE ANNUNCIATION, NEW YORK, N. Y. MESSRS. ELLIOTT LYNCH & W. H. ORCHARD, ARCHITECTS, NEW YORK, N. Y.

SHELBY COUNTY COURT-HOUSE, MEMPHIS, TENN. MESSRS. HALE & ROGERS, ARCHITECTS, NEW YORK, N. Y.

DOORWAY AND PORTE COCHÈRE, EAST 36TH STREET AND MADISON AVE., NEW YORK, N. Y. MR. C. P. H. GILBERT, ARCHITECT, NEW YORK, N. Y.

HOUSE OF F. W. ESCHMANN, ESQ., YONKERS, N. Y. MR. F. A. DE MEURON, ARCHITECT, NEW YORK, N. Y.

For this and the following subjects, we are indebted to Messrs. H. F. Huber & Co., who were charged with the decoration of the house.

HALL AND FIREPLACE IN THE SAME HOUSE.

### Additional Illustrations in the International Edition.

THE LADY CHAPEL: ST. PATRICK'S CATHEDRAL, NEW YORK, N. Y. MR. CHARLES T. MATHEWS, ARCHITECT, NEW YORK, N. Y.

## NOTES AND CLIPPINGS.

**A BAVARIAN PROTEST AGAINST MONOTONY.**—The architects of Munich have lodged a protest against the monotonous rows of houses that are being erected in their town; they suggest that the houses should no longer be built absolutely parallel with the line of the street, but that each house should have an individuality of its own, within certain prescribed limits.—*The Builder*.

**BACTERIAL ANALYSIS OF AIR.**—Testing the condition of room air by a bacterial method is an unusual one, but in an article in the January *Bulletin* of the New Hampshire State Board of Health Dr. Howard Nelson Kingsford, bacteriologist of the State Health Board, says that the Dartmouth College buildings at Hanover, N. H., are inspected several times each month. Samples are taken from time to time of the air in all lecture-rooms, recitation-rooms, basements and the chapel to obtain cultures, which give an index of the number of bacteria existing in each sample. If there are above a certain number of colonies found growing on the media of the culture after being exposed for ten minutes a careful search is made to ascertain if possible the cause, and in every case the room or building is disinfected. The basements are whitewashed once a year to give light and prevent the growth of bacteria, mold and fungi.

**ROMAN EXCAVATIONS.**—In continuing the excavations of the Imperial Tribune in the Forum more fragments of stucco modeled with winged figures have been found. In studying the position of the Plutei of Trajan, and of the square edifice that stood near, a large dedicatory inscription has come to light, with bronze letters nearly sixteen inches high, of which the forms remain in the slabs of travertine. It is twelve yards long, and records the names of the magistrates and the authorities of the Senate, and the people of Rome, and may be a dedicatory inscription of the pavement of the Imperial Forum.

Signor Boni has come to an interesting conclusion with regard to many of the buildings belonging to the first and second centuries. He is now convinced that a large number of them that were supposed to be built of long, flat bricks, are really composed of tiles, obtained in millions from the great conflagrations that devastated Rome. The aqueduct of the Aqua Trajana, the entire port of Ostia, near Fiumicino, the hemicycle of the Forum of Trajan,

the Horrea under the Basilica of Maxentius, many of the tombs on the Via Latina and the Via Appia, including the internal part of the tomb of Cecilia Metella, and many other buildings, are all formed of these remains. This would entirely alter the dates attributed to many buildings, which were formerly supposed to be unquestionably fixed by the stamps of the supposed bricks of which they were composed, but which Signor Boni feels that he has now proved were taken from the remains of very much older constructions.—*Rome Correspondence London Standard*.

**THE VILLAGES IN THE SPREEWALD.**—One of the most interesting regions in the "Old Fatherland" is the so-called "Spreewald," the Forest of the Spree, situated not far from the German capital, in the Province of Brandenburg. Each village is a little Venice, every house a little island, and these islets are connected by bridges sufficiently raised to allow boats to pass under them. Most of the houses, with their barns and stables, rest on piles, and there is generally a strip of artificial terra firma, either in front or at the rear of every building. By means of these land strips and of the bridges, the slender land communication is kept throughout the district, but most of the business and amusement is carried on through the canals, which not only form the main highways, but penetrate and cross and recross the whole region. It is on these lagoons that all traffic is conducted in boats during the period from spring, when the last vestiges of frost and ice are disappearing, until the end of autumn. You see the letter-carrier shoot up and down the canals, performing his duties in his frail craft; the police glide leisurely along the banks, watching everything going on; peasants bring the products of their toil to the nearest towns; children go to and from school, young mothers, dressed in their Sunday clothes, are rowed to church, carrying in their arms a small, queer-looking bundle, from which two large eyes in a tiny face stare at the stranger in wonderment—baby is going to be baptized, an important moment with this strongly religious people.—*Technical World Magazine*.

**WINNERS OF THE LHEUREUX PRIZE.**—M. Camille Formigé is one of the best known of Paris architects. He has long been connected with municipal works, for he was at one time on the staff of the late M. Alphand when he was carrying out the transformation of the city. He has been awarded the prize which was founded in 1900 by M. Lheureux, and which is alternately bestowed on a sculptor and an architect. The other recipients have been the late Jules Dalou, to whom modern English sculptors owe so much; Charles Girault, the architect of the Petit Palais; Louis Barrias, the sculptor of the monument to Victor Hugo as well as of the Bernard Palissy; M. Pascal, the architect of the additions to the National Library and other public works; Antoine Mercié, the sculptor of the Gloria Victis and of the memorial to Alfred de Musset, which was unveiled a few days ago. M. Formigé is, therefore, in good company, and he is worthy of his position.—*The Architect*.

**CAGOTS' CHURCHES.**—The Cagots are a mysterious race found in Gascony, Béarn and the Basque provinces. During many centuries they were treated as if they were accursed. They had to wear a peculiar dress, and most trades were closed to them. It is in the churches, however, that we find the most numerous and lasting proofs of the abhorrence in which they were held by the rest of the population. In some places they seem to have had at a remote period churches or chapels of their own—at least, the ruins or traces of small ecclesiastical buildings are found which popular rumor ascribes to them. In most of the churches of the west and southwest of France there is a small entrance door (now often walled up) called the Cagots' door, quite distinct from the principal entrance. There is also a division of the church at some distance from the portion of the church occupied by the congregation, which is understood to have been set apart for the Cagots, and a small holy-water basin for their separate use, the latter generally bearing traces of ancient sculpture. The Cagots were forbidden expressly to enter by the same door as the rest of the congregation, or to introduce themselves into any other part of the church than that set aside for them. The late Mr. G. E. Street, R.A., believed that although Cagots did not live in England, yet that lepers were in this country kept under in similar restrictions. He concluded that lychscopes or low side windows should be called "Eucharistic windows," as they were intended for the administration of communion to people who were compelled to keep themselves apart from the congregation like the Cagots of France and Spain.—*The Architect*.

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WE have so little sympathy with the "architect's license" movement that we can hardly be expected to say anything in favor of the bill now before the New York Legislature. But it is perhaps worth while to ask its supporters whether they will quite relish the degradation of being forced each year to pay five dollars for the privilege of practising their vocation, while their neighbor on one side, a lawyer, and their neighbor on the other side, a physician, are allowed to earn their daily bread in peace and honor without being tagged—and having to pay annually for the tag—as suspicious persons. The official "license"—obnoxious word!—framed and hung upon the architect's office wall will be but the evidence, first, that he wears the collar of a trades union and, next, that he stands in need of police supervision.

ALTHOUGH it is very doubtful whether Congress will succeed in passing an "omnibus" Public Buildings bill, it seems to be accepted as almost certain that an appropriation will be made for a new custom-house at Boston. One of the committee of investigation which recently visited that city is reported as saying that there is "not a live, wide-awake city in the West that would have put up with the inconvenience found in Boston, without making such a fuss about it that Congress would have been compelled to take action, if for no other reason than to keep the people quiet." The implied compliment to Boston manners is not undeserved, and the fact that a new building is required by the actual exigencies of the service will reconcile the true, but uncomplaining, Bostonian to the possible displacement of a building which two generations have regarded as a landmark—one in which they could take a justifiable pride. Should it chance to be taken down, we hope that the students of the Institute of Technology will be de-

tailed to make careful measured drawings of this masterpiece of Ammi B. Young's, that was erected between 1835 and 1847, one of the few buildings in the country covered by a stone roof, the rotunda being covered by a stone dome of admirable proportions, while the Doric columns of the several porticos are amongst the largest monoliths ever cut at the Quincy quarries. These, too, would probably have to share the fate of the monolithic columns of the old post-office building, which had to be broken up because the streets, pierced with sewers since the building was erected, were known not to be able to support their weight, if an attempt should be made to remove them whole, for re-erection in some other building.

THANKS to the generosity of an unnamed benefactor, the Massachusetts Institute of Technology is enabled to make tardy recognition of a body of young men who have done much to bring honor upon it, more particularly upon its Department of Architecture, which enjoys the adhesion of a greater number of "special students," we believe, than any other of its departments. By special stipulation, perhaps, but if not, then through the right feeling of the heads of the department, "special students" are now to be allowed to compete on equal terms with the "regular students" for a new Traveling Scholarship in Architecture, to the value of twelve hundred dollars, which a generous friend of the department has founded, the condition being that contestants of either grade shall have studied in the department during the last three years for two consecutive years. The fact that one of these years must have been spent in the graduate class will, of course, narrow the list of the contestants, while at the same time it should heighten the quality of the contest. The scholarship is to be held for a year and the scholar's travels and studies in Europe are to be made in conformity with a programme prepared in advance by the Department of Architecture and the Faculty of the Institute.

WE take it for granted that the work that will be required at the hands of the fortunate student will, as usual, consist largely of a number of "measured drawings," made with minute care and with devoted ardor, the end and aim being to produce, at no matter what waste of time or lapse of opportunity, a set of show drawings that shall eclipse those made by earlier students. We think it time that some one should lift up his voice against this particular way of discharging an obligation. For one thing the method is too Procrustean, but it is objectionable mainly because it is wasteful, and wasteful in two senses, to the student himself in the first place, and in the second to those less fortunate than himself to whom his endeavors, if otherwise directed, might be much more fruitful. The disciplinary value of the making of measured drawings we do not wish to deny; but enough is as good as a feast, and it is a cruel waste of opportunity to have to spend months of working hours over the drawing-board when

the beauties of art and architecture are calling from hither and yon to the seeker after inspiration to draw near and absorb. It is time that the committees who have the direction of the many traveling scholars who nowadays visit Europe each year should take counsel together and consider if some wiser method cannot be devised, a method, that is, that shall yield a return to others than the individual beneficiaries of the bounty of the many founders. At present the benefit is too merely individualistic, it centres in and is absorbed by the single pair of eyes and brain of one man. There is a waste. How can this waste be prevented?

IF he has succeeded in doing nothing else, Professor Goodyear has roused the enthusiasm of architects everywhere by opening their eyes to what intelligent photographing of a building may yield. Here, then, is one way in which the trained intelligence of some scholar or scholars can be made to yield results of general value. Amongst them there must be amateur photographers, who, under the stimulus of opportunity, can produce results of greater informing value than could in the same time be produced by their most careful draughtsmanship. But the idea that has long possessed us with reference to these scholarships is this: These traveling-scholars are in a sense one and all under obligations and most of them have felt that it was a sufficient discharge to merely do fair justice to their opportunities, for the sake of their own ultimate personal advantage. We believe this is not a correct attitude. What they ought to feel is that they are especially helped and favored and that what they receive with one hand they must in honesty and honor offer to some one else with the other hand. There is an opportunity, a very real and important one, we believe, which the several committees have before them, and one way of taking advantage of it is to make it obligatory for each traveling scholar while abroad to study some building, class of buildings, material or technical method thoroughly, with a view to delivering on his return and during a period of, say, three years, a course of lectures on the assigned topic, these lectures in courses of six each to be delivered twice each winter—before the architectural schools, the draughtsmen's clubs in rotation or the public at large. In six years there would be twenty of these peripatetic lecture-courses going on simultaneously in different parts of the country, and if enough of them are devised for the instruction of the general public here would be a great educational agency along architectural lines, enlightening the great public—the profession's clients, that is—as to the purpose and value of architectural art. The few hours per year required from the amateur lecturer would be no heavy imposition and it would not be hard to find some friend of education who would provide money for lantern-slides and traveling expenses. These young men should be made of a broader usefulness to the advance of architecture in the United States.

IF, making due allowance for the time that must be consumed in ocean passage, any architect feels he can lay down in Rio de Janeiro, Brazil, on or before June 30 next, a full set of competition drawings for the

proposed Congressional Palace for the Brazilian Republic, including the necessary description and estimate of cost set forth in readable Portuguese, he may have a chance of winning the first prize of fifteen thousand dollars, the second prize of ten thousand dollars, or the third prize of five thousand dollars. To any intending competitor, it will give us pleasure to exhibit the copy of the programme—in Portuguese—that we have received. The drawings required include a general plan of building and grounds at a scale of one five-hundredth, the main façade at a scale of one-fiftieth, the rear and side elevations and the longitudinal and transverse sections at a scale of one one-hundredth, while the construction of the central dome or tower must be shown at a scale of one-fiftieth, with further details of the same at one-tenth full size. In view of the shortness of the time and the amount of work to be done, architects who indulge in foreign competitions will find here an obvious chance to get busy.

WE do not wish to do injustice even to "capitalists," but as people of their class are somewhat notorious for going into a thing "because there is money in it," and for no higher motive, it is not really so improper to surmise that the five Western capitalists who are about ready to open a perambulating exhibition of paintings of the "real Christ" are more intent on adding to their bank accounts than in stimulating imitation of the Saviour of Mankind. Should this be the case, their undertaking distinctly recalls that other transaction where money was made out of selling the Christ. It appears that these capitalists, stimulated, perhaps, by the interest excited by Tissot's remarkable series of water-color illustrations of the scenes amidst which the Saviour passed His life, have commissioned ten American artists to paint each his conception of the "real Christ," and when the paintings are delivered to them they propose to exhibit them in one city after another. The morality of their undertaking depends, of course, entirely on whether admission-fees are or are not to be collected. As a money-making enterprise, if not frowned upon by those who still believe in other things than mere money-getting, the scheme is evidently a good one, even although the ten artists commissioned to produce these mediumistic paintings are not just the ones that most of us would have selected for the task.

IN November last, the students of the University at Jena held a mass-meeting, and petitioned the authorities to the effect that existing privileges enjoyed by foreign students, both male and female, might be modified or abrogated. The restrictions asked seem to us both modest and reasonable, being in the main intended merely to make sure that foreigners shall not have the benefit of the University's advantages to the detriment of the native students, whether through absorbing more of the professors' time or through actually enhancing the expenses of German students. The fact that it is Germany which is making this attack on the "foreign devil" will probably make the French Government all the slower to recede from its practice of an extraordinary hospitality to all foreign—and particularly to American—students.

TRUE ARCHITECTURE.<sup>1</sup>

I KNOW an architect who believes that he can accomplish more for his art by placing himself in sympathy with a body of laymen than by addressing his professional associates. It is his understanding of history that architects merely reflect the spirit of the people. It is his thought that no effort of the architect can successfully direct a specific architectural expression. This architect has lived to witness failures in this country of the English-Gothic movement, the decline of an imitative Romanesque revival, and now the beginning of the ebb of a Renaissance effort.

Institutional methods of education, conspicuously the architectural schools, develop memory and the faculty of imitation. They inculcate great respect, if not reverence, for facts. The pedagogical methods of developing the imitative faculties are wonderfully skilful and ingenious. However, those who see visions find little encouragement in the schools. The dreamer is an outcast, if he be not a giant, and then he will desert or reform the school. If you please, such a one was the Great Teacher, such a one was Shakespeare, was Wagner, Browning, Millet and Israels, the painters, was Richardson and is Sullivan, the architects. These men knew facts; they had memory; they knew history; they were able to imitate; yet they dreamed, they saw visions, they had ideals. Memory was a resource, the faculty of imitation the medium of expression. Imagination blazed the trail. Dreams led to idealization; idealization to manifestation in works—to music, painting, literature, architecture. In the neglect of the spirit of things, we lose the life of things. We do not write alone with pens, paint with brushes or touch the violin with hands, but with the spirit.

Much of the difficulty and confusion which obstruct our understanding of the philosophical, scientific and practical problems which confront us exists because we consider them in detail before we realize the simplicity of the few basic principles which underlie all knowledge. Most of our education consists in the consideration of innumerable facts without a proper comprehension of their intimate and logical relation to principle. Nearly all of us have wasted many years of our lives not through lack of industry, ambition, hope, high ideals or determination, but rather on account of ceaseless activity in burdening and oppressing ourselves with unrelated facts, theories, opinions and experiences. Many of us can be justly compared with unnumbered volumes of unclassified scrap-books of intrinsically valuable material. Whether we be students, artists, engineers, philosophers, preachers, business men, this is more or less true. The wider our experience, the more willing are we to acknowledge the truth of these general statements. We have memory of facts, theories, opinions—we have trained our faculties of imitation, but we have neglected the vitalizing quality of imagination. In the search for the source, the spiritual, the principle we must hold aloft the light of imagination.

The genius, the man of talent, the wise or the successful one, is he who has consciously or unconsciously vivified the facts and the experiences of his life by relating them to principle, the eternal source of all life.

It is entirely possible for an architect, for instance, to go through any of the schools of architecture or to know never so well the chronological history of his art, to have stored his mind with great volumes of facts relating to form, color, decoration, arrangement of details, to have had extensive practice in their imitative use, and yet not understand the underlying principles, the source, of architecture. The isolated facts with which he has stored his memory, his theories, examples and the detailed imitative experiences which have come to him are a positive burden without the understanding of principle, without imagination and the constructive sense. They have dulled his vision and hampered the freedom of his movements. As a general proposition, this applies alike to all branches of philosophy, science and the practical affairs of life. There must be memory as related to facts and precedents; there must be the training in imitation; but without imagination there can be no creation, and without creation and re-creation there is death.

It is desirable that we should eliminate the strong and deep lines which isolate and divide the arts and sciences into so many parts and classifications. There are certain basic principles, an underlying unity, which relate all our activities. There is a source, a fountain from which all may drink. There must be an artistic unity that there may be free creation.

Creation is the recognition of something which already exists.

Our creation is the result of imagination, perception. We bring nothing into the world. Everything exists for us. Nothing comes into the universe and nothing goes out of it. Everything is here. It is for us to realize. No physical force, no power, no energy is brought into or taken out of the world. It is. The manifestation of electricity in the sky is not the dissipation of force or power. The same force yet remains in the universe. The burning of fuel, the escape of steam takes no power or substance out of the world. There is a mere change in the objective form. The growing of wheat or corn or trees brings no more of physical substance into the universe. There is a mere change of substance, the uniting of forms and substances which make wheat and corn. Nothing comes into the universe and nothing goes out of it. The same is true of the soul force or of the soul stuff, as some one calls it. It is universal. It exists in its ideal completeness. It is for us to realize. It is for us to appropriate. The mere mental force of the world is pre-existent, complete and absolute. The soul stuff, the mental power, the spiritualized physical substance form the universe. In it we may measurably comprehend Divinity through ourselves. Nothing can be taken from it; nothing added to it. It is a constant, unchanging, free, absolute, omnipresent quality.

This force is available. The measure of our creative capacity is our willingness to think in terms of that which is in us, of us and for us. It is only limited by our capacity for freedom. The form which we give our thoughts, our imaginings, is the measure of our tangible, free realization.

Beethoven brought no music into being. All the music that ever will be in the universe, now is. It has subjective existence. It is the soul fountain. It remains for us to realize it in actual existence, in objective form. Beethoven was an instrument of God. The sculptural representations of a MacMonnies, a St. Gaudens, a Rodin are mere realizations of divinity in form. The pen of Browning touched the fountain of the Infinite. The spirit of the great painter is the spirit of the Eternal One. The great builders of the 13th century were free children of the Creator. Each in his own way, in his own measure, expressed the infinite Divinity. His manner of realization and expression was the indication, the formal definition of personal self-consciousness, or consciousness of being.

There is a maximum and a minimum of realization, or identity with the Infinite. From the expressions of the tom-tom to the orchestrations of Wagner, there is a great interval. In each there is self-consciousness. In each there is recognition of being. In each there is the touch of the Infinite. Each comes out of the great Universal. It is a part of it. Each is the highest personal expression of the period and the individual. There is the Wagner of the tom-tom and the Wagner of the great artistic unity of Bayreuth. Each realized as far, as extensively, as an habitual state of mind allowed. Each rendered farther progress and more complete realization possible. Creation is the giving form to realization.

Creation is a process of relating, combining pre-existent qualities, forces, facts and substances of the universe in a manner to serve the manifold ethical, æsthetic and utilitarian development of man. Human advancement is human realization, and realization is what we call creation. Through our process of realizing and combining we bring into being. We make nothing; we do not develop by making something out of nothing. We create by appropriation, by appreciation, by idealizing, by seeing, knowing and perceiving that which is of us. There is no creation in the sense of absolute newness.

The distinction which we imply in the use of the terms æsthetic, ethical, utilitarian, is disturbing. They should imply a unity. The æsthetic is utilitarian, the utilitarian æsthetic, and the æsthetic is ethical, and so on. They form a complete unity. Our being admits of no distinction in these qualities which we define and consider separately and with so much precision.

Few of us realize our capacity as creators through the faculty of appreciation. We appreciate to-day that which meant nothing to us yesterday. To us this appreciation is creation. The musician brings something to us and in so far as we appreciate, we ourselves are musicians, and create for ourselves, increase our capacity, enlarge our horizon, draw from the eternal fountain, appreciate. The painter places before us a picture. Our realization of its meaning, our understanding, our appreciation expresses artistic consciousness. We are literary artists, we are creators as measured by our understanding of that which comes to us through literature. Appreciation is one great source of creation.

Of all the arts, the art of architecture is the least alive. It

<sup>1</sup>A paper by Mr. Louis H. Gibson, architect, read at a meeting of the John Herron Art Institute, Indianapolis, Ind.

rests almost wholly upon the traditions of the past. It is the only art where respect for precedent implies bondage. We have music to-day than which the world knows none better. We have literature which is in no way controlled by the past, by memory. We have great paintings not yet dry upon the easel. Sculpture is modern and expressive of present day emotions. It is not imitative. The architecture of the Greeks expressed the sentiment and culture of their civilization; that of the Romans was expressive of Roman character. It stood for organization, formula, authority, academic methods, control. The mediæval architecture was expressive of religion and the sentiment of the Infinite. The period of the Renaissance—the 15th and 16th centuries—was identical with the spirit of research and the retrospective view. The sentiment and culture of the Greek, the religion of the Mediæval time and the spirit of research of the Renaissance were idealized and materialized in a great way in architecture. The spirit of the present is not expressed in our architecture. We clothe our thoughts in the tattered, objective garments of the Greek, the Roman, the Mediæval, the Renaissance period. Our present-day architecture has no subjective thought which manifests present-day spirit or life.

The art of the builder was never so exalted as during the 13th century. The craftsman and the artist never joined hands more seriously or joyously. Never in history did they express themselves in greater enthusiasm. There was a great and compelling reason for this sympathetic and loving relation. The artist and the builder were serving a people united in a declaration of spiritual and intellectual independence. They were taking part in a great racial expression, and their monuments were commemorative of individual freedom and an illumination of the soul which delivered them from the Dark Ages. They were idealizing, expressing in material form their enthusiasm, their gratitude, and hopes of a new democracy. The thirteenth-century architecture was the flower bursting from the bud of eight hundred years of repression.

As we look into the history of architecture, we are astonished by one great fact. The greatest art was developed absolutely without precedent. Greek and Mediæval art were born full strength into the world. This is as relatively true of Roman as it was of Renaissance architecture. Each period had its own origin and each created its own bondage. The Mediæval art was a proclamation of spiritual freedom. It died from spiritual and intellectual bondage. The Renaissance was a symbolic expression of secular freedom and intellectual research. The Renaissance created its bondage by the exaltation of precedent. The period of the birth of these arts is the period from which to date their decline. Greek architecture was the greatest in the fifth century before Christ; the Mediæval early in the thirteenth; the Italian Renaissance in the fifteenth, and that of France in the sixteenth. Everything that has been done since by the architects has been relatively inferior. It remains for the architect of to-day to clothe the new, virile thought of our time with the objective architectural garments of the past.

In a country so small as France, the architecture of the thirteenth century preserved the same initial principles throughout its territory and yet presented the individual character of the various Provinces. When at the end of the century, the architectural expression amalgamated, when it lost its personal quality, it lost its fineness of expression, its exquisite choice of form and detail. When it lost its personality, it necessarily lost its real art, its character.

Conscientious and honest employment of material distinguished the construction of the thirteenth century. It charmed the cultured world and the uncultured. Nothing less than false education will cause one to lose respect for a true, natural law. Again, there is no human work which does not contain within itself the germ, the principles of its own dissolution. Merits, if exaggerated never so slightly, soon become defects. The art of the thirteenth century was the art of individuality. There came a time when reason replaced imagination, logic dispelled poetry, science encroached upon fancy, and calculation displaced inspiration. It is then that the dreamer is displaced. It is then that the art of the builder, the builder God within us, is dead.

The spirit of true architecture of the Mediæval period went out at the end of the thirteenth century. During the early part of that century there was individual freedom and therefore national expression. Through individual freedom is found the highest expression of national genius.

Only in the architectural art do we feign the expressions of the past. In discussing literature, we do not ask the period of the author's work nor consider his fidelity to an earlier style.

Think of Kipling relating himself to the Elizabethan period. We should not know him if he did. It has remained for the modern painter to discover color. They have their masters in name, only. The sculptor is free yet respectful of tradition. Wagner revered Beethoven, yet proclaimed his own message. As said before, architecture is the only art where respect for tradition or a school implies bondage.

As illustrative examples, we will consider two great libraries. Our people are at least serious in housing their books. A library building, more than any other, is our most deliberate and painstaking architectural expression.

The library at Washington is the most earnest, artistic effort on the part of our Government in recent years. We made some progress during the time it was building. The structure shows it. The exterior indicates serious and earnest effort, but the result is crude. The composition is not pleasing and the detail is coarse. Artists unite in this opinion. Those who had general charge of the structure recognized its deficiencies before the building was finished, and a change of scheme was the result. The interior, so far as it was possible to change it within the limits of the structural forms of the previous administration, shows the hand of a master of academic architecture. It is the interpretation of the Renaissance, as seen through the eyes of the *Ecole des Beaux-Arts* in Paris. From an architectural point of view, there is not a spark of originality or national character within the material form of this building. The floor plan is good, much better than that of the Boston Public Library; the exterior is crude; a part of the interior is masterly, from the French standpoint. It is the Paris *Ecole des Beaux-Arts* at liberty in America.

As we view the work, we may well ask, Where are we—Germany, France, Italy, or has an architect gone to Brazil? Where are we? What of American history and American life? Have we done nothing? Have we no history? Have we had no struggles? Have we had no definite relation to the rest of the world? Have we no individual thought to express? Or have we been taught not to express it? Have we been directed to study only the shell of architecture? Think of the great historical galleries of France as expressing the life and history of the French people, or of Germany, or England. There is nothing local or American in the decoration of the walls of the Library of Congress. Are our artists not represented on these walls? By masterly technique, yes. By expressions of American life or history, no. The same subjects would do well for a building in a new African province without history, but not for a nation that has lived and builded history in a great way.

Here is a list of some of the decorative subjects treated on the walls: Minerva, Writing, Book, Literature, Law, Michel Angelo, Religion, Beethoven, the Graces, the Seasons, the Virtues, Government, etc. Much of this is painted in a great way, so far as mere painting goes, but none of it represents a single thought or characteristic connected with our history or people. What might not patriotic artists have done with such an opportunity?

Ruskin has said: "You may read the character of men as of nations in their art, as in a mirror." Where is our mirror? He says again: "Great nations write their autobiographies in three manuscripts—the book of their deeds, the book of their words and the book of their art." We have the book of deeds and the book of words. But what of art? Ruskin has something more to say: "Not one of these books can be understood unless we read the two others. The only quite trustworthy is the last. The acts of a nation may be triumphant by its good fortune; and its words mighty by the genius of a few of its children; but its arts only by its generous gifts and the common sympathies of the race." Where are we?

In the art of the Boston Public Library, we find no mirror of New England character. The building is a refined Italian importation. It is architecture as it was in the fifteenth century. The general motive of the front is more modern, but all other parts and the detail of all parts are imported directly out of the fifteenth century. The stone was quarried in New England; the idea in the fifteenth century. Music and painting, sculpture and literature we have belonging to our own time, not architecture.

Think of the relation of architecture to the lives and history of a people! The architecture of Egypt is Egyptian; the architecture of Greece is an expression of the intellect of that time; that of the Romans was governmental, formal, academic, aggressive, dominant. The Mediæval architecture was the first democratic art. The architecture of the Renaissance was the spirit of that time. Not so the architecture of the Boston Public

Library. There is a great building, but not great expressive art; great painting and drawing, but not great characteristic art. Mr. Sargent, a great technician, represents Eastern or mythological subjects; Pasht, the cat-headed, three-eyed goddess; the Ibis of the Nile; Puvis-de-Chavannes paints "the Muses acclaiming Genius, the Messenger of Light."

Where is New England, with its splendid history, its educational work and all that it has done for the civilization of this country? The people of a hundred years from now will look to the decoration of this building and find nothing of historic interest. They will wonder why the great things of our time or history found no record on the walls of this building. They will look to Harvard and to Yale, to Concord with its philosophers, to the great writers and thinkers of New England. They will call to mind great reforms that have emanated from this section. They will think of the character of the old Puritans, of their philosophy, of their history, of the story and spirit of the "Mayflower" and wonder why, with all this abundance, nothing decorative should have come out of it.

Think of the picture of a New England town-meeting! Think what this meant in the history of our country and Government; or of a religious gathering in an old meeting-house. Think of the return of the "Mayflower" and the people standing on the beach, our search for the Holy Grail. What might not a patriotic, sincere and imaginative artist have done with this? We have bull-headed, three-eyed goddesses! Where are the gods and goddesses of Concord? None of them three-eyed, but all of them with eyes in front and an exalted view. We have pictures of the Venetian seas, but where is Massachusetts Bay? Is this symbolic of New England?

No one can find fault with the Boston Library because it contains works from Puvis-de-Chavannes, Sargent, Abbey or Smith? We are fortunate to have their work. As heritors of a great past, the subjects are worthy of representation in any great library. These artists have shown that they have memories. The imitative quality is expressed by their great technical ability. On the walls of these great structures they have failed to show that they have creative impulse, imagination, the faculty of idealizing our history and giving it worthy representation.

The spirit of *domesticity* is a dominant force of our time. Never before in the history of the world was it so strong and individual. The love of home is a sentiment high enough and strong enough to form a nucleus of great art. Emotions which originate in family attachments and home life are serious enough and delicate enough to be the germ of an architecture as fine and as expressive as that of the Greeks, and as beautiful and joyous and picturesque as that of the thirteenth century.

Great architecture has always been the expression of high sentiment. Greek architecture was the expression of an advanced intellectual condition. Gothic architecture was developed from great religious emotions and the exaltation of the realization of intellectual freedom. True architecture must come from a strong impulse. Our opportunity is the idealization and the materialization of the spirit of home life. Architecture may spring from the family and express all that is beautiful and tender and noble in family love. This cannot be done in temples or castles or great cathedrals, because the sentiment which develops these is wanting. The spirit that built the cathedral is now in the home. Architecture may be an expression, material in form, of the family sentiments. It will relate to the love of men and women and children and youth and old age.

How does one build to express a sentiment? How does he represent veneration for family life? How does he express in wood and brick and mortar the love of men and women? These questions are direct enough and practical enough. In all history there is no sentiment so high that it has not been given adequate material expression. Every building must exist in thought, in hope and ambition before it can exist in substance. All the beautiful sentiment of the home has been and may be expressed in infinite variety, in beauty of form, harmony of color, picturesqueness of outline, delicacy of detail, in proportion and mass, through enduring material and honest handicraft. The most God-like of human emotions have found, and may find, physical expression through the medium of material, form and color.

There is a great opportunity in building a house which is to serve as a home for expressing artistic unity. To begin with, there are the general sentiments which we all so well understand and which we so inadequately express. Within the expressive house there may be music and painting, sculpture if you please, literature and the appreciative spirit which makes us a part of them. The ideal home can be better expressed by an example

than a definition. One who is interested in domesticity and home-life and home-building can find nothing more charming and satisfactory than the history of Sir Walter Scott's homes and home life. Everything around him partook of his own sweetness of character, and at the same time was rendered picturesque by those qualities of mind which belonged so much to him. There was the element of romance in everything that he touched. Abbotsford was a narrative, and in it and through it ran the poetry of his nature. But his home-building character had an earlier demonstration than in that completed structure. Abbotsford was its culmination. One of his homes was an old border tower, and in its little sitting-room he wrote with children, wife, servants and dogs around him, sitting in the little bow-window which looked out on the Tweed. The first house at Abbotsford was a simple cottage. The ground around it was bare of trees, but it was immediately set with slips and planted with seeds sent by his friends from all quarters of the globe. With the success of his novels, Scott changed his plans many times. The building moved along with his resources, but the home spirit was never lost during its transition from a cottage to a castle.

One can see in Abbotsford the same idea which brought forth his poems and novels. Antiquarian research formed the basis of both. An old legend, a queer or interesting character, combined with ideas of his own, in his inimitable way, formed the poem or novel. A block of stone from the door of Tolbooth Prison, bits of carving from Melrose Abbey, carved wood from Dunfermline Kirk, mosaic pavements from Italy, built together with new stone, placed in the form suggested by Scott's imagination and historical research, formed a building picturesque and romantic as the Lady of the Lake. One cannot but feel that Abbotsford was to him more real than his literary work. It combined the legends of his country and the romantic, imaginative qualities of his own mind in material form.

When we look at an architectural production like Abbotsford Castle, the most natural question to ask is, What style of architecture is it? In truth, Scott's castle is as varied in its style as the legends with which he stored his brain. It is a kind of architectural romance, altogether picturesque and varied. There are in it suggestions of the heavy Norman architecture of the twelfth and thirteenth centuries, and alongside this, and at times a part of it, we have Elizabethan details and suggestions of the Perpendicular style, and again choice bits of the Early English, all arranged in a most picturesque and pleasing way. Thus we have an architectural romance constructed exactly in the same manner as his literary productions.

The buildings of the Old Colonial period were the truest architectural expressions that America has known. The medium was a Renaissance departure, yet material, color, form were idealized and inspired to express Old Colonial life. It was careful, thorough, academic house-building. The old New England dwelling or meeting-house and New England history and character are part of the same expression. We know the early New England people as thoughtful, refined in a way, very severe and exact. We find the architecture of that period expressing as clearly as possible all these qualities. There is no suggestion of the picturesque either in the personality or the architecture. There is no mere prettiness. It is truthful, severe and refined. It carries with it a certain reserved, dignified, quiet beauty and nobility which comes from seriousness and concentration. We architects undertake to build Old Colonial houses to-day. We memorize Old Colonial details and imitate the forms. We do not supply the character—the Old Colonial character. No more do we produce the architecture. A musician does not produce a sonata by memorizing and imitating the work of a Beethoven. There must first be the spirit of a Beethoven. Architecture is not creative; it is created. Architecture as an art cannot exist for its own sake. We must be artists in thought before we can be artists in manual performance. The manual expression is the end, not the beginning. We may have certain trained cells which see and represent the skin of things. But dominating all arts, except the art of music, is the art of thinking. When a thought takes outward form so as to be conceivable by the human mind, it is a word, a thing. The word is the symbol of creation. A word, a thought, is the verimost reality—the greatest essential in the universe. The thought, the word is the expression of the spirit. Painting, architecture, sculpture, literature are materialized ideals. The actual performance is only the expression of thought. One who touches the violin must have something to say—a thought, a something high. It is well to remember that the ability to draw and color does not make the painter. There are greater draughtsmen and colorists in the world than Millet.

But Millet had the thought. He knew the word. It is not necessary that we should have great manual dexterity in order to be artists. We may be great artists in our thinking. It is desirable that we should be able to manually write or even be able to spell in order to produce literature, but it is by no means necessary, though very convenient. We must have the imagination, the thought.

There was a time when Greek and Mediæval and Renaissance art was L'Art Nouveau. The perception of its beauty was the fatal moment. It then ceased to be an unconscious expression. Convulsive clinging to æsthetic effort means loss of real mastery. Our Art Nouveau carries with it a suggestion of failure. It is an exaggerated expression of self-consciousness. In that it clearly expresses a distorted self-consciousness, it is effective. In that the expression of this condition of mind is not desirable, such an expression is out of place. A thing out of place is never true art. The true new art will come without a convulsive birth—unconsciously, from the natural expression of present day emotions and thought. New art is the expression of new thought; the now, and not the taking on of a new skin.

In detail, in color, as expressed in ornament, L'Art Nouveau is often very beautiful. The beauty is hectic. It covers a badly organized structure. The engineering is generally bad and the forms and compositions forced.

The present-day craftsman's work has the merit of presenting a free opportunity to study form, composition and craftsmanship without the consideration of ornament. At this time, when we are so lacking in reserve, this is a desirable opportunity for restraint. Some day we will unconsciously combine the simple, rational qualities of the craftsman with the decorative sense of the new art and thus produce real art.

There is no doubt about our present-day architecture being frozen, but I will not allow that it is frozen music. Music is infinitely more free than the art of thinking. Music ignores ideas and therefore is not dependent on the perceptible or what we choose to call the natural world. Music is the image of the will. It speaks of essentials and the other arts of shadows. The same identical will shows itself in ideas as well as in music, though in a totally different way. There must consequently be a parallelism, an analogy, though by no means an immediate likeness between music and the other arts. Music is not represented by the body, but purely by the inner soul. It is the heart of things—the highest art. It represents the metaphysics of all that is physical in the world, the thing that lies beyond appearance.

A church is a place for a great gathering together, a great opportunity for the unified artistic expression of the real being, the I am, of a body of people. Such an expression is inherently the highest form of art. In so far as it is true, it is great art. In a meeting-house there may be worship through literature, architecture, oratory, music, painting, sculpture and ceremonial in all its manifestations. It may be a unified art incarnate.

In everything which we do, our daily work, our art, our building, is a manifestation of some primal life, some central living power, or central spiritual control, call it by what name we will. In a finite expression we manifest the Infinite. All material things are only the outward expression of a spiritual reality and an essence which represents it to the senses, an outward, visible sign of inward spiritual emotion—man's expression of the Eternal. Our work is an expression of soul—a revelation—think of the responsibility. We do this with material which we find at hand, plus the Infinite, plus thought.

#### THE METRIC SYSTEM AND ENGLISH-SPEAKING PEOPLES.

ALL of the arguments in favor of the metric system, says Mr. William Kent, Dean of the College of Applied Science of Syracuse University, in a recent letter addressed to the *New York Tribune*, were published by its advocates in this country more than thirty years ago. For all these years they have maintained one or more metric societies for continuing a propaganda of that system; they have deluged the country with literature on the subject; they have had it incorporated in the arithmetics and taught in every common school in the country; they have besieged Congress with petitions, they have had bills introduced in nearly every new Congress providing for the compulsory adoption of the system, and have had hearings before the Committee on Coinage, Weights and Measures. With the activity of the tariff reformers, and with equal eloquence, invective and ridicule, they have labored in season and out of season, and with equal success. They have made thousands of converts, especially among newspaper editors and "closet philosophers." But, like them,

they have labored in vain, so far as practical results are concerned. They have not succeeded in getting a metric bill through Congress since 1866, when an act was passed making the use of the metric system legal for any one who wished to use it. The people who actually use weights and measures in the mining, agricultural and manufacturing industries and in domestic and foreign commerce have not been converted. They go on multiplying rules, scales, weights, measures of bulk and making drawings, patterns, tools and articles of manufacture by the millions, all based on the English inch. They have divided land and recorded deeds with English measures of length and area. They have published plans, drawings, books and technical papers for the use of every student and artisan, in which every dimension and weight has been stated in the English system. They have refused to consider the adoption of the metric system as even a possibility.

And these people who thus stubbornly ignore the metric system are the most intelligent, active, progressive and far-seeing people on earth. They have revolutionized systems of manufacture and commerce. They have advanced the United States to the first position among manufacturing and commercial nations. They are no more apt to be blind to their own interests in regard to systems of weights and measures than they are in regard to the tariff.

During all the years of the propaganda of the metric system these practical people have remained unorganized, so far as opposition to the metric system is concerned. Only now and then some one among them writes an article on the subject for some newspaper or reads a paper on it before some technical society. They have no anti-metrical society or club, although England has had one for about a year.

Only within the last two or three years have the opponents of the metric system waked up to the fact that there is actual danger of a bill in favor of the metric system passing Congress, but in that time they have done some splendid work. When it appeared two years ago that the Committee on Coinage, Weights and Measures was unanimously in favor of the last metric bill that had been introduced in Congress, they appeared at the hearings before that committee and made such strong arguments against it that the bill was never reported. The American Society of Mechanical Engineers had a thorough discussion on the subject and appointed a bipartisan committee of four, two in favor of the system and two against it, to bring in a report of the arguments for and against the system. Both the discussion and the report may be found in Volume XXIV of the *Transactions* of the society. Let any one who has not yet made up his mind in regard to the metric system read the book above named and the discussion and report referred to, and he will be convinced that, no matter how good a thing the metric system may be from a purely academic point of view, and no matter what legislation may be passed in its favor, there is no more chance of its being generally adopted by the English-speaking nations than there is of the universal adoption of the French language.

#### WHO WAS THE ARCHITECT OF THE HOUSE OF PARLIAMENT?

THIS old controversy, revived in the March issue of the *Burlington Magazine* by Mr. Robert Dell, was originally raised nearly forty years ago in the pages of the *Building News*, and led, as some of our senior subscribers will recollect, to a long and heated discussion. It arose as a side issue during correspondence on the Law Courts competition in the summer of 1867, when a writer made reference to the "assistance rendered by Augustus Welby Pugin to Sir Charles Barry, in carrying out the House of Parliament." In the following number of the *Building News*, that for June 28, 1867, Pugin's son, Edward Welby Pugin, objected to the term "assistance," and claimed the entire credit for the design for his father, adding: "The plan of the Parliament Houses was solely Sir Charles Barry's; the elevation and all details were wholly my father's. . . . All work done in the House of Parliament, apart from my father's designs, is as devoid of feeling as the stone on which it is chiseled." In reply to this claim, Prof. E. M. Barry published a letter penned on September 3, 1845, written by the elder Pugin, in which he denied the rumor, even then current, that he was the *bonâ-fide* author of the original design; but to that E. W. Pugin rejoined, in our issue for August 30, 1867, that this denial only related to "certain works connected with the internal fittings and decorations of the Houses, and had no reference to anything my father had done ten years previously." The younger Pugin also alluded (as does Mr. Dell) to the fact that his father had previously been

engaged in preparing designs in the same competition for Gillespie Graham, for which he received three hundred guineas, and that he did not accede to Barry's application to assist him until he had received Graham's consent. He explains that his father did not compete in his own name, as, being a Catholic, he believed he had no chance of success—"an impression which, rightly or wrongly, was fostered by Sir Charles Barry." Benjamin Ferrey, the biographer of Barry, wrote: "On more than one occasion, when mentioning to the late Mr. A. Welby Pugin the common rumor that in reality he was the author of the Houses of Parliament, I recollect how energetically he denied the truth of the statement, bidding me give it the most positive contradiction whenever I heard it repeated." This evoked another long letter from E. W. Pugin, in which he reviewed the rebutting evidence brought against his original statement, adding: "The facts of the case in the beginning were simply these: My father intended himself to be a competitor, and he had prepared a complete set of designs for the purpose, which were finished and mounted before he put pencil to paper for either Mr. G. Graham or Sir Charles Barry. From the day they were mounted they appear to have been lost sight of; but there is little doubt that these were the designs for which Sir Charles paid 400 guineas, and which, as far as possible, were engrafted on Sir Charles's ground-plan. The designs thus prepared were eventually successful, and my father was called in to complete the work which he had commenced." In a long letter in our issue of September 6, 1867, E. W. Pugin refers in detail to a reply by J. L. Wolfe, chief assistant to the elder Barry and to Talbot Bury, and quotes from his father's diary and Sir Charles Barry's letters to show that not only the designs, but all the working-drawings were made by A. W. Pugin, including elevations, sections, and details for every portion of the building. As for the assertion by E. M. Barry that the "friendly relations" of the principles "were unclouded by the vestige of a quarrel," he asserts that between 1837 and 1844 his father, disgusted at being thrown overboard, refused even to see Sir Charles. In our issue for September 13, of the same year, page 639, E. W. Pugin gave a long list from his father's diaries, showing the immense mass of drawings made by him for Barry during the years 1836 and 1837. He added that his father designed every portion of the initial work, the whole of the wood-carving, hundreds of cartoons for stained glass, and the patterns for color decoration in every department, adding: "These all point to one inevitable conclusion, that my father's brains was the source whence emanated the architectural, no less than the artistic glories of the Palace of Westminster." On September 20 the younger Pugin challenges in our columns Charles Barry, Jr., to produce the 76 letters from Sir Charles to A. W. Pugin which Sir Charles borrowed from the writer under a promise to return them immediately, but which he never sent back. No proof, he adds, could be so decisive as this action and the confession to the writer by Sir Charles that he had destroyed all Augustus Pugin's letters to himself. Alfred Barry subsequently wrote expressing his willingness to submit the evidence before a proper tribunal; but no reply was ever given to E. W. Pugin's repeated demand that the 76 letters from his father to Sir Charles should be produced; nor was any attempt made to deny that such correspondence was obtained by the elder Barry.—*The Building News*.

#### ART TREASURES IN THE PARIS CHURCHES.

THOSE who are at present making an inventory of the art treasures in the churches of Paris, writes Louis Hourticq in *Le Figaro*, have a task which is not altogether unpleasant. They see a quantity of works of art, some of them very beautiful, which they would hardly have known of otherwise. Since no one goes sight-seeing except when on a foreign tour, the Parisians never go to see the chief sights of Paris. Santa Maria Novella in Florence and St. Mark's in Venice are familiar to all self-respecting tourists, but what Frenchman visits St. Paul, St. Louis in the Island, St. Nicolas du Chardonnet? Even foreign travellers seldom visit these Paris churches. Like the Wise Men of the East, they depend on a star for their guidance, namely, the asterisk that Baedeker places after a name to indicate his enthusiasm; and, as Baedeker is chary of his asterisks, the tourists in Paris rarely find their way to any churches except Notre Dame and the Sainte Chapelle. Nevertheless, how many curious churches there are besides, which are veritable museums of the seventeenth and eighteenth centuries—the Sorbonne, Val-de-Grace, St. Nicolas du Chardonnet, St. Paul, St. Louis in the Island, St. Roch, Notre-Dame des Victoires, the Invalides, etc. With their façades, ornamented correctly with the antique orders,

they seem the work of discreet architects who have only allowed themselves the slight luxury of a small copula by way of magnificence. In the interior there is no dizzy immensity of Gothic nave, or of a forest of columns, but a neat, reasonable architecture for a congregation that comes to listen to a well-constructed sermon on some thorny problem of ethics. But often there are to be seen marvellous tombs of the seventeenth century—at St. Eustache, that of Colbert; at the Sorbonne, that of Richelieu. Coysevox and Girardon executed them after the designs of LeBrun. Beautiful mourning figures, Fidelity, Religion, etc., are grouped about the dead, lamenting or praying in majestic attitudes, like a passage of eloquence from Massillon. At St. Nicolas du Chardonnet, LeBrun's mother, awakened by the trumpet of the archangel, throws back the slab of her tomb, and, under her shroud, reveals her pale, suppliant and terrified visage. St. Roch is a real museum of sculpture; many of its tombs, it is true, were injured during the Revolution, and of some of them nothing is left but the portrait busts; but those busts are by Coysevox, that is to say, they are as nervous and subtle as Florentine sculptures. The curious paintings are innumerable, from those small anonymous panels that the vagabond Flemish artists of the seventeenth century painted with brilliant coloring and erratic drawing, up to LeBrun, Mignard, Le Nain, Largilliere and others. St. Louis in the Island possesses a marvellous collection of paintings left by the Abbe Bossuet. At St. Gervais is a genuine Perugino and a so-called Tintoretto, which are fine. Doubtless, among all these works, there are attributions which are a little audacious; but there is respectable precedent for this. Modern art is also to be seen. Everybody knows of the Flandrins of St. Germain des Pres, also of St. Vincent de Paul; the Delacroix of St. Sulpice. But not everybody knows of the dark and tempestuous Delacroix in St. Paul and in St. Denis du Saint Sacrament; nor of the Chasseriaux at St. Roch, St. Méry, St. Philippe du Roule; nor of the great landscape by Corot in a modest chapel of St. Nicolas du Chardonnet; nor of the "St. Clotilde" by Barye in the Madeleine.

## ILLUSTRATIONS.

NEW YORK *Evening Post* BUILDING, VESEY STREET, NEW YORK, N. Y. MR. ROBERT D. KOHN, ARCHITECT, NEW YORK, N. Y.

PLANS OF THE SAME: TWO PLATES.

SECTION OF THE SAME.

THE RICHARD SMITH MEMORIAL GATEWAY, FAIRMOUNT PARK, PHILADELPHIA, PA. MR. J. H. WINDRIM, ARCHITECT, PHILADELPHIA, PA.

Although the edifice still lacks sundry statues, busts and other sculptural adornments, it is yet possible to perceive how the half-million of dollars bequeathed for the purpose to the city by a worthy type-founder has been expended in part.

GENERAL VIEW AND DETAIL OF THE SAME.

The detail exhibits the standing figure of the founder.

HOUSE OF G. F. SHEPARD, JR., ARCHITECT, MILTON, MASS.

NORTHWEST VIEW OF THE UNITED STATES CUSTOM HOUSE, NEW YORK, N. Y. MR. CASS GILBERT, ARCHITECT, NEW YORK, N. Y.

Ordinarily we do not like to publish photographic views of buildings in a state of incompleteness, but as it will be about a year before the building is in occupation, and as a very fair idea of its character can now be had, we find it worth while to publish this preliminary view.

Additional Illustrations in the International Edition.

WINDOW DETAIL: HOTEL ASTOR, "TIMES" SQUARE, NEW YORK, N. Y. MESSRS. CLINTON & RUSSELL, ARCHITECTS, NEW YORK, N. Y.

OFFICES OF THE BUSH CO., LTD., PEARL, BROAD AND BRIDGE STREETS, NEW YORK, N. Y. MESSRS. KIRBY, PETIT & GREEN, ARCHITECTS, NEW YORK, N. Y.

Further illustrations of this unusually satisfactory building can be found in our issue for January 7, 1905.

## NOTES AND CLIPPINGS.

A CURIOUS OLD-LADIES' RETREAT.—The most curious almshouse in England is St. Mary's Hospital at Chichester. There eight old ladies live actually in the church, which is a fine old building dating from 1680. It was originally a monastery, but when

Queen Elizabeth came to visit there she turned it into an almshouse, to endure as long as almshouses exist. The old ladies have two neat little rooms each down the sides of the main church, with windows looking out on the garden. They have each a coal supply, a kitchen range, water and gas. At one end of the church is the chapel, where daily services are held. The choir stalls are beautifully carved old oak, the original seats that the monks used. The church stands in a quiet little square.—*Boston Transcript*.

PROPOSED STATUE OF COLUMBUS.—Representative Goulden, of New York, has introduced a bill in the House providing for the erection of a suitable memorial for Christopher Columbus in the District of Columbia. Mr. Goulden believes that there should be a statue of the discoverer of America in the capital to add to the memorials in the public parks.—*N. Y. Tribune*.

FALSIFICATION IN ART MUSEUMS.—It would be interesting to be able to study the reports which the various conservators of the Louvre have prepared by order of the Minister of Fine Arts. In order that there might be no doubt about the kind of information which was desired, printed questions were sent to those officers. In each case suggestions are to be given about the rearrangement of the collections. It is expected that as a result there will be more concentration of various objects, and that henceforth there will be less necessity to make long journeys through the museum in order to compare objects which should be considered as being of the same class. It is also anticipated that the opportunity will be taken to remove a great number of acquisitions which are of doubtful authenticity. All museums, it is believed, can produce testimonies to the incapacity of their officers; but the Louvre is supposed to surpass all others in Europe in the number of falsifications. Of course it is outdone by the New York Museum.—*The Architect*.

GOthic vs. GEORGIAN CHURCHES.—I doubt if there is in America a truly Gothic church. And this is because the truly Gothic church was a growth, often through generations; and we cannot build one by merely resolving that we will do it. Besides, the Gothic is opposed to our ideals; its religion was as gloomy as its great vaults, as idolatrous as its carved altars, as narrow as its lancet windows; in a word, the Gothic is mediæval. It belongs on the other side of the Atlantic, and for a Unitarian it is a purely fanciful importation. A Unitarian Gothic church is as out of place in a New England village as the absurdly battlemented houses of our millionaires are out of place in our New England landscape. But the Georgian belongs here. It came with our earliest prosperity, at a period when the Gothic was dead and the Georgian was a growing force in architecture. It is essentially "colonial," and it is as perfect and complete an architectural style as the Gothic itself. It represents the new ideas; it is freer, brighter, more open. It was domiciled here; it struck root like our apple-trees; it adapted itself to our conditions, and still expresses them. Let the Episcopalian cling to his Gothic, for it is traditional with him; but it has nothing to do with us. Our worship is as clearly set apart from his as the one architectural style is from the other. The Georgian is simple, open and direct; the Gothic is involved, given to forms and ceremonies. In the two styles can almost be read the independence of the one, the hierarchical tendencies of the other.—*Allen French in the Christian Register*.

THE DANISH PANTHEON.—Roeskilde Cathedral is the Westminster Abbey of the Danish nation. Roeskilde at one time was a place of considerable size and importance. There were, it is said, twenty-seven churches within its walls, and as many convents, while its population is stated as about 100,000.—*Exchange*.

NATIONAL GALLERY PRICES.—According to M. W. Brockwell, in a letter to the *London Chronicle*, a "comparatively moderate sum," variously stated as \$200,000 and \$250,000, was paid by the British nation for the Rokeby Velasquez. If the picture had been bought for the United States, it is understood that the owners would have demanded a much larger amount. In regard to the high prices paid for pictures for the National Gallery, Mr. Brockwell's letter reads:

"It will be urged that \$350,000 was a very considerable sum

to pay for the 'Ansidei Madonna,' but it must not be forgotten that Sir Frederic Burton, the then director, valued the work at \$550,000. Again, we shall be reminded that we gave \$87,500 for the Van Dyck 'Charles the First,' but the fact that it was sold out of the collection of that king by Cromwell for \$750 only serves to show how England has always been lacking in artistic foresight. But let us look at the reverse side of the medal. The exceedingly fine investments we made in purchasing Gainsborough's 'Mrs. Siddons' for \$5,000, Hobbema's 'Showery Weather' for \$7,875, Tintoretto's 'Origin of the Milky Way' for \$6,250, and Rembrandt's 'Old Woman with a White Cap' for \$6,000, surely justify an occasional thrill of satisfaction. The truth of the matter is that the nation has made a very fine investment of other people's money. What we now want is a minister of fine arts."—*N. Y. Evening Post*.

SAVING THE HÔTEL DE LAUZON, PARIS.—Learning in 1899 that the Hôtel de Lauzon on the Quai d'Anjou was about to be sold by the heirs of Baron Pichon, the municipality of Paris bought it for \$60,000. It is a small residence built in the seventeenth century, has a sober, but elegant, façade on the quay, painted ceilings, carved doors and delicately wrought woodwork. But the city has been unable to find a use for the house and the heirs are to buy it back for the same amount they received six years ago. The only proviso the city makes is that in case the heirs should sell again a delay of six months shall be allowed, during which the city may decide whether to take it again. Apparently it is too small to use as a museum of the decorative arts, and the proposition to store city archives in it did not meet with favor. In 1896 Paris bought the old Medical College on the Rue de la Bucherie, to save it from being torn down and sold piece by piece, and last year Paris bought the park and château of Bagatelle, a pleasure erected for the Comte d'Artois, to save it from a similar fate. Little as most of the buildings serve for the immediate necessities of the City Government, these are good investments in one way. Their value constantly rises and when there is need for a museum or a public park they save the expenditure of a much larger sum.—*N. Y. Times*.

B. H. LATROBE, ARCHITECT.—In connection with the forthcoming celebration of the centenary of St. Mary's Cathedral, in Baltimore, a feature of interest has been brought forth in regard to the architect of that historic edifice, Benjamin Henry Latrobe, grandfather of a former mayor of Baltimore. Mr. Latrobe, who was one of the architects of the Capitol, was born in Yorkshire, England, in 1764. An ancestor, Boneval de la Trobe, emigrated from France to Holland after the revocation of the Edict of Nantes. This ancestor entered the service of the Prince of Orange and was severely wounded at the battle of the Boyne.

When twelve years of age Mr. Latrobe was sent to a Moravian seminary in Saxony and concluded his education at Leipsic. He entered the Prussian army in 1786, serving under the Archduke Charles, and was twice wounded. In 1786 he left the army and, going to London, became an architect. Here he was made surveyor of the public offices and engineer of London in 1789, and seven years later he declined a crown surveyorship and came to America, settling in Norfolk.

His first enterprise in this country was as engineer of the James River Canal, and he also built the penitentiary in Richmond. Two years later he removed to Philadelphia, where he designed the Academy of Art and other buildings. He was the first to supply Philadelphia with water, pumped by steam from the Schuylkill River. Thomas Jefferson appointed him surveyor of public buildings in 1803, and he is said to have perfected the designs of Dr. William Thornton and altered those for the interior construction of the south wing of the Capitol.

After the Capitol was burned, in 1814, Mr. Latrobe reconstructed the north wing. In the construction of the Chesapeake and Delaware Canal Mr. Latrobe was engaged as engineer, residing alternately at New Castle and Wilmington until 1808, when he removed to Washington with his family. He was also interested with Robert Fulton in the introduction of steamboats on the western waters.—*Washington Star*.

A LIVE LOAD CHEAPER TO APPLY THAN A DEAD ONE.—Four hundred unemployed workmen of Poplar were recently given sixpence each by Clarence Soumes, proprietor of the Prince's Theatre, to go into the theatre and jump about on the galleries to test their safety.

# The American Architect and Building News

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WE have on several occasions pointed out that the "district-surveyorship" system in vogue in London might with great profit to all concerned be adopted by the City of New York, for the sake of securing the rightful execution of the building laws and the proper supervision of building operations. It is, therefore, a pleasure to have our own good opinion of the system officially confirmed by a competent body. Owing to sundry and diverse causes, the London County Council has been induced to consider the propriety not of abolishing the district-surveyors but of making a change in the method of requiring their services. While some of these officials receive a stated salary, the greater number of them derive their income through a precisely regulated system of fees. The result of this is that in the new districts where building operations are active a building-surveyor's income is really generous, and this has excited the apprehension of the parsimonious and economical members of the London County Council. On the other hand, in the districts which are practically built up, the surveyor's fees must be derived mainly from repairs and dilapidations, and his income therefore must necessarily be small, and this has worked on the sympathies of the philanthropic members of the controlling municipal body, the result of both these forces being a proposition that all district-surveyors should be paid a fixed salary and that the amount of such salary should in each case equal the average income of the last seven years. This suggestion, as might be expected, has not commended itself to the district-surveyors and their organized society.

AS it was apparent that one result of the proposed changes would be to extinguish ambition and discourage activity on the part of the surveyors, and that it would furthermore cause the withdrawal from the

calling of the most capable ones, men who were sure they could win a better income in other ways, it was plainly a case for the intervention of the architects. The Council of the Royal Institute of British Architects accordingly addressed to the London County Council a remonstrance in which it was explained that the district-surveyorship system was inaugurated in the reign of Charles II., and that a long series of enactments had "deliberately and uniformly provided that the administration of those laws should be"—and this is the nub of the whole matter—"in the hands of trained and experienced professional men"—not political appointees and professional office-holders—"who in the pursuit of their craft as architects have acquired practical knowledge," etc., of building construction and the complex body of the statute and building laws. It was further pointed out that the R. I. B. A. not only valued the advantages "which accrue to members of the profession in having the advice and co-operation of a colleague trained in his art," but that such co-operation has worked well in the past and, in the opinion of the Institute, "to the advantage of the owners and occupiers of every class of buildings in London." Fortunately the Institute's protest was effective, and the proposed reform was referred back to the committee, who now will probably abandon the project.

THE incident gives occasion to point out one or two things about the system which may not generally be known. The district-surveyors, in spite of the name, are men who have had the training of, and have practised as, architects rather than engineers; they are resident in the district that they supervise and, so, in daily contact with and in easy reach of all that there goes on; they hold office practically during good behavior, and they are not debarred from the private practice of their profession. It is this possibility that allows a district-surveyor in a district where fees are scarce to discharge his occasional functions to the satisfaction of the public, since the greater part of his income is derived from private architectural practice and the surveyorship fees are merely a grateful but not necessary addition to it. The great merit of the system lies in the fact that these responsible officials are trained and intelligent men who, holding office practically without term, are able to serve the public with an eye single to the rightful discharge of the duty the public imposes upon them.

PROBABLY there is some indirect connection between the two movements, else it would be really singular that, just at the time our own National Sculpture Society is trying to bring about a satisfactory exhibition of sculpture, the Society of British Sculptors is petitioning the London County Council for a temporary site and building wherein the products of the English mallet and chisel can be exhibited. With a larger number of sculptors to draw from and a larger audience to appeal to, it seems to us that the English undertaking ought to be successful and prove to the public that dur-

ing the last twenty-five years "wonderful progress" has been made, and that much "talent is hidden [in the studios] undreamt of by the public." As for our own sculptors, great as was the artistic success of the exhibition they gave a few years since in Madison Square Garden, it proved a financial loss to the Society, and we do not wonder that they hesitate to undertake a second one. There is, however, apparently a chance that an exhibition may be held next year in New York, for Mrs. H. P. Whitney, herself of no mean skill with the modelling clay, is said to have expressed the desire to be allowed to finance and direct such exhibition, and under such auspices this could hardly fail to be a success.

MEANWHILE in the lack of such exhibitions, which, of course, are in reality, in spite of the high-flown language in which artists indulge, nothing more nor less than a hawking about of wares for sale in a commonplace commercial way, sculptors, like mural-painters, are finding they must depend largely upon architects for their commissions. Thus a very desirable working trinity is coming into operation here, just as was the case in those happier days for all practitioners of the arts. But if the work is to be successful, if the trinity is not to be disrupted, all, including the architect himself, must recognize the headship of the architect. There has been enough sculpture added to—we dare not say incorporated into—buildings here in New York to afford a reasonable base for an argument and a conclusion. On giving the matter some little thought, we have reached the conclusion that, really, the sculptors have done very little to add value to the buildings their work was intended to adorn. Not that the figures are in-artistic, not that they are unskilfully modelled, not that they are not conceived with historic, or poetic, or allegorical propriety; but simply because, for the most part, they are in conception and handling non-architectural. They have not the static lines which their actual positions require; they have been conceived apparently as isolated subjects, not as figures and groups that must be affected by the background against which they are placed, or the contiguity of neighboring groups in the same series. In the case of groups like those on the Chamber of Commerce, where each is, as it were, enframed within the lines of a single bay and, so, isolated, the effect is satisfactory: the sculptor's work can be considered by itself and without much regard for the building. But where a series of figures is used as associated decoration of a parapet, as on the Appellate Court, of a portico, as on the Hall of Records, or of an attic, as on the Custom-house, it is safe to say that the sculptor's first duty is to give much more attention to his static lines than has been given in any of the instances mentioned.

IT is rather unkind to burden Satan with all the mischief idle hands find to do, when, in most cases, it is not needful to put the blame farther back than the sire who forgot to administer sufficiently stern punishment to a foolish son. At least, that is the way we feel about the father of the man who has introduced at Al-

bany a bill which, if passed, will subject to fine and imprisonment any one who undertakes to erect in this State a monument or statue "to any ruler, or spy, or to any monarchy, or to any country that has a monarchical form of government." So far as we can guess, the bill is instigated by the erection at the War College at Washington of a statue of Frederick the Great, and is intended to prevent a similar desecration of New York soil through the erection of the statue of William the Silent that the Holland Society hopes sooner or later to erect. The outlawing of the spy, which can only refer to the André monument at Tarrytown, which many people would like to see done away with, is evidently thrown in to arouse local feeling. It is curious to note, since two out of the three monuments mentioned have a Teutonic genesis, that the propounder of the bill, judging from his patronymic, seems to be of German derivation.

FOR some years the Boston Society of Architects has been seeking a way by which the handling of the improvement of the Metropolitan District might be vested in the hands of some body of men competent to deal with it, but, remembering the jealousy which kindred and alien organizations in the territory affected have at times exhibited towards other of their own undertakings, they have hesitated to suggest that this matter should be placed in the charge of the Society. But recently Mayor Fitzgerald conceived the idea of forming a "Metropolitan Council," of temporary tenure, to consider the matter, so as to formulate a general scheme of procedure, and the Society was glad at this juncture to urge its views before the Mayor, the result being that he prepared a bill to submit to the Legislature organizing such council, but in such a way as to throw most of the power into the hands of the political representatives of the city of Boston. On consulting the Governor the latter pointed out that, while he believed in the desirability of having a plan of improvement developed, he felt it should be undertaken by an independent body of architects and engineers, and not by such a body as was proposed by the Mayor, in which the controlling force rested with political members. He therefore suggested that the matter be reconsidered and then referred in a better form to the next Legislature.

THE London *Architect* a few weeks ago narrated how a maiden lady was adjudged by the Probate Court not to have been of sound and disposing mind because she sought to leave her property for the erection of a kind of market-cross at some spot in London, designed in the Gothic style, under conditions which showed she possessed true architectural instinct and strong good sense. The Scotch Courts seem to have different ideas as to what acts prove the actor to be *non compos*, for the Edinburgh Court of Sessions has just upheld the will of a Scotch banker who devised his entire estate—not a very large one, to be sure—so that it could be used only in erecting statues of himself and his relatives, interspersed with "artistic towers," upon prominent sites of the estate he once owned.

THE POSSIBILITIES OF CONCRETE CONSTRUCTION FROM THE STANDPOINT OF UTILITY AND ART.<sup>1</sup>

IT is not my purpose to dwell especially upon the use of cement in the purely engineering side of building, although I believe that its use in that direction is in its infancy—and the general problem of concrete for heavy foundation-work and reinforced with steel for structural work has been covered by experts in those arts.

The accepted use of reinforced concrete as a structural material does, however, open up a field in architectural design that has been little considered. We have, both here and abroad, a comparatively large number of concrete buildings which are structurally good, but in most cases they are treated merely as a skeleton on which a building apparently of brick or stone is hung—a makeshift and a sham, whether the actual work is done by structural steel or a concrete frame developed therefrom.

But reinforced concrete used even as a skeleton offers opportunities for design not offered by any other material. A steel-frame building is no stiffer than its joints, and in buildings of greatly varying heights or loads allowance must be made in design to take up undistributed settlement, or serious cracking will result; while in concrete the building, if properly designed structurally, and properly built of proper materials, is a monolith.

In the Blenheim Hotel, at Atlantic City, we have an exaggerated case of uneven loading. The "solarium" is but two stories high; it covers an extent of 150 by 120 feet; it immediately joins the main structure, which leaps at the juncture to twelve stories—a height to the dome of 155 feet—and next adjoining this mass is the main building, eight stories high, surrounded by outlying sun-parlors and banquet-rooms of two stories. And yet, in spite of this divergence in loads, and the fact that this work was not all built at one time, there is not an eighth of an inch settlement in any part of the building. A steel building on the same foundations would probably show at least three inches of settlement, and it would not be safe to count on less.

It is my opinion that a considerable area of this building could have the foundations washed out without damage to the structure, nor does the heaviest wind so far encountered cause a perceptible vibration, even of the highest part of the building. These facts are not new as facts in engineering, but as architectural facts and inspirations they have been largely ignored. But if the cement manufacturers will stand by the architects this will come. Any falling off, however, in the quality and reliable characteristics of cement will be fatal, as a concrete building is either the best or the worst of constructions, and primarily the cement is the vital point, so that the cement man's first business is with himself. But while his responsibility may end there, his interests do not. The best of cements may be improperly or dishonestly used; poor sand, poor stone, poor mixing and placing alike will damn the construction, and it is in this direction that the greatest danger lies, and this danger is an imminent one. If buildings are to be designed by incompetent or ill-informed engineers and architects, no matter how much they know of design in other directions, the result will be disastrous, both to the cement men and to those among the architects who believe in the future and possibilities of cement.

It all looks so easy, just the building of boxes and the casting of concrete and steel in the moulds, and where the law or, better, knowledge does not protect us, all sorts of liberties are going to be taken, owing to the desire to save materials and the large factor-of-safety usually and properly allowed.

To illustrate, when bids were taken on the Allegheny City Station of the Pennsylvania Railroad, a number of bids were received, varying considerably in amount, and, while the specifications called for 16,000 pounds stress upon the steel and 500 pounds on concrete, we found upon questioning the bidders that some of them had computed their steel as high as 22,000 pounds, and their concrete at 750 pounds. In fact, they were entirely frank about the matter, stating that there was no law in Allegheny on the subject, and that it was amply strong. Nor had they at all considered it incumbent on them to use the stone specified. Now, if this is to be the tendency of even large and reputable contractors, I can see grave dangers ahead, both from the effect of failures upon the public and the passage of too stringent laws.

I turn from the dangers to the possibilities of the material architecturally. I cannot see much sense in the use of concrete as a substitute for block building material, although it will probably have its place if it is frankly treated as concrete and not as imitation stone. But the possibilities of design in concrete used in this way are those of its competing materials, stone, brick and terra-cotta, so that I shall not dwell upon these, but try to point out something as to what seems to me to be its greater possibility as a plastic material.

In block building, whether of stone, brick or other material, the joints are an essential element of building, and as such should become an essential element of design, to be accentuated rather than hidden, and in all characteristic and good architectural design you will find recognition of this fact. Take, for instance, any of the Classic orders or their modifications in the Renaissance, and you will find a frank succession of blocks and columns set upon plinths, or directly on basement wall, cap, abacus, frieze and cornice, all built up, stone upon stone, with major joints marked by mouldings, bands and ornament, a logical, built structure. But if we attempt to follow such a system of design in a plastic material, or even a material like wood, the results are disastrous to true architecture. The design becomes a matter of external form, not of the true expression of methods



ROTUNDA: BLENHIM HOTEL, ATLANTIC CITY, N. J.

and materials used. Concrete is built with shovel and trowel, and its proper ornamentation should be either cast in moulds as built or such as can be run or fashioned on the work, with the addition of such color ornament as may be obtained by the use of terra-cotta or other protecting material used as wall-copings, roofs, pier caps, etc., and such other flat color ornamentation as may be produced by the use of tiles, marble, glass or other material which is evidently applied to the surface. It is evident that this would and should make a wide departure from Classic forms and accepted styles,—that it means, in fact, a new architecture, although it will not be necessary to abandon all precedent. We shall want walls, windows and doors in any case, and must learn to build them in their accepted forms. But in a material so plastic the forms of openings and mouldings may be expected to vary much from those necessary to an architecture dependent on arches and lintels. There is more to be learned in the Spanish, or Californian and Mexican varieties of Spanish, than any other accepted type. Their plastered walls, tile roofs and wall-copings suggest concrete more than they do

<sup>1</sup>A paper by Mr. William T. Price, Architect, read before the March quarterly meeting of the Association of American Portland Cement Manufacturers, held at the Bellevue-Straford Hotel, Philadelphia, Pa., and published by that association as "Bulletin No. 2."

brick, and their domes and curved pediments are already suggestive of plastic rather than block construction.

I may perhaps be permitted to refer to the Blenheim Hotel as an example of an attempt to carry out some of these thoughts. At least, there is a suggestion of built structure in its simple wall



TILE DECORATION: BLENHHEIM HOTEL, ATLANTIC CITY, N. J.

openings, its exceedingly few and simple mouldings, and its total lack of cornices. We have distinctly tried in it to use a solid wall, pierced by the simplest of openings, in an effort to reduce to a minimum the chopped-up appearance common with buildings that of necessity have many windows and small unbroken wall-spaces. We have attempted, even where the wall was broken still further by bay-windows, to preserve this "feel" of wall, and have used the shadows thrown upon this broken surface by balconies to give the relief usually obtained by ornamented cornices, and with the addition of the tile roof and some beautiful



TERRA-COTTA DETAILS: BLENHHEIM HOTEL, ATLANTIC CITY, N. J.

color obtained with Mercer tile, we have secured sufficient color and variety to make a building essentially plain in wall-surface give a sense of richness not always obtained by the use of elaborate and expensive ornamental work in stone or terra-cotta, and the use of a moderate amount of terra-cotta where required

for sills, copings and other wall protection has been made unusually important by modeling it in interesting and appropriate sea forms and coloring it a light green, by a glaze which has the additional advantage of destroying any semblance of stone and giving it a plastic character that seems appropriate to modeled ornament. It is along the line of simple and direct expression of the purpose and mode of construction of building that architecture grows when it is really growing, and cement in its manifold possibilities spreads before us a new field for the imaginative designer.

#### ROOD SCREENS.

**I**N a lecture, dealing with Parish Churches, recently delivered in Carpenters' Hall, London, the Rev. Walter Marshall, F.S.A., in that portion of his lecture devoted to screens, said that, although in English churches there are to be found screens of various kinds, when we spoke of screens generally our thoughts always turned to the rood-screens, and he was sure they must have derived much pleasure from visiting a church where the rood-screen still remained, and must have felt how very much it added to the sense of completeness of the internal effect of a building. But, in considering rood-screens, they must be careful to make a clear distinction between those in a cathedral or collegiate church and a parish church. In the cathedral or collegiate church the screen—almost invariably of stone—was of a much more solid construction than in the parish church. In both types of buildings it answered the purpose—one amongst several—of dividing the nave from the choir. But in the cathedral this division was, of necessity, far more marked than in the parish church, because the choir was reserved for the use of the clergy, provision for the laity being made in the nave. They might, therefore, consider the choir of a collegiate church before the Reformation as a church within a church, and thus that choir was not only cut off from the nave by the solid screen, as at Tattershall (Lincolnshire), but also when there were aisles to the choir they were also shut off by screens, but not generally of so solid a character as the rood-screen.

Almost all parish churches before the Reformation were provided with a chancel-screen, and a rood-loft placed upon it; however, the screen seemed to have been used first without the loft, because the earliest examples of screens did not seem to have carried any loft, as, for instance, the beautiful screen at Stanton Harcourt (Oxon), which must be of late XIIIth century or early XIVth century date, and is probably the earliest example of a chancel-screen existing in England. It seemed impossible to say the precise period when those rood-screens were introduced. He was inclined to think about the XIIIth century, because, frequently in Norman and Transition-Norman churches there was distinct evidence that the jambs of the chancel had been cut away for the fixing of the screen, and also, in some cases, for the insertion of the rood-loft staircase. The fine church at Walsoken showed this very clearly. They must have noticed that the tops of most rood-screens to-day presented an unfinished appearance, which was owing to the destruction of the rood-loft in accordance with the Royal Injunctions of 1564. No part of the church seemed to have been so signally devastated as the rood-lofts and roods, for not only were they taken down, but, in places, all trace of the supporting beams entering the wall had been, as far as possible, removed.

It was in the reign of Edward VI. that the Royal Arms were first placed on the screens, on a beam over the nave, or on the wall above the chancel-arch. At Hurst (Berks), there was a very good example of a Gothic screen across the chancel and north aisle of chancel of XVth or even late XIVth century date; the loft was taken down according to order, and in the place of the rood-screen were now the Royal Arms of the XVIIth century, with characteristic strapwork ornamentation on either side.

#### THE TAURIDE PALACE, ST. PETERSBURG.

**C**URIOSLY enough Russia's first Parliament will hold its sittings in the old Tauride Palace, a building whose associations are all connected with imperious and absolute personal rule. It was constructed by the autocratic Catherine II., and bestowed by her upon Prince Potemkin (pronounced Patiemkin), who throughout her reign was her most enduring favorite. It was Potemkin who, after many years of struggle, reduced Tartar Khan of the Crimea to submission and brought that beautiful peninsula, now the Russian Riviera, finally under Russian sway. So charmed was the empress with the conquest that under the prince's escort she made a journey to the region,

then called The Tauride. Potemkin had built model villages and embryo cities along the whole route from Moscow to the Black Sea to show his sovereign the wonderful prosperity of the country, and upon that trip she dedicated half a dozen towns which have since grown into important cities, like Ekaterinoslav, Ekaterinodar, etc., which were named in her honor. Upon her return she built the palace for the "Hero of the Tauride," which palace during the latter part of her reign was famous for almost barbaric feasts on which Potemkin lavished the empress's gold. In the very hall in which the sessions of the Parliament are to be held the prince gave, in honor of his sovereign, the historic banquet, whose prodigality and splendor rivalled the feasts of Nero and the Roman emperors.

Potemkin received his royal guests in a uniform blazing with diamonds and a head-dress so heavy with gems and gold that its weight had to be supported by an aide-de-camp. Contemporary accounts of the banquet, at which 600 guests were served on dishes of gold, read like extracts from the "Tales of the Arabian Nights," one of the features being a ballet in which the grand dukes Alexander and Constantin with 200 of the most beautiful ladies of the court and nobility danced before the empress and her favorite. Shortly afterward Potemkin died and the palace was repurchased by Catherine from his heirs and served as her residence much of the time during the remainder of her life. Her son and successor, Paul I., who was destined to be killed like a mad dog a few years later, had held Potemkin in such hatred and contempt that he caused his bones to be taken from the tomb and buried in a dunghill. He also dismantled the Tauride Palace and turned it over to the Horse Guards for use as a stable. But after Paul's assassination Alexander I. restored the palace and made of it a residence for visiting sovereigns and his other distinguished guests. Among the crowned heads who occupied the palace was Frederick William III., of Prussia. Karmazim, the great Russian historian, was later lodged there by Alexander until his death. Subsequently the pictures and furniture were removed to the Winter Palace, and the Hermitage Art Gallery and the palace became a home for the aged pensioners of the court. It fell into decay and was restored only in the last decade of the nineteenth century.

The palace, which was designed by Staroff, was supposed to be modelled after the Partheon at Athens, but it is far from a pure Classic type, being in reality an odd mixture of Greek and Pompeian architecture. From the main building, the façade of

which is Greek, with portico columns and tympanum, project the wings which sweep to the rear, enclosing a garden with fountains and statues. The main entrance is through the portico, which is supported by six large granite pillars. The hall of the representative assembly occupies the major portion of the central wing, the entry for members being opposite the main portal and reached by passing through two intervening lobbies and a long members' corridor. It is rectangular in shape, with a large semi-circular alcove, or bay, enclosed in glass projecting from one end of the garden in the rear. It is little more than half the

size of the hall of the House of Representatives at Washington or about twice the size of the hall of the British House of Commons. It is well lighted from above as well as from the glass alcove and the seats of the 564 members, somewhat cramped, rise tier upon tier in a semi-circular form upon steeply inclined floor. The first impression somehow recalls mental visions of the Convention of the French Mountain, Gironde and Plain.

The domed walls of the bay act as an immense sounding-board for the tribune of the president, which stands before it. The tribune is flanked on one side by the ministerial benches, with seats for twelve members and as many assistants, and on the other by the desks for the official reporter and newspaper correspondents, thirty-four places in all. There is also a gallery for ministers and correspondents. The president's tribune, with these galleries, marks the dividing line of the "floor." The semi-circular alcove may be used for "divisions" taken as in the English Parliament, members passing through the entrances to the right or left according to the way in which they desire to vote. The public gallery, overhanging the last row of seats, is remarkable, principally, for its small dimensions, and would seem to indicate that the Government has no desire to have the "mob" overawe the assembly. It extends across the breadth of the

hall, but is only eight to ten feet deep and by crowding perhaps two hundred persons can find accommodation. The walls of the amphitheatre are panelled in white. The furniture is of oak. The members are not provided with individual desks as in the American Chamber, but sit behind "forms" built up in continuous semi-circles, the "form" having a sloping top upon which members can write and a shelf underneath for books.

The chairs of the members are screwed to the floor with tilting theatre seats in order to permit members to squeeze into their places, as the space between the "forms" is narrow. The



FIREPLACE IN THE AEOLIAN BUILDING, FIFTH AVENUE, NEW YORK, N. Y.  
J. H. Morgan, Architect.

precautions that have been taken to have everything firmly fastened down is sufficient evidence that tumultuous scenes in the new Parliament are anticipated. Special measures have been taken to deaden the floor in order to prevent obstructionists from stopping the proceedings by stamping; the parquette floor is laid in cinders, beneath which is a specially prepared cement base, making it practically noiseless. The ventilating arrange-

rooms, president's salon, quarters of the chancelleries, etc., are in the wings, and in these rooms the old Pompeian decorations, friezes and allegorical mural paintings have been restored. The great brass chandeliers, now fitted with electric globes, have been brought back from the Winter Palace and the Hermitage. The building also contains a room for members of the press, with a telegraph room adjoining, baths in the basement, hospital for emergency uses, buffet, restaurant, etc.—*Boston Transcript*.

#### A WESTERN VIEW OF THE ARCHITECTS' LICENSE.

**I**N *The Architect and Engineer of California* Mr. A. W. Smith expresses himself as follows on the "Architects' license question":

"The City Council of Oakland has passed an ordinance which levies a tax on almost all kinds of animals, including architects.

The tax or license on a dog, which latter is allowed to run at large, is fixed at a less sum than the tax on architects, probably because it was thought that the dog is a more harmless creature than a knight of the T-square. The tax on a stallion, kept for service, or a bull is about the same as that demanded from the poor dumb beast who daily bends his back over a drawing-board creating 'frozen music' and other Ruskinisms. Incidentally, many commercial pursuits were also taxed, but no other profession was included.

"There is some doubt as to what method will be employed to enforce payment of this charge. In the Athens of the Pacific they maintain a poundmaster who enforces the tax, as far as the genus canis is concerned, but instead of gathering in the taxless dogs by a gigantic butterfly net, as is the custom in the civilized parts of the world, they use a lasso with which they strangle the vagrant cerberus into submission and cast him then into a foul enclosure from whence he is condemned to asphyxiation, if his fond owner does not sally forth to the rescue. No doubt many of the owners for whom the Oakland architects are creating bungalows and 'sich like,' would gladly come to the rescue before the lethal-chamber stage was reached, but we fear the shock to the system caused by the rough treatment and the strangulative lasso of the license collector.

"The patriarchal fathers, when interviewed, informed a committee of architects that no tax had been levied on doctors or lawyers or dentists because they were governed by a State law which regulated the practice of their profession, and seemed very much surprised to know that the architectural profession was similarly controlled, but, like the Shah of Persia, they could not revoke what they had decreed, and the law, they said, must stand. They, however, gave the committee to understand that the carpenter-architect, to whom the drawing of plans was incidental to his business, and to whom it was not an exclusive method of earning a livelihood, would not be considered as taxable, so that the jerry-builder can roam at large without a leather collar with a brass tag thereon.

"It is said that the councilmen contemplate adding an amendment to the law requiring that the architects wear a leather muzzle during the hot months, and the amendment surely ought to pass, for if they are to be taxed the same as a stray cur, then the treatment should be parallel in all ways. The village 'Dog-berrys' who passed this tomfool legislation gave out as their reason the fact that the city needed the money. There are not over ten practising architects having an office in the trans-bay sleepy hollow, and a city must indeed be poor that needs two hundred a year so badly that it taxes its professional men for the privilege of earning their bread and butter.

"The writer would recommend to the legislative gentlemen before referred to, that if the city of Oakland, which is generally supposed to be experiencing a boom, needs money so very badly, that they, the aforesaid legislators, levy a license tax of twenty dollars a year on nurse girls, as there are a great many more of them than there are architects, and the amount of revenue raised would be greater."



STORES ON SOUTH WILLIAM STREET, NEW YORK, N. Y.  
C. P. H. Gilbert—Architects—E. R. Tilton.

ments are excellent. In addition to the regular air inlets there is an orifice under each seat, something after the system in the House at Washington, through which fresh air at proper temperature is pumped into the chamber. Among the paintings on the wall is a large portrait of Emperor Nicholas II., whose picture adorns all public edifices in the empire. It was executed by Rapen, the best of Russia's portrait painters. The committee-

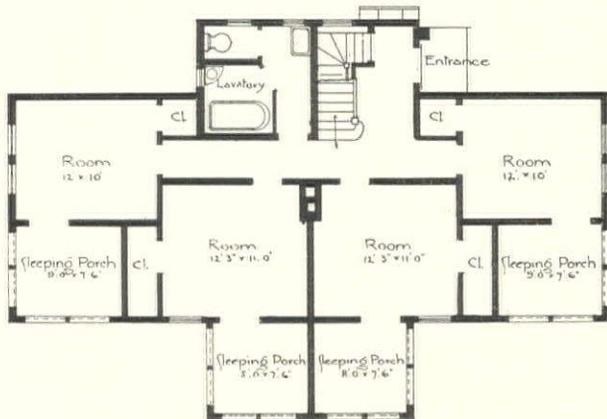
## ILLUSTRATIONS.

PROPOSED CRAGMOR SANATORIUM, COLORADO SPRINGS, COLO. MR. T. MACLAREN, ARCHITECT, COLORADO SPRINGS, COLO.

THE proposed Cragmor Sanatorium for the treatment of tuberculous invalids is to be located on a piece of land one hundred acres in extent and situated several miles northeast of Colorado Springs, Colo., at the foot of a bluff which will shelter it from the north winds. The building is to face south-southwest, and is

a flat segment in plan, thus obtaining shelter from side winds and at the same time retaining the advantage of the southern aspect. The building is, approximately, one thousand feet over extremities, and it has been a matter of difficulty to fit this great length to the irregular contour of the site without undue expense, but this has been accomplished on a line making the building face exactly south and southwest, and in this direction a magnificent view of the mountain-range is obtained. To reduce length of building to about seven hundred feet an alternate plan for the wings is considered, making these three, in place of two, stories high, and thus retaining the same number of patients' rooms.

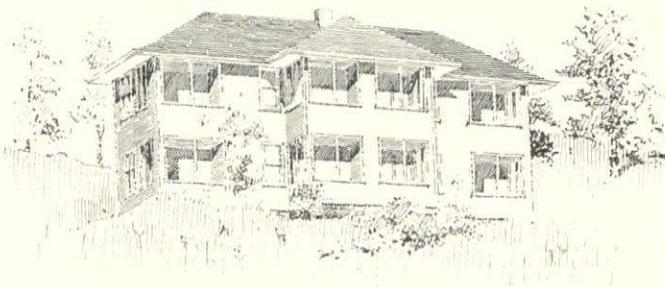
The centre portion of the building is mainly occupied on the first floor by the public administrative room. The dining-room has been placed so as to obtain the full advantage of the morning



sun. The main entrance is placed at the north of the building to avoid the dust and traffic which would obtain were the entrance placed in the front of the building.

A garden or fore-court, at a level of about six feet below the main floor of building, is placed opposite the central portion of the building and is enclosed at the ends by cloister features projecting from the ends of central feature. A gateway marks the centre of the front wall of garden.

The building will accommodate one hundred patients, eighty-eight of these having special suites, consisting of a sleeping-porch, private bath and a room which is meant to be a dressing or sitting room, rather than a bedroom, the idea being that patients will sleep outside in the porch. Alongside this room is placed the sleeping-porch, with the private bath behind. Each



DETACHED COTTAGE OF THE GRAGMOR SANATORIUM.

room is provided with a fireplace. Cross ventilation can be obtained by the windows on the two sides, and each bath-room has a special ventilating flue.

This unit of patients' suite has been carried throughout the entire front of the building, in the two upper stories of central building, and in the two stories of the wings. To prevent one patient disturbing another it was necessary to separate the sleeping-porches and to avoid one adjoining another either horizontally or vertically. It will be seen from examination of floor plan that, horizontally, the sleeping-porches are all separated from the room intervening, and that no porch is built over another. In this way any disturbance of one patient by another will be reduced to a minimum.

All staircases are shut off from hallways, so that the air will not penetrate from lower into upper stories. In addition, the

building is divided into sections by means of doors in the corridors, and each section can be ventilated by itself. Accommodation for nurses and dietary kitchens are provided for each section.

An ample number of verandas are provided, consisting of one along the front of central features, and the two cloisters at the lower level at each end of the garden or fore-court will serve also as verandas. Several north porches are provided at each section of the building, which will be very desirable during the summer months, and these accommodations will give patients every choice of position.

The external walls will be faced with buff or cream-colored bricks, and roofs generally will be covered with Spanish tile.

The entire building is heated by direct radiation, and to insure a positive circulation with low pressure in a building of this length, the radiators are connected with the Paul System of steam heating.

The boilers, which are located beneath the dining-room, supply the power for the refrigerating system, the laundry (located some distance from the main building) and the heating system. In order that dust and dirt may be easily removed from around the radiators these are of cast-iron, sectional type, with plain surfaces, long nipples and high supports. While the general temperature of the building will be 68 degrees Fahrenheit, all patients' dressing-rooms and bath-rooms can easily be heated to a higher temperature, if desired.

In the basement of each wing is a tank for supplying the hot water to the plumbing fixtures. These tanks are heated by live steam coils connected direct with the boiler, and the piping from the tanks to the various fixtures is arranged so as to give a continuous circulation. A similar tank in the boiler-room provides for the fixtures in the kitchen and main building.

The building is designed to accommodate the best class of patients. Funds have been secured for beginning this work, and the intention is that revenue from this undertaking will be devoted to providing later accommodations for a poorer class of patients.

Estimates have been obtained for parts of the building, and the whole structure as well, the scheme being laid out so that it can be built in sections, if necessary. The total cost will amount to \$300,000. The plans have been prepared in consultation with Dr. S. Edwin Solly, vice-president of Cragmor Sanatorium Company.

#### ROOD AND CHAPEL SCREENS: PLATES 18-25.

It was the custom in the primitive church to have the Epistle and Gospel chanted from two stone pulpits or "ambones." Many examples of these remain. The canon, reading the lessons of the Divine office, always asked a blessing beginning with "*Jube Domine benedice*," and these pulpits were, therefore, named "Jube," the name being retained when they were afterwards raised and incorporated into the gallery that reached across the choir. A rood or cross marked the centre of this later loft, and often there were supporting figures on either side of it. This cross and its attendant groups in smaller churches were elevated to the tie of the roof-truss.

The "jubes" were, doubtless, used in the old Mystery Plays, and history tells us that it was on the "jube" at Rheims that the French kings were crowned.

At Fécamp the illustrations of the stone "Jube," restored by Viollet-le-Duc, are excellent examples of the free development of the rood-screen, although the rood and furniture are not shown. The altars for parochial services are placed on either side of the door, as is customary in the case of solid enclosing screens. The fragments of this screen were unearthed by Viollet-le-Duc, having been used for various purposes, and the drawings of his restorations may be found in "*Monuments Historiques*."

An extreme is found at Troyes, where the rood-loft is a gallery suspended by marvelous vaulting of Caen stone, between the columns of the nave, leaving a clear opening. This form also occurs in Caen stone in St. Etienne du Mont, Paris, but in a later Renaissance style. At Troyes the Renaissance influence can be seen in the small pilasters at the left. Apart from this the screen is Flamboyant, carried to the highest degree, and is an unrivalled example of undercutting in stone carving.

In the picturesque church at Villemaure is a wooden rood-screen, where the staircase forms a feature of the design. This screen presents a bewildering amount of detail; every possible member is carved and the sculptural panels in the gallery are in full relief. The subjects for these panels are taken from "the Betrayal" and "the Crucifixion" and, like the contemporaneous

pictures of these subjects, all the figures are clad in mediæval dress. One is forced to admire the fecundity of the artist as well as his skill, for throughout the entire work there is no repetition of detail.

The jubes of France saw many alterations. As changes in church ritual created them, so later changes caused their removal. An increase in the number of offices made more room imperative, and in nearly all cathedrals the walls between the buttresses were removed and small chapels formed by means of screens. Many of these were Gothic in style, afterwards replaced by Renaissance examples, and many were originally built in the later style. As the minor services in these chapels were only attended by a small number of people, they have not suffered so much at the hand of the improver and a good many of them still exist. The most famous examples are probably those at Evreux, Laon and Fécamp; these are unparalleled in execution and each is of a different period of the Renaissance.

The carved wood screens in the Cathedral of Evreux are familiar to the architect through their excellent reproductions in the Trocadéro Museum at Paris. They were begun in 1522 and finished in the same style, it is said, fifty years later, though it is difficult to believe the same touch could have been given at so late a period. Remarkable as they are in execution, they have been treated on too small a scale, even for wood, and look too delicate in contrast with the stone piles. The best-known screen is that called "the Immaculate Conception," both after the chapel, where it is placed and the subject of its carvings. It was given to the Cathedral by the house of Postel. Their coat-of-arms bears a column and the sculptor has made a direct allusion to the donor in choosing his subject for the panels of the screen.

The panels of the base or wainscot show several busts in high relief, similar in character to work of the school of Auvergne of the same epoch. The other screens are nearly all Flamboyant in character, although Renaissance detail is apparent in some parts.

It is not unlikely there was some architectural feature above the entrance door. The spacing of the pilasters, so as to make a pier at the ends, leaving three middle panels equal in width, makes a clever composition, though the difference in the scale of the figure is too great. W. T. P.

THE FORD BUILDING, ASHBURTON PLACE AND BOWDOIN STREET, BOSTON, MASS. MESSRS. BRAINERD, LEEDS AND RUSSELL, ARCHITECTS, BOSTON, MASS.

TWO DOORWAYS IN ALT-KASSEL, PRUSSIA.

These subjects are reproduced from *Zeitschrift für Bauwesen*.

HOUSE FOR MRS. C. BIRTON ELLIS, SENECA LAKE, N. Y. MR. A. R. ELLIS, ARCHITECT, HARTFORD, CONN.

ELEVATIONS OF THE SAME.

#### Additional Illustrations in the International Edition.

REAR FACADE: HARVARD CLUB, W. 45TH STREET, NEW YORK, N. Y. MESSRS. McKIM, MEAD & WHITE, ARCHITECTS, NEW YORK, N. Y.

This plate shows the street front of the considerable addition to an always too-small building that was finished last year. Complete illustrations of the original building may be found in our issue 16 July 20, 1895.

## NOTES AND CLIPPINGS.

LONDON.—"A Statistical Abstract for London, 1905," issued by the London County Council, is an amazing compilation and shows that the British metropolis still holds the first place among the greatest cities of the world. The rapidity of the growth of London during the last century is shown by the fact that while in 1801 the population was 1,114,644, it had risen in 1901 to 6,581,402, and these six and a half million people live in 928,008 houses. Nothing more impresses the visitor to London than the enormous volume of the traffic. Of course the tramway and omnibus statistics for 1904 do not adequately represent the traffic of the present day, as since the completion of the new tubes new electric car tracks have been opened, but they may be interesting for comparison with New York. There were then 201 miles of tramway lines open, and during the year 557,947,846 passengers were conveyed, while 288,965,214 passengers traveled on the two principal omnibus companies' vehicles.

An interesting idea of the different sources of London's wealth

may be gathered from the gross annual assessed value of the income tax in 1904, houses, etc., amounting to £45,055,851 (\$225,279,255); trades and professions being £74,806,453 (\$374,062,265), and the profit of public companies, and other interest and profits amounting to £143,534,555 (\$717,672,775).—*New York Herald*.

THE ROMAN THEATRE AT ORANGE.—M. Formigé has prepared a scheme, to be submitted to the Commission des Monuments Historiques, for carrying out a restoration of the Roman theatre at Orange in such a manner as not to injure its archaeological value. He proposes only to build up rifts in the walls, to restore the *gradins* (the rows of seats), and the staircases which give access to them, and to repave the passages. He considers that this will fit it for the revival of classic drama, without any further restoration in detail.—*The Builder*.

ONE OF THE LARGEST DOMES IN THE WORLD.—The Devonshire Hospital at Buxton in its annual report gives an illustration of its great central hall. This appears to be covered in with glass, and claims to be the largest known dome in the world. Its internal diameter is given as 150 feet. The building was not originally a hospital. It was erected about a century ago as stables and a riding-school. In 1859 the late Mr. H. Currey, the architect—of whom I retain many pleasant memories—at a cost of about £6,000, transformed the place generally, and very cleverly converted it into the present well-known and commodious hospital, destined for the relief of poor souls suffering from rheumatic and gouty complications. The report alluded to remarks, the circular colonnade upon which the great dome rests is practically a replica of one in Spain (which latter, however, is not covered in), of which an illustration occurs in *Les Delices de l'Espagne et du Portugal* (1707), inscribed: "Palais des Rois Chrétiens à Grenade—Vu par dedans de la Cour." The accepted internal diameter of the dome of the new cathedral at Berlin is 102 feet (external 125 feet); but it is doubtful whether any authentic measurements of that over-rated Dom have ever been given out to the public. It is a long while ago since the International Exhibition was held at Vienna (A. D. 1873); but I recollect when visiting it then the guide-books asserted the Rotunda, the conspicuous dome over a portion of the Industrial Palace that was erected in the main avenue of the grounds for the occasion, had a diameter of 102 metres, which, if my arithmetic is correct, works out at 334 feet 8 inches. At the time it was accepted to be "the largest cupola-crowned edifice in the world." It may be useful to know whether Buxton Hospital's claim can be maintained by actual fact.—HARRY HEMS in *Building News*.

NEW CASINO FOR MONTE CARLO.—The Casino receipts between January 1 and the end of February show an increase over last year of £100,000. It will be remembered that at the beginning of 1906 figures showed a decrease of £60,000, so that more than £160,000 over the usual receipts have been taken in two months. The question of building a second colossal Casino within the Principality at Beausoleil has now reached a most interesting stage. Permission to build a Casino has been granted, the syndicate has been formed and the site bought. The position is on the very frontier line between France and Monaco, near La Turbie Railway station, and is at present occupied by a small buvette and the Hotel Montfleury, whose proprietors are offered some £3,000 to leave. These premises are to be pulled down and the new Casino erected in its place. The acquiring syndicate commands a capital of £80,000, and is registering its enterprise as a Société Anonyme, under French company law.—*Pall Mall Gazette*.

MEXICAN ONYX.—The Bureau of Manufactures of the Department of Commerce and Labor has been furnished by Consular Agent Chambers, of Puebla, Mexico, with samples of onyx taken from the quarries of that country. Puebla is the centre of the onyx industry, and large shipments are made from there to the United States, but there has been complaint that dealers are not able to obtain the onyx, because the people in control of the quarries preferred to elaborate it and sell it at retail.

The opening of new branches of the industry now promises to meet the demand in the United States at least in some measure. The samples forwarded to the Bureau of Manufactures are of many varieties, and some of them are very beautiful. The price of onyx at the quarries of Puebla averages about \$150 gold a cubic metre. Delivered at the railway stations in blocks, it varies from \$175 to \$200 gold, according to the distance from the quarries, and the consequent transportation charges.—*New York Tribune*.

# The American Architect and Building News

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THE manner in which the matter of "registration of architects," in England, is being handled just now, is in refreshing contrast with the wire-pulling methods followed in this country by the supporters of the "architects' license" movement. The Royal Institute of British Architects, long opposed to the idea, was, last year, reluctantly brought to a point where it gave the proposal a qualified indorsement and undertook to give the matter considerate attention during the past winter, appointing a committee to investigate and report. This committee, in turn, placed the matter in the hands of a sub-committee, equally divided, as was the larger one, between those who favored and those who opposed the plan, and this sub-committee then selected and invited to appear and give testimony before it twenty-four architects, twelve favoring and twelve opposing the plan and, also, in equal numbers representing the metropolis and the provinces. These twenty-four gentlemen attended and set forth their ideas and opinions at twelve successive meetings. The sub-committee then conferred and reported to the larger committee, which, in turn, considered and reported to the Institute itself at a general meeting on April 3, reports of which have not at this writing come to hand.

THAT appears to us to be a proper and dignified manner of treating a vexed subject which deserves calm and considerate, not impassioned nor hysterical discussion. It is grossly improper and unfair for a small group, or coterie, or society, to vote, possibly at a packed meeting, to support a "license" measure and thereupon hasten to the legislature with a crude and ill-considered bill which they seek to jam through as hastily and quietly as possible. If the measure be good and worthy, or if it be evil and obnoxious, it, in either case, affects the entire body of the profession, and when the demand comes from within it should be the voice of the majority of those who are to be affected

that the lawmakers should listen to. If it comes from without, from the great general public seeking to defend itself, why then the profession, as the weaker of the two interested but opposing parties, must yield. So far as this country is concerned, we are convinced that the demand for a license law, so far as it comes from within the profession, is not a genuine, and certainly not a general, demand. We believe it is nothing more nor less than a hasty and ill-considered giving way to the great American peculiarity, the itch for formulating a new law without taking time to consider whether older laws do not already cover the point.

IN the case of architects, we believe that existing laws do sufficiently cover the requirements, since architects are common and not uncommon human beings, and, on the average, are desirable and law-abiding citizens. If the great public feels that the architect is more dangerous to its welfare than the merchant, the broker, the engineer or the mechanic, then it is proper to put him under a restraint that these others are not affected by. But we do not for a moment believe that the public feels in this way about the members of the architectural societies, the graduates of the architectural schools, and the many men of merely practical training who, in years of faithful service, have proved their competence, and we do not believe the public feels there would be any justice in requiring these men, even if they can well afford it, to pay an annual license-fee, when the merchant, the broker, the engineer and the mechanic are allowed to follow their calling untaxed, or that there is any good reason for placing such a stigma on honorable men. The public can proceed against an unlicensed architect for manslaughter as successfully as against a licensed one, and an injured client can as hopefully expect to collect civil damages. How then is the public benefited by annoying the majority of architects? Because there are some thieves, does the public require all good men to pay an annual tax in confirmation of their probity, or does it make restraining laws that apply only to the evil?

OUR own belief is, that the evil done by those who can now practise as architects, but who would be barred from practice through the operation of a license-law, is really a negligible quantity, so far as public safety is concerned. The practitioner of blunted moral faculties, who, for gain, becomes the willing tool of real-estate speculators, may be able to pass with flying colors the severest examination that can be devised. How does a license protect the public from such a man? For such real evil as there is—and so far as the public is concerned, it is infinitesimally small—we believe that a cure should be found, not through special and obnoxious "class legislation"—which may or may not prove to be unconstitutional, for the constitutions of the several States are by no means identical in their provisions—but simply through enforcing against the small body of malpractitioners the penalties already established by the general laws.

Architects are not outlaws; they constitute a highly developed and liberally educated profession, and they should be considered and treated as other professional men are. The profession is coherent and respected: it would gladly feel itself self-respecting, if the champions of the license system would kindly allow it that privilege. If, perchance, its manners, morals and customs need amending or cleansing it should be allowed, encouraged or, if need be, compelled to *itself* attend to such cleansing.

THE proper, the dignified, the entirely effective way of coping with such evils as exist, is to make the profession itself responsible to the public in essentially the same way in which the legal profession, through its bar-associations, and the medical profession, through its societies are now responsible. State laws are undesirable because of the differing constitutional limitations. What may be needed is a United States enactment, empowering and compelling the American Institute of Architects—the body known to and recognized by the National Government—to act, through its properly constituted committee, as a Grand Jury to enquire into and determine the professional standing and ability of any practitioner against whom charges may be brought, or of whose attainments suspicions may be entertained. If, after enquiry and a thorough and searching examination, any so-called architect should be found not to possess the minimum qualifications, the Institute should be empowered to bar him from practice until his disabilities should be removed through his later successfully passing the required examination. This would be the proper and dignified way of handling the matter and would place the burden and stigma, such as they are, where they belong, and not upon the honorable and competent majority of the profession.

TRUE to its policy, not only of keeping in touch with art matters in France, but of, where possible, actually associating itself with artistic movements there, the Society of Beaux-Arts Architects is just now seeking from its own members and their wealthy friends contributions that may be offered to the Society's name toward the erection of a monument to the late Paul Dubois, at his birthplace, Nogent-sur-Seine. There is a reason, perhaps a good one, why the American pupils of the École des Beaux-Arts should desire to honor the noted sculptor who, for so many years, was the Director of the Paris school which these American architects so much delight to honor. But while it may be pleasant to place, as it were, a wreath on the actual resting-place of a respected master, it seems to us that there is another way of doing him honor, and, in the doing of it, at the same time discharging a duty that Americans owe to their own country. Suppose, since the powers that be have determined that we must be a military people, a replica in bronze of the fine figure of "Military Courage," from the tomb of General Lamoricière, should be procured and set up as one of the adorning features of the Columbia University's new stadium. Would not that be more helpful to American art and redound more to the sculptor's fame, than if the mere expensiveness of

the monument to be created by MM. Boucher, sculptor, and Boeswilwald, architect, should be magnified by American contributions?

THE Dubuque, Ia., *Telegraph*, which we take to be a paper of distinctly socialistic leanings, asks why society should not reap the benefit of the increment of value that itself has created, rather than the accidental owners of the property that has increased in value, owners who have themselves done nothing to add to that value. The question has a speciously attractive air, but we do not know just how the *Telegraph* would divide profits in the case it was considering. The incident that attracted its attention is that of the property at Broadway and Thirty-fourth street in this city, formerly owned by the Broadway Tabernacle and still covered by its now unused edifice. When bought, about fifty years ago, \$78,000—we give all figures without verification—was paid for the land. When at length sold, some four or five years ago, the purchaser paid \$1,300,000, which was practically merely the value of the land, since the old church was essentially valueless. After adding to this two small parcels in the rear at a cost of less than \$150,000, the combined properties were shortly sold for about two million dollars and they are said to have been again sold within a short time at an advance of another half million of dollars. To just what section of society the *Telegraph* would distribute this unearned increment, we do not know; but we feel that, on a just analysis, no inconsiderable part of it should go to the much contemned surface railways—and that probably would not suit the editor at all.

IN the interest of civilization and the positive well-being of this country and of the children of the people who now inhabit it, it is worth while to bring together two series of really allied facts that are not very likely, else, to be considered together. In sundry warehouses in Washington there are stored and unusable to-day ninety-five hundred tons of obsolete public documents and reports, and this in spite of the fact that the Fifty-third Congress endeavored to reduce the hoard by ordering a distribution of the matter, *pro rata*, to Members of Congress, one of whom is said to have received as his share two and a half carloads of the stuff. Aside from the increment from the several Departments this mass of waste matter is being increased each year by seventy thousand volumes of the *Congressional Record* which are printed, through routine, but for which there is no demand. That is one set of facts. The other is that the paper-pulp mills of the country last year consumed over three million cords of wood in the production of 1,993,000 tons of pulp, and the records of the Forest Service show that the production of pulp (and the consequent inroads upon our forest reserve) has increased by more than fifty per cent. during the last six years! If the Government cannot check and control the operations of the papermakers, it is clearly in position to practise a real economy in the consumption of their product and, by reducing the demand upon them, give the forests a longer lease of life and a more economical usefulness.

THE REGISTRATION OF WORKS OF ART.<sup>1</sup>

THE *Burlington Magazine*, in an able editorial (January, 1906), proposes a scheme according to which two or three picked persons shall be entrusted with the task of reporting upon the private collections of England, and advising the National Gallery as to such limited number of masterpieces as must be secured to the nation, should they come into the market, "at all costs," while in respect of minor works of art the National Art Collections Fund shall undertake the responsibility of purchase.

Whatever two or three individuals there may be who could command the full confidence of the directors and trustees of our museums in the first capacity, it seems doubtful at present whether the National Art Collections Fund could hope to gain it in the second. Assuredly, the Fund has already done good work, such as presenting a fine Watteau to the Dublin Gallery, and coming, in 1904, to the assistance of the British Museum in the matter of the two Greek bronzes referred to above. Nor can the zeal which they are now displaying in the projected purchase of the Velasquez at £40,000 be ignored. Yet the Fund has also shown signs of inexperience, of a certain lack of judgment, as in the purchase for the National Gallery of the repaired Lazzaro Bastiani. Then, since the *Burlington* editorial asserts, of the "Venus and Cupid" by Velasquez, "the price proposed is considerably in excess of that which the owner would perhaps have been willing to accept had he been approached directly," why should not the Fund, this "embodiment of contemporary scholarship," have found out long ago that the picture was for sale and left no stone unturned to secure it before it came into the hands of dealers?

At the same time the proposal of the *Burlington* editorial, that some outside body should be appointed to report upon the private treasures of the nation and to hold, as it were, a watching brief, is one in itself excellent. Only, such a body must be one fully representative of all artistic interests and able to work with the authority of office as well as reputed knowledge. Indeed, its formation should be preceded, I think, by the appointment of some preliminary committee to consider carefully what should be the character and powers of a body of artistic advisers to the nation.

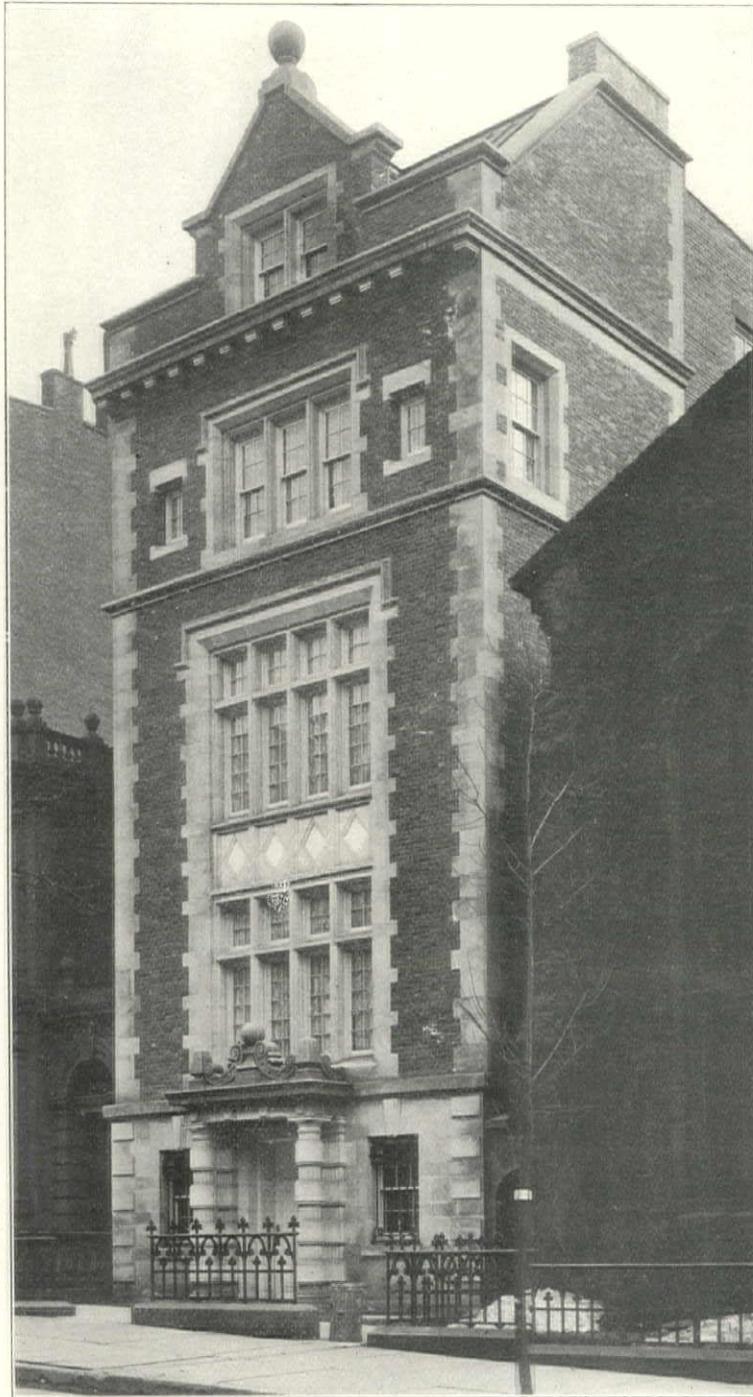
Such a preliminary committee, representing in its members the various bodies already formed to protect the artistic interests of the country—the three great London Museums, for instance, the Hellenic Society, the Arundel Club, the newly formed Vasari Society, and, of course, the National Art Collections Fund—would,

it is hoped, find it possible to approach the Government in view of obtaining the appointment of some *royal commission for inquiry into the art collections of the country and for the registration of their contents*. A commission of this kind would have valuable precedents in the Historical Manuscripts Commission, founded in 1870, which works in concert with the Record Office. The new commission would in the same way be affiliated to the National Gallery and the British Museum, probably also to the Victoria and Albert Museum, pending the time when we shall have a ministry of the fine arts so ably advocated by Mr. M. H. Spielman in *The Nineteenth Century* for last September.

It is, happily, true that in some few cases owners of great ancestral collections, heirs as well to a long scholarly tradition, and probably to great wealth, have already caused these collections to be placed, as regards, at any rate, cataloguing and arrangement, on much the same footing as a public museum. But, after all, it is not all owners, even of hereditary treasures, who are able or willing to keep a permanent librarian or curator. To such as cannot, a commission for inquiry into works of art should come as a real boon, helping them to discover where the real strength of their collection lies, and discard old high-flown attributions which invariably bring discredit on a collection, and nowadays impress only housekeepers and cheap trippers. Any fear, moreover, that by making known the contents of their collections, death duties—the bugbear of the private owner—might be increased, is manifestly absurd, since the same spirit of discretion that governs the transactions of the Historical MSS. Commission would assuredly govern those of the new commission. The Royal Warrant for the former provides not only "that nothing of a private character . . . should be divulged," but in a subsequent paragraph instructs the Commissioners to give owners "full assurance that . . . no knowledge or information which may be obtained from their collections shall be promulgated without their full license and consent." So the Commission into Works of Art would be bound in honor not to reveal to the public the value, real or probable, of any object which they scheduled.

It is more than probable, indeed, that such a commission would instruct its members, or any one it employed, never so much as to discuss either with owners or with outsiders the commercial value of an object.

They would, in short, merely be putting on a sound official basis work such as has been left in this country to foreign savants. Let us listen to what Professor Furstwängler,<sup>2</sup> in an



RECTORY OF THE CHURCH OF THE INCARNATION, 209 MADISON AVE., NEW YORK.  
EDW. PIERCE CASEY, ARCHITECT.

<sup>1</sup>Extracts from a paper in the *Nineteenth Century* for February, by Mrs. S. Arthur Strong, LL.D.

<sup>2</sup>*Ueber Kunstsammlungen in alter und neuer Zeit*, von Adolf Furstwängler, 1899.

address delivered before the Bavarian Academy as lately as 1899 had to say on the English private collections of antique sculpture alone:

"In England Charles I. collected antiques, which, however, were sold by public auction in 1649, and the Earl of Arundel brought many Greek fragments from the Classical East, which afterwards were scattered and partly destroyed. Then, in the eighteenth century, there awoke among the English nobility, as a result of increasing culture and of a corresponding taste for antique sculpture, a desire—which soon passed into a fashion—for adorning castles and country seats with antique marbles in the manner of Italian palaces. Then began an influx of antiques into England, where they vanished among the country seats of the aristocracy, and, soon forgotten and neglected, fell into a new sleep of death from which, in our times, German savants have occasionally endeavored to recall them."

The reproach, though severe, is not unmerited. Professor Michaelis, the learned compiler of "*Ancient Marbles in Great Britain*," which was published in 1882, complains in his preface of the difficulty of getting information about the works of art so "widely spread" over the country, adding, however, that "even more difficult is it to obtain such access to them as shall enable the visitor thoroughly to examine the works of art without being every moment disturbed by the impatient noise of the housekeeper's keys. But the greatest of all hindrances is the want of good catalogues or other literary means of general, as well as special, preparation and instruction."

Unfortunately, great works, such as that of Michaelis, having, so to speak, no official authority to recommend them, have made, singularly, little effect either upon English owners or the English public. They seem to have been consulted everywhere abroad—especially in Germany and in America, where the most zealous collectors are to be found—rather than over here. In fact, I sometimes think that it is partly owing to their existence that so many works of art have gone out of the country without the "authorities" who preside over our national collections being so much as aware that sale was imminent or contemplated. It would be interesting to find out whether, as a rule, foreign museums do pay such very high prices, or whether it is not industry and organization which enable them to be first in the field and thus carry off the prize.

It is time, indeed, that this work among the English private collections be taken up by English scholars working under competent official direction. This is not said to disparage our immense debt to Passavant and to Waagen, to Conze and to Michaelis, to Professor Furtwängler and to Dr. Bode, all of whom, in their different lines and at different periods, have, amid untold difficulties and discouragements, contributed to the great catalogues which are now classical. On the contrary, their work it is which will enable a commission, such as that now proposed, to proceed in their task of registration with rapidity and certainty, avoiding waste of time or labor; for, in reality, the task before them would be to revise and generally bring up to date the descriptions of their predecessors, doubtless shortening or compressing many of these descriptions, since, *qua* Commission, at any rate, they would not be required to produce the work of specialists. One essential innovation, however, would have to be introduced—one which the Historical MSS. Commission, moreover, have never attempted—and that is the competent illustration, by however cheap a process, of nearly every picture, statue or other object scheduled. Then, in case of accident, a record of the work would at least have been obtained. The destruction of the Turin Library by fire sufficiently shows the necessity for securing, wherever possible, photographs of works of art. Negatives, moreover, should not be left to the care of photographers, but be collected into a place of safety such as the British Museum. The Arundel Club, for the reproduction of pictures in private collections, and the Vasari Society, for the reproduction of drawings, have already set a good example, but their work must necessarily proceed more slowly and be on a more limited scale than that of a royal commission such as the one proposed.

The gain to the studious and art-loving public of reports thus competently undertaken is self-evident. It might well be that other benefits would accrue to public and owners alike from the work of the Commission. Many a work of art might be saved, by timely expert notice, from destruction by sun or damp or smoke, or even from relegation to a lumber-room, and thence to a rubbish heap by an ignorant housekeeper—dangers which no one who has studied private collections with care will think imaginary.

Again, might not the influence of the Commission be employed

in obtaining for the public reader, or rather more satisfactory, access to private collections?

In view of the vast numbers of sightseers who tramp daily through the great houses of the "Dukery," or through Warwick Castle, Chatsworth and Wilton, it is idle to echo old abuse of "the favored class" and declare owners unwilling to admit the public. Neither is it difficult, unless in the rarest case, for a student to obtain special leave to examine some individual object. But the intelligent and educated person who is neither ignorant "cheap tripper" nor special student, falls between the two, and, herded with the mob, harried by a pompous housekeeper or flunky, or perhaps by a young and quite illiterate housemaid, can seldom enjoy quietly a visit to a private collection. The much-abused tourist is not always of the sort made familiar by Mr. Anstey's *Voces Populi*, who asks for "the cupboard where his Grace's boots are kept," or who, in front of Rubens's "Three Graces" inquires "Which is the present duchess?" Indeed, I sometimes doubt whether this genus—any more than Mr. Gladstone's collars or Mr. Chamberlain's nose—has any real existence outside the domain of the caricaturist. In the course of my excursions to private collections I have been brought across extremely intelligent tourists—real students sometimes, who are too shy to avail themselves of the privilege of scholars to ask for a special permission; at other times workmen keenly interested in the applied arts, all of them in too great awe of the imperious housekeeper and her satellites to dare to do more than glance at the objects of real interest while they are hurried past foreign and English treasures, past pictures by Rembrandt or Veronese, past Chippendale furniture or Limoges enamels—to be made to admire modern silver candlesticks given by some royalty, or the latest bad portrait of the owner. I remember a housekeeper once saying to me, indignantly, of a young German who was trying to identify the pictures in a great collection with the help of his Waagen, "I've no patience, ma'am, with these foreigners. They bring their books and think they know the place better than me, who've been with the family twenty-four years!" Were owners and keepers of museums to enter, through the Commission, into friendly relations for their mutual advantage, it might be that—in the case, at least, of our great historic collections—some scheme for better exhibition, under competent guidance, might be devised. But these are considerations beside the present mark.

Were legislation to go a step farther and to grant further exemptions or give direct aid to owners willing to arrange and show their collections in such a manner as really to delight and instruct, there might be won for the country, not isolated works of art, but complete collections, surpassing in value and interest and beauty any possible fresh-created local gallery or museum. By legislation on these lines the sale of works of art from private collections might be successfully checked—for time after time the heavy death duties have been the plea for such sales. Thus, by laws, not penal, but advantageous, we might attain the object vainly aimed at in Italy by the oppressive and ineffectual *Legge Pacca*.

Hitherto, instead of open and educated intercourse between the various national collections and those great private houses which contain works of art, there has been mostly only the mutual suspicion and distrust that spring from ignorance. This attitude is fostered by a good deal of cant as to the selfishness of the private collector who shuts up his treasures from the vulgar gaze, and the consequent advisability of sweeping all art treasures as quickly as may be into great national collections open to the public. This sort of talk is not of yesterday. It dates back to the time of the Emperor Augustus, and probably farther, Pliny, in his "*Natural History*" has a passage about the great Agrippa, the friend and son-in-law of Augustus, which excellently illustrates the point. Agrippa, it seems, had once made a magnificent speech (*oratio magnifica*) "fully worthy of the first citizen of the state, urging that all pictures and statues should be made public property." "Certainly a wiser plan," adds Pliny, "than to consign them to exile in our country houses (*quam in villarum exilia pelli*). There is no reason to believe that Agrippa ever carried the day, probably because Augustus would have been reluctant to support a measure so likely to give offence to the powerful Roman nobility, who, like the English of the eighteenth century, were the most zealous collectors of their time.

Anyhow, we find another distinguished Roman, the brilliant and many-sided Asinius Pollio, whose collection, to judge from Pliny's account of it, must have been one of the most stupendous in antiquity, proposing to throw it open to the public, and showing, moreover, "characteristic eagerness in the execution of his project

(*ut fuit acris vehementia, sic quoque spectari sua monumenta voluit.*)"

To-day public opinion, as a whole, is still on the side of Agrippa. Yet there are not wanting great scholars and even directors of public museums who are beginning to see the matter in a different light.

There has been a good deal said of late in England about those dealers—*lupi in pelle ovina*—who, masquerading as art-critics, get introduced into the easy cosmopolitan society of Italy and help deplete its princely houses of their works of art for the benefit of American and other millionaires. But the internal affairs of Italy, though we seem unable to learn the lesson, are not ours. As a fact, it appears as if the great Italian, and especially the Roman families, were becoming alive to the danger, though, like other people, they may be shutting the stable after the mare has bolted. Italy only so far concerns us that we should study what has happened there, not in order to read cheap and impertinent lessons to the Italians, but in order to avoid committing the same errors here in England without one-half of the excuse.

It is no use crying shame when the superb Sciarra collection dis-

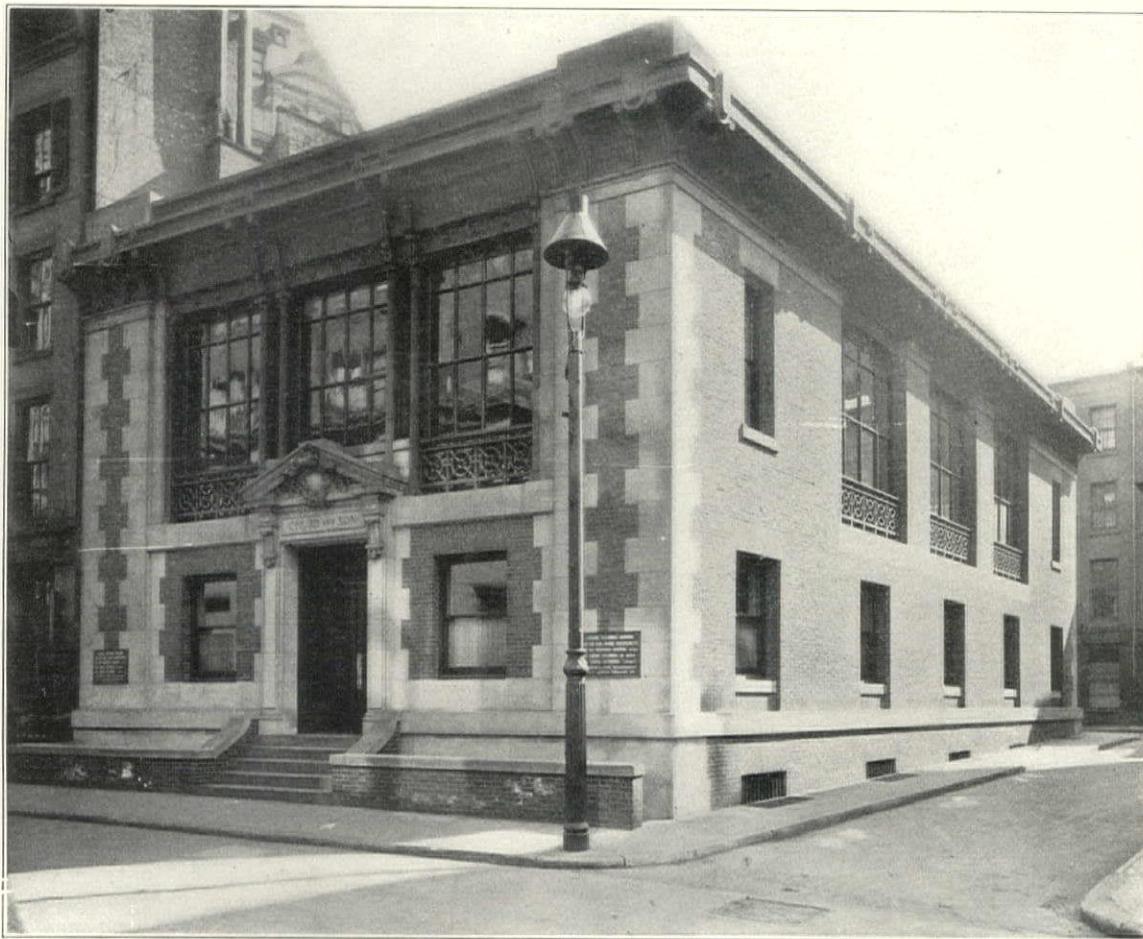
tured to advocate differs from others now in the air mainly in the greater stress laid upon the necessity of maintaining great private collections intact. Rather than pass out of the country, works of art which come into the market should be secured without fail to an English public gallery, but, best of all, would it be if by happy co-operation of private owners and a public body, our great houses could preserve their artistic contents, while becoming by better management and more organized accessibility themselves "national monuments" in the truest sense, ministering to the culture and delight of the nation none the less because remaining the property of those historic families to whom they owe their existence.

EUGÉNIE STRONG.

#### EFFECT OF FREEZING OF MORTAR.<sup>1</sup>

THE freezing of mortar before it has set may be said to have two effects: (1) The low temperature retards the setting and hardening action, and (2) the expansive force of the freezing water may overcome and destroy the cohesive strength of the mortar.

The action of frost on rich lime-mortar is not serious, since it



OFFICES OF MESSRS. CHUBB & SON, SOUTH WILLIAM ST., NEW YORK, N. Y.  
KIRBY, PETIT & GREEN, ARCHITECTS.

appears from Rome to be dispersed over minor collections outside Italy, or when, more recently, the Vicenza Giorgione and the Chigi Botticelli go to the Gardner collection in Boston, and worse still the Aretino by Titian from the same Chigi Palace also finds its way, doubtless by the same route, to America. It is no use to cry shame or for pious lady tourists to exclaim against the indifference of the modern Italians to art if meanwhile, in so infinitely richer a country as England is than Italy, the Lothian Dürer goes to Berlin, the Dudley Raphael (the exquisite small panel with the "Three Graces") goes to Chantilly, and Lord Darnley's "Europa and the Bull" to America—or if family portraits, far too numerous even to indicate, the flower of the art of Van Dyck, of Reynolds and of Gainsborough, are allowed to cross the water to adorn the Museum of Berlin or the salons of Parisian financiers.

All are doubtless agreed in wishing for some measure to check the exodus of works of art from England. On the part of the public, at any rate, there seems to be a considerable awakening to responsibility in these matters. The scheme which I have ven-

hardens so slowly. When lime-mortar is used, however, it is not permissible to allow building operations to be carried on during frosty weather. Apart from any effect which the frost may have on the mortar there is great danger to the stability of the wall by the alternative thawing and freezing of the mortar with which the wall has been built. For instance, where a wall has been frozen through, as we term it, when the thaw comes the fresh wind may strike on one side of the wall only, with the result that the mortar on that side of the wall becomes soft, while that on the other side remains hard; thus in many cases causing an unequal settlement of the wall, by which it is put out of the perpendicular.

The author made an experiment recently to determine the effect of frost on cement-mortar, but found that before anything definite could be said on the subject a long series of tests would require to be made. The results of the experiment may be summed up briefly: At 3 deg. of frost, or at 29 deg. Fahr., the

<sup>1</sup>Extract from a paper on "Mortar" by Mr. S. Smith, in *The Builders' Journal*.

physical appearance of the mortar was affected; at lower temperatures ranging from 25 deg. to 14 deg., there was no physical change visible to the eye. The briquette which was at a temperature of 14 degs. when newly gauged presented the same appearance as a briquette which was kept at a temperature of 60 degs. Fahr. The tensile stress required to break the briquettes did not show much variation until the briquettes which had been kept at the temperature of 14 degs. were reached, when their tensile strength was found to be about 10 per cent. lower than that of the others.

In the United States of America, where the effect of frost is more serious than in Britain, numerous experimental tests have been made to determine the effect of freezing temperatures on hydraulic limes and cements. Although the conclusions of the various experiments do not in all points agree, it is the generally accepted belief that the ultimate effect of freezing upon Portland cement mortar is to produce only surface injury.

The following is a table showing the result of experiments made by T. F. Richardson, an American engineer:

Briquettes.	No. of briquettes.	Tensile strength in lbs. per sq. in. at—				
		7 days.	28 days.	3 mths.	6 mths.	1 year.
In water in laboratory...	20	268	304	359	370	401
In air in laboratory....	20	298	352	364	392	517
Outdoors below freezing.	80	139	238	344	435	627

This appears to show that frost improves Portland-cement mortar, though the author is a little dubious about the improvement.

The author has found, however, that when cutting into walls where the skin has been peeled off the mortar by frost, the mortar in the wall was quite sound. He once had experience with a granolithic pavement where the skin was peeled off the surface of a few of the sections by a severe frost. It was intended to relay these sections in the following spring, but on examination the concrete was found to be quite sound, and at the present time, after the lapse of nine years, the sections that were affected by the frost cannot be distinguished from the others.

It may, however, be stated as a general rule that, if possible, building operations should be suspended during frosty weather. In cases of emergency, or where the buildings are urgently required, with proper precautions cement-mortar may be used with very little (if any) bad effects.

These precautions are admirably put as follows by an American engineer, a Mr. Baker, in his treatise on "Building Construction":

- (1) Use a quick-setting cement.
- (2) Make the mortar richer than for ordinary temperatures.
- (3) Use the minimum quantity of water.
- (4) Prevent freezing as long as possible.

The first three requirements of Mr. Baker's are easily met, but the fourth is more difficult. To cover up the wall that is being built will prevent freezing of the mortar in a wall when the temperature is below freezing-point during the night. The author found by experiment that if four hours passed from the time the mortar was mixed till it was attacked by the frost there was no bad effect. It is when the temperature is below freezing-point during the daytime that greater precautions have to be taken. Fires should be kept burning around the board upon which the mortar is prepared. The stones or bricks with which the wall is built should be dry and free from frost.

Various American writers advocate the use of salt among the water with which the mortar is mixed. Baker gives the following recipe: Add to the water used for mixing the mortar 1 per cent. of salt for each Fahr. degree below freezing. Messrs. Taylor & Thomson, in their book on "Concrete, Plain and Reinforced," another American publication, writing of the effect of salt on mortar, say: "Since the temperature of the water cannot be determined in advance, an arbitrary quantity is as suitable as a variable one. In the New York Subway work, in 1903, 9 per cent. of salt to the weight of water was adopted; on the Wachusett Dam, during the winter of 1902, 2 per cent. of salt to the weight of water. This makes about 1 cwt. of salt to every 120 gallons of water used at the subway and 1 lb. of salt to every 5 gallons of water at the dam."

In Mr. Richardson's experiments salt, added in the proportion of from 2 per cent. to 4 per cent. of the weight of water, gave slightly higher tensile strength than the unsalted mortar at all seasons of the year.

The following table is given by a Mr. Charles S. Cowen, an-

other American, as the result of his experiments with salt added to the extent of 10 per cent. of the weight of water used:

	1 week.	1 mth.	3 mths.	6 mths.	9 mths.	12 mths.
Fresh water used...	112	183	268	335	351	458
Salt water used...	68	131	215	265	301	413

The above table scarcely bears out Mr. Richardson's statement that the mortar is improved by the addition of salt to the water.

The author is of opinion that a small quantity of salt may be added without much harm being done, and that it will keep the water from freezing until the cement has become fairly well set; but there are so many risks in connection with the use of mortar during frosty weather, and so many precautions to be taken, that unless there are very urgent reasons for the work being proceeded with all building operations should be suspended during frosty weather.

#### SAFETY IN THEATRES.

THE Association of German Fire Department Chiefs, through a committee appointed at a meeting in Munich in 1904, has adopted at the 1905 annual meeting, held in Bremen, some rules and regulations intended for the better protection of life in theatres.

The following are the chief requirements of the rules as regards both new and old theatre buildings:

(A.)—The stage must be separated from the auditorium by thoroughly fire and smoke proof means.

1. In the case of new buildings, two iron curtains, operated hydraulically, are required; in the case of existing buildings one iron fire-curtain and besides this a reinforced asbestos curtain (such as the one of "Reichel") are called for.

2. An open-pipe sprinkler apparatus or water-curtain for the protection of the fire-curtains should be installed.

3. The stage must be separated from the auditorium by means of double fireproof brick walls, so arranged that there is a sufficiently wide passage between the two walls for men to stand and to pass. This passage is intended to be so planned and arranged that all required apparatus for raising and lowering the fire-curtains, for operating the curtain-sprinklers, the ventilating skylights over the stage, the automatic fire-alarms, the fire signalling apparatus, etc., can be placed and operated from it by the special officers there stationed in charge of such appliances. The space must be well ventilated from above and must be proof against gases of combustion from a stage fire. From this passage at least one unencumbered exit directly to outdoors must be provided. It must also be possible to reach from the passage all parts of the stage.

NOTE.—The fire-curtains might also be operated successfully electrically, but whatever the motive power, auxiliary hand apparatus for working the curtain should, under all circumstances, be provided.

(B.)—Correct arrangement and operation of a sufficient system of ventilation of the stage and auditorium to efficiently provide for the escape of smoke and gases from a stage fire.

1. It is recommended to omit from the ceiling of the auditorium any special ventilating ducts.

2. The vent-shafts or flues in the roof over the stage must be of such dimensions that their free sectional or effective areas are at least two per cent. of the superficial area of the stage larger than the sum or aggregate of all door-openings provided in the auditorium above the level of the parquet. In no case shall the combined area of the stage ventilators or flues be less than 10 per cent. of the floor area of the stage.

3. The opening of the ventilating flues in the stage roof should not be accomplished automatically, but a single operation of a controlling lever in the hands of the safety officer in the passage should accomplish it at his discretion.

4. It is recommended to arrange such windows as may be located in the upper part of the stage in such a manner that they may be opened and closed from the stage.

5. The upward and outward movement of air is to be accelerated by means of exhaust fans placed above the stage, arranged so that they can be set in action by a simple movement of a lever from the stage.

(C.)—Sufficient fire-extinguishing apparatus must be provided.

1. A system of automatic sprinklers should be provided covering the entire area of the stage, including the rear stage and also including the spaces under the fly-galleries and the rigging-loft.

2. The piping for the automatic-sprinkler equipment should consist of copper; the pipes should be run at right angles to the wings.

3. The automatic-sprinkler equipment should have two independent sources of supply; but if there is only one street main available, provision should be made for the storage of a large reserve volume of water.

4. No branches for domestic water use should be taken off the mains serving the sprinkler equipment. Nor should the sprinkler tank be used for other than fire purposes.

3. The stairs which are wider than required for two persons walking side by side must be provided with centre rail, and the centre rail must be a double one, so arranged that not more than two persons can walk side by side in each half of the width of stairs.

4. As much as possible the public should be made to use all side exits after each performance. No so-called "safety" exits should hereafter be provided.

5. Winding stairs of any kind should be prohibited.

(E.)—Provision for sufficient auxiliary lighting of stairs, passages and exits.

In new theatres the auxiliary lighting of exits and passages should be accomplished by means of electric incandescent lamps. The lights should be distinguished by red glass and each lamp should be supplied from separate accumulators.

(F.)—Fire-watch.

1. The fire-watch during performances should not be taken from the theatre employes, but should consist only and always of specially detailed members of the regular fire-department.

2. The fire-watch should consist of a sufficient number of trained firemen to operate properly all the safety apparatus enumerated under A, and located in the passage between the two walls dividing the stage from the auditorium.

3. The officers and men from the fire-department detailed for the fire-watch on the stage and in the auditorium should not only have charge of the fire-alarm, the fire-extinguishing appliances and safety appliances, but they should also be invested with fire-police authority.

One more requirement might have been mentioned, namely, the constant control and inspection of all theatres by the fire-department. Occasional expert inspections by special theatre fire-commissions are not in themselves sufficient.

Translated by WM. PAUL GERHARD, C.E.

## COMMUNICATIONS.

### THE ARCHITECTS' LICENSE QUESTION.

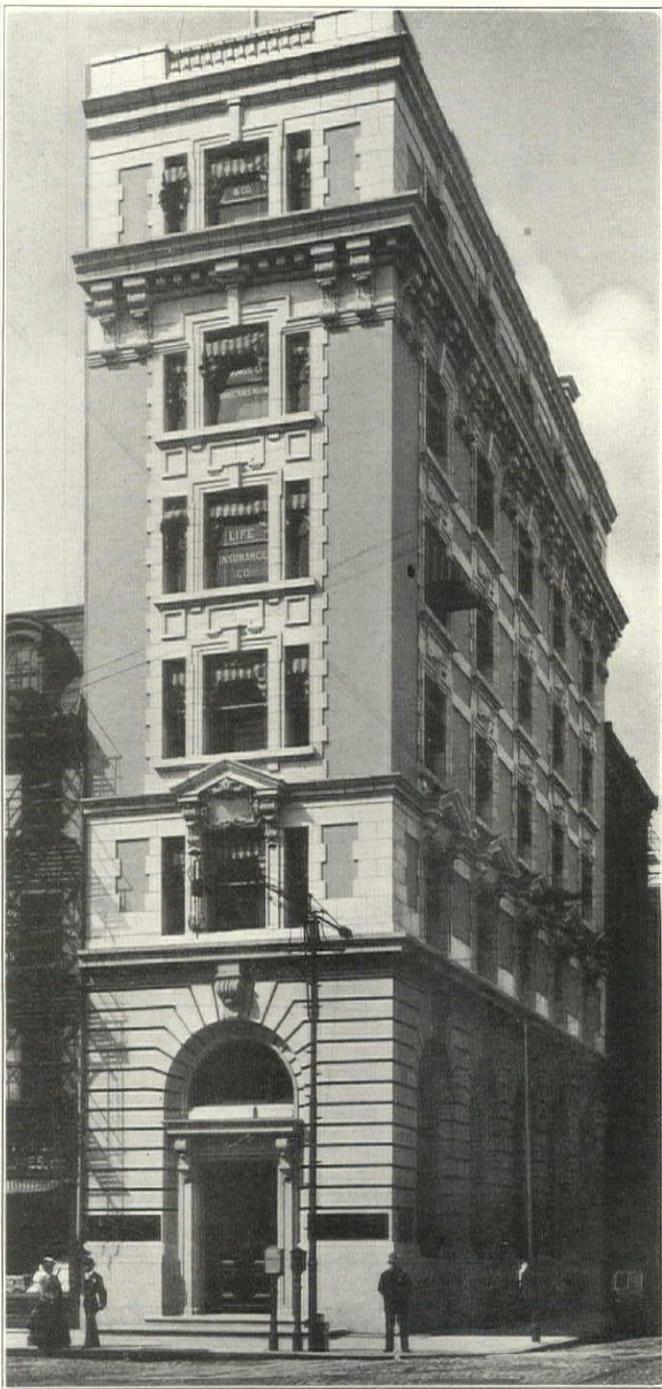
APRIL 4, 1906.

TO THE EDITORS OF THE AMERICAN ARCHITECT:

Dear Sirs:—The first article in the editorial of your issue of March 31 causes me to refer thereto. While I do not know the contents of the bill before the New York Legislature you refer to, I presume it is at least generally similar to other bills which have been drawn, looking to the same end. Whether such legislation is desirable is a question upon which there is more than one opinion, but whatever is best in that direction there is surely nothing in the situation which justifies such a presentation of the matter as your article contains. Your intimation therein that doctors, lawyers and other professional men are free to pursue their callings whenever and however they please is not true. Even preachers are "licensed" to preach the gospel, and lawyers and doctors are required to possess a certain qualification in order to pursue their callings. None of them consider themselves "tagged," neither do they, nor should they, feel that the fact that they are required to possess certain qualifications before beginning to engage in their work, is a disgrace to either them or the vocation they have chosen. Whether they pay a \$5 fee per annum or not is no matter. The fee in the case of architects, I presume, is to provide funds to cover the expense of registry and examination, which the State may not at present be ready to pay.

Again, no man can be admitted to the American Institute of Architects, or to any other Society of Architects, unless he possesses certain qualifications, and is both able and willing to show the fact by personal examination, or in such other manner as is provided. If it is proper to require an examination in order that a man may be admitted to a Society of Architects, what serious objection is there to asking for a similar evidence of qualification from persons not members of any Society, to show that they are not frauds? Who will be harmed by such a law, and how?

Having given much attention to the subject of requiring some form of registration before architects are admitted to practice, it is my opinion that the weight of argument is decidedly in favor of such a requirement. However uncomfortable it may be for some of us fellows until we get used to it, and however funny it



OFFICE BUILDING, FOURTH AND MARKET STS., PHILADELPHIA, PA.  
WILLIAM COPELAND FURBER, ARCHITECT.

5. In addition to being operated from the stage, the sprinklers should be operated from some safe place outside of the stage.

(D.)—Improvements in theatre exits.

1. The exit ways from the auditorium to the outside of the building should be so arranged and planned that they become wider as they get nearer to the exit doors.

2. In dimensioning the width of doors, stairs, passages, etc., the number of persons allowed per foot of width must be reduced in proportion to the height of the tier above the street level.

may seem to require men like Charles F. McKim and George B. Post to ask for a "license" to practise architecture, I think I am justified in saying that the article referred to does not present the case with either fairness or accuracy.

Respectfully yours,

J. W. Yost.

## ILLUSTRATIONS.

PLAN AND WESTERN ELEVATION: "TEN-CLASS" DORMITORY, PRINCETON UNIVERSITY, PRINCETON, N. J. MR. BENJAMIN W. MORRIS, JR., ARCHITECT, NEW YORK, N. Y.

As its title declares, this dormitory was erected at the cost of the graduates in the ten classes 1892-1901 inclusive.

EAST AND SOUTH ELEVATIONS OF THE SAME.

DOORWAYS TO THE SAME.

ORIEL WINDOW OF THE SAME.

### Additional Illustrations in the International Edition.

ENTRANCE LOGGIA: DE WITT CLINTON HIGH SCHOOL, TENTH AVE., NEW YORK, N. Y. MR. C. B. J. SNYDER, ARCHITECT, NEW YORK.

This elaborate and costly building, certain mural paintings in which by Mr. C. Y. Turner were published in a recent issue, fronts not only on the avenue but also on 58th and 59th streets.

## NOTES AND CLIPPINGS.

WORKS OF ART IN THE VATICAN.—Pope Pius X. has decided to allow the public to have free access to the splendid frescos by Pinturicchio in the Borgia apartments of the Vatican. The Borgia rooms have been occupied by Cardinal Merry del Val. He has now moved into another part of the palace. The Pope has also ordered certain works of restoration in the Vatican which were much needed. The splendid salons of the first floor to which Bernini's royal staircase leads had been divided, at about the beginning of the nineteenth century, into several small rooms; the partition-walls have now been demolished, and visitors may admire the beauty and size of these rooms, which were finely decorated under Paul V. and Urban VIII., the great popes of the seventeenth century. Dominating the colonnade of Bernini, and lighted by large windows opening on the square of St. Peter's, a specially beautiful room has been restored to its former state. Under worthless tapestries which were attached to the walls have been found some decorative paintings of much charm, executed by seventeenth-century artists of the school of Guido Reni and Carlo Dolci. The Pope intends to have the picture gallery rearranged; the pictures are to be moved into a wing of the palace which runs along the Court of the Belvedere, now used as the Floresia, or apostolic greenhouse, not far from the Archives and the Library. The large windows will be restored, the floor will be paved with marble, and a heating plant will be installed. "We tremble at the thought that the 'Transfiguration' of Raphael has got to be moved," writes a Roman art critic. "The galleries through which this immortal work is carried ought to be covered with flowers."—*Boston Transcript*.

A WHISTLER ANECDOTE.—Another Sargent in the Tate Gallery was bought for the nation in 1887 for \$3,500 out of the Chantry Bequest. This is the "Carnation, Lily, Lily Rose," a nocturne, with children carrying Chinese lanterns, concerning which, the fable goes that Whistler, examining it at the Royal Academy exhibition, ejaculated: "Damnation Silly, Silly Pose!"—*Exchange*.

CONDITION OF WINCHESTER CATHEDRAL.—The Dean of Winchester has issued a statement with regard to the condition of Winchester Cathedral, which reveals a state of things much more serious than has yet been disclosed. "The fall of a portion of one of the spandrels perilously near the Wayflete Chantry was not," he says, "anticipated by any one, though it is well within the zone of the affected part. One writes 'affected part' because it conveys to the mind that portion which is now a mass of timber supports, but really the cathedral is in such a thoroughly bad state of repair from end to end—except the nave, which Dean Stephens restored at a cost of £12,000—that it is difficult

to point to any portion that is not really 'affected.'" He points out that there are cracks everywhere in the building, and deflections from the perpendicular at almost every turn. It would be perfectly easy to spend £100,000 on the fabric, and then not completely restore it.—*London Tribune*.

AMERICAN REPRESENTATION IN THE LUXEMBOURG.—The American artists who are at present represented in the Luxembourg Museum are Whistler, Dannat, Alexander, Miss Cassatt, Ben Foster, Walter Gay, J. MacLure Hamilton, Alexander Harrison, Robert Henri, Winslow Homer, Frederick Frieseke, John La Farge, J. Humphreys-Johnston, Walter MacEwen, Gari Melchers, Richard E. Miller, Henry Mosler, W. L. Picknell, John S. Sargent, H. O. Tanner, Lionel Walden, Edwin L. Weeks and William Horton.—*N. Y. Evening Post*.

EFFECT OF FIRE ON CONCRETE.—The heat-resisting properties of concrete are a prominent subject of discussion among engineers and fire-department officials. A recent fire at Duluth, which destroyed a part of the large Peavy elevator plant, has afforded a test on a large scale, and local reports show that the material came off with all the honors of the contest. Thirty-five circular bins, 110 feet high, with a capacity of 4,000,000 bushels, directly faced the "crib" or working elevator, the latter being completely destroyed by flames, whose heat broke glass in buildings half-a-mile across the bay. The bins were of steel framework, covered with concrete; they are entirely unharmed and the walls are not even blackened, the fierce heat having burned off the smoke.—*Municipal Journal and Engineer*.

THE GREAT BALTIMORE FIRE STILL BURNING.—The *New York Herald* for April 8 declares that "evidence was found on McClure's dock to-day that the great Baltimore fire is still smouldering among the ruins after two years and two months. While Frederick W. Taylor was delving in a cellar full of bricks, where had stood a wholesale feed-store, he uncovered a smouldering fire among broken sacks of water-soaked grain. That the fire is a remnant of the blaze that swept away the heart of the city is attested by the fact that smoke has been seen issuing from the pile of debris from time to time. It has been drenched with water often without quenching it, and it gives forth heat and smoke intermittently like a sleeping volcano."

THE CRIMINALITY OF THE PAPER WASTE.—The amount of paper produced and consumed in this country is enormous in weight and bulk. Houses, shops, wholesale and department stores, office buildings, banks, factories and institutions, where the waste produced cannot be destroyed, send outside the building quantities of articles which have become worthless through use, or are not worth preservation, owing to their cheapness and profusion. Of this amount, paper in many forms is the largest proportion. It is stated on good authority that fifty pounds of paper were consumed by each individual in this country last year. The output of paper in the United States was over six billion pounds, manufactured in one thousand mills, and furnishing 7,500,000 tons of freight for transportation by rail and steamer. To produce this paper whole countries and territories are laid under contribution, thousands of acres of forest trees are turned into pulp; the world is explored and ransacked for old or new forms of manufactured and vegetable products to be worked into paper-stock, great factories and many firms and companies, with huge amounts of capital, are all busy trying to satisfy the insatiable demand of the public for more paper. An instance of the use of paper in New York City may be cited. The combined weight of one number of each of six Sunday newspapers, on March 5, 1906, was 5¾ pounds, an average of 15 1/3 ounces for each paper. The whole number of sheets, if spread out flat, would cover 52 square feet of surface. The length of these sheets, if placed end to end, the long way, would be 393 feet, about one city block. It is estimated that the newspapers of New York City daily consume 350 tons of paper, and that fully two-thirds of this remains in the city, and is not sent out through the mails. This is upwards of 85,000 tons to be accounted for yearly, to which must be added the stream of other matter—circulars, posters, advertising and trade matter of all sorts, besides the great volume of paper in the weekly and monthly journals and magazines. By far the largest proportion of paper manufactured, after serving temporary and transient purpose, is thrown aside as worthless. It is so cheap as to be hardly worth saving; its abundance makes it a nuisance, and it is the custom to get rid of it as soon as possible.—*Municipal Journal and Engineer*.

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**C**ARTHAGO FUIT! The old school phrase must have occurred to many a man on Wednesday, as he watched with growing apprehension the startling and hardly credible news from San Francisco as it was posted on the bulletin boards. The disasters attending the outbreak of Vesuvius a fortnight ago have been far outdone by those which attended and followed the earthquake—the severest that has occurred on the Pacific Coast—that rocked and rended the city shortly after five in the morning of April 18. In the case of seaboard cities affected by earth shocks of magnitude, damage is to be expected not only from the shock itself but from the reflex or "tidal" wave, as it is usually called, which often adds the prolonged agony of drowning to the speedier pang of a crushing blow. But though both kinds of disaster are common, if occasional, it adds a new horror to such catastrophes to be reminded how the public utilities man has provided for his own use and comfort may by Nature be turned against him. The ruptured gas-pipes added fuel to the fires that were everywhere lighted amongst the ruined buildings and, as the same stresses had burst the water-mains, there was no water the firemen could use, even when they were not prevented from getting their engines out of engine-houses either crushed or with exits choked with débris.

**W**HILE every citizen is concerned by the catastrophe, architects and builders are particularly interested, a few because they entertain the ghoulish hope that, because of it, they may secure fresh "jobs," but the many because they expect to learn facts of the utmost value to them. Ever since the introduction of the steel frame, architects have been looking forward with expectant eagerness to the time when the stability of the new style of building should undergo a real earth-

quake test. Of course the finite cannot compete with the infinite and no architect imagines he can build anything but a pyramid or a concrete sphere that would sustain the severest shock that Nature, presumably, could inflict; but if he can by the use of the steel frame build structures that will endure the strains that would shake to pieces buildings constructed of other materials and on other lines, he desires to be assured of it at the earliest possible moment. The long-desired test has now been had in extreme form and the entire building world is ready to digest the expert testimony that may, in a few days, be expected to disclose just how the earthquake affected the few "high buildings" in the city, particularly the Claus Spreckels Building, which was designed, eight years ago, by the Reid Bros., and which for its day was an exceptionally good piece of construction. It is unfortunate that the effects of the earthquake proper have been obscured or destroyed by those of the ensuing conflagration and the exploding charges of dynamite used in blowing up buildings in the path of the fire. The early testimony is that the steel-frame buildings sustained the shock with fair success.

**B**UT the shield has two sides and, though the brighter one is not so cheerful as the sinister one is dark, it is probable that San Francisco, like Chicago, Boston, Baltimore and other fire-swept cities, will in later years realize that its costly purification was advantageous. A wholesale destruction of a community's property by fire may, by fair analogy, be considered identical with the discarding of out-of-date, though still serviceable, machinery that so often in these days is practised by progressive and long-sighted manufacturers. San Francisco is fortunately in better position to reap advantage from its misfortunes than were the earlier afflicted cities, since Mr. D. H. Burnham has for months been studying the situation and preparing a report—possibly already filed—of a scheme for improving the city through the formation of new streets, parks, parkways and so on, and the present disaster may possibly make the adoption of his suggestions all the more practicable, while the fact that he and his assistants have so thoroughly considered the topographical, social and commercial conditions of the whole city will make it all the simpler for them to cope with the new problem of laying out afresh the burned-over district.

**B**UT while San Francisco is the chief sufferer, it is not by any means the only one, and amongst other towns that suffered was Palo Alto, where, as the early reports have it, the interesting buildings of the Leland Stanford, Jr., University, were practically destroyed. If the report is true and these low, masonry buildings, new, exceptionally well-built and expressly intended to be earthquake-proof, have seriously suffered, while steel-frame structures have escaped essential damage, the contrast will provide instruction in a form most easily digestible by layman and expert.

WHATEVER else may prove to be the case, this San Francisco disaster may be different from all others in the manner in which the final losses are adjusted. In the cases of the earlier "great fires" the loss was really distributed and assessed upon the country at large, through the collection of insurance from the guaranteeing companies—except where they went to the wall under strains greater than they could bear. But in the case of San Francisco—unless policies in that earthquake-affected district give specific protection from loss through shock and resulting fire—it is probable that the insurance companies will contest every claim, and the burden of proof that the insured building was unaffected by the earthquake at the time fire seized upon it must rest upon the owner, and, as such proof must be very difficult to procure, the chances are that such owners will have to shoulder their own total losses.

WHEN, a few months ago, we drew attention to the appeal that Paul Nocquet had just addressed to American sculptors, exhorting them to do their own modeling or to give fair and proper credit to those who assisted them, we little foresaw that an unusual and pathetic ending of his career was so close at hand. It is known to everyone how, a fortnight ago, he needlessly lost his life, after having made a supposedly safe descent after an aeronautic trip of a few hours' duration, by trying to wade and swim to the mainland of Long Island from his landing-place in the fringe of low-lying islets that skirt the larger island. How great, how real a loss to art—to American art, since the young Belgian sculptor had already taken out his first naturalization papers—has been wrought by his death can be gauged in part by the fact that in the recent competition for the bronze doors of the chapel of the United States Naval Academy, at Annapolis, the third place was awarded to his model, an illustration of which, and the other prize models, will be found amongst the illustrations of this week's issue.

IF the Royal Institute of British Architects at the special meeting called to consider the "registration" question accomplished a most amazing *volte face*, it seems to have been due entirely to the patient thoroughness and patent fairmindedness with which the committee delegated to the task of enquiry discharged its duties. The method actually followed we referred to last week, and the report finally laid before the Institute for its consideration may be found in another column. The surprising thing is that, at first, the meeting was inclined to adopt unanimously the report and its recommendations, but wiser counsels intervened and it was found enough for the moment to vote that "the general principles of the report and recommendations of the Registration Committee . . . be adopted and the details referred to the Council for further consideration and report to the general body." It will be noted that the Institute's action agrees with the suggestions we made last week in so far as it expresses the belief that the profession should look out for its own standing, and that, in order to do so effectively, the leading organization, the Institute, must have conferred on it by the

National Government greater powers than it now possesses. Possibly nothing had a greater effect in influencing the Institute's action than the fact that Sir Aston Webb, long one of the most active opponents of the registration movement, himself moved the adoption of the report exactly as the committee, of which he was a member, presented it.

M. NÉNOT can safely be counted on to win further credit for himself through the unrivalled opportunity that has come to him, and architects will agree cordially that, if the architectural effect of the Place de la Concorde must be changed in any way, there are few men who could so safely be entrusted with the change which is involved in the remodelling of the Corps Législatif—the Palais Bourbon—as M. Nénot, whose work on the École de Médecine and the new Sorbonne has proved him one of the safest and least eccentric of modern French architects. In spite of its considerable worth, there is something commonplace about Poyet's treatment of the façade on the quai which, in spite of its portico—said to be the only pediment-crowned dodecastyle portico in existence—will reconcile people to a change in the treatment of the building that closes the vista as seen from the Madeleine.

IT has been the general belief that the fortunate proprietor of a bit of real estate owned not only the surface but the entire inverted pyramidion that terminated at the centre of the globe; also that his proprietorship in the superjacent atmosphere terminated at the zenith. Recent decisions, however, seem to invalidate both these claims, and, what is very unfortunate, seem to leave the owner without redress for very real grievances. By the exercise of the right of eminent domain municipalities through the enactment of height-limit laws have already deprived, perhaps in an unconstitutional manner, landowners of their previously existing super-terrene rights; and in a general way landowners have accepted the rape without much complaint. But if a property-right above ground can be lost with equanimity, it does not follow that a similar theft of subterranean rights should be submitted to with like good temper; yet the power of the municipality would seem, by fair analogy, to be as valid in one direction as in the other, and the owner of the surface soil would seem to be quite helpless, unless his title specifically conveyed to him mining-rights as well. In the latter case an owner should be able to protect himself from injury through the burrowings of subway-tunnel builders. A case recently decided in a Westminster court was, it is true, brought by a mere lease-holder against one of the underground railways for damage, false entry and similar misdeeds, and the suit was lost because the railroad could prove that the actual owner of the land had been paid the nominal sum of one pound per lineal foot, the jury declining to agree that the lease-holder's rights had been invaded. The decision seems illogical, for it can hardly be assumed that the landowner did not by deed transfer to the lessee the use and usufruct of such real property as he himself enjoyed, and his sale of privilege in the sub-surface territory must have been an invasion of his tenant's rights.

## A SCOLDING.

TO scold is never agreeable; and, besides, a scolder is one presupposed to have some authority over or right to scold the scolded or -dees, so perhaps this had better be called a friendly criticism of our brothers in active practice, of the rank and file, of course, for there are some who are above criticism, however much they may merit it, a class apart, and then others who don't deserve it, but of those dear brothers I must say there are, alas, distressingly few.

My specific complaint is that the architects are not up-to-date and thoroughly awake to the advantages and necessities of better fireproof construction, and as a result, it is not too much to say, they are directly blamable for nearly half of our appalling losses of life and property by fire. Blamable in that they do not take the initiative and are not public-spirited enough to make a really strenuous effort to secure more fireproof buildings. Unless the law absolutely compels it or a client, of his own volition, demands it, the average architect is going to keep right on and plan that particular building in the customary 2 by 12-inch joist and everlasting 2 by 4-inch stud way, just as fire-trapy as he possibly can. His predecessors did it, his instructors, and it will be breaking some particular commandment or an infraction of architectural love of precedent for him to do otherwise. Once in a while he may feebly suggest fireproof construction to a client, but if the latter looks the least bit alarmed our brother will close up like a clam. Far be it from him to risk losing that job or to suggest that there be a story less, or fewer frills and beautiful interior fittings in order to bring really first-class construction within the limits of the cost the client has set. Indeed, he is rather lethargic upon the subject, is the average practitioner. He knows in a general, vague way, what fireproof construction means and that it is undoubtedly the best way to build, but he is not impressed with the necessity for it, and as far as the fact of our appalling annual fire-loss is concerned, why, it is no particular affair of his, it doesn't cost him anything, and away down deep a good many of him may think that if there were better buildings built he might have less to do. But there are few so contemptible as that. The principal fault is just plain apathy.

I know whereof I speak, because I come in contact with very many people who build and when the question of fireproofing comes up they express surprise at this or that fact that I quote them. Their architects have never said a word about those things. Had they known of this or that in time they would have insisted upon it, and, as a matter of fact, the average client does get just about what he asks for and nothing more. It is up to him to take the initiative, and if he doesn't know what he wants, why, it's his fault. Yet how in Heaven's name is he to know all about building, unless his chosen adviser, his architect, tells him and advises him and directs him and insists upon the work being done right? And if he knows just what he wants, what's the use of going to an architect at all?

The average architect, I repeat, doesn't keep abreast of the times. He may design pretty things, but he is too busy doing the work as he knows how and chasing more jobs to be able to devote any time to study, research, or even to reading what is brought to his attention and put before him. For instance, nine-tenths of the profession associate true beauty in domestic architecture with shingle, shingle roof, shingle siding, etc., and they will use shingle 'til the cows come back, however burnable that shingle is, and they will souse it with creosote, and anything and everything that will insure that a spark—properly applied—will do the work. How many are there who know that they can get exactly the same effects they so much desire in a shingle that will neither burn, nor warp, nor crack, nor split, and that, considering repairs, painting, etc., ultimately costs less than the inflammable wood?

And that brings me to another phase of building, a more essentially "architectural" part, as we misunderstand architecture to-day. The average practitioner looks upon the construction of his building, its planning, the meeting of difficult problems and the solution of complex questions of arrangement as being humdrum work, mere accessories to the exterior. Ah! There's where he shines. That is what he calls "architecture," the monumental front, the effective ensemble, the beautiful Classic proportions. Therein he sins, he puts the horse before the cart, and has secured the well-merited cussing that so many of his clients so ably bestow. He forgets that his *art* is far more comprehensive than is the term as it is usually understood. Painting and sculpture are essentially and merely decorative; they serve as accessories and embellishments to his work. His

the larger task of creating a whole, and if he limits his aspirations to merely decorating a part of the whole then is he derelict to his high duty and he becomes of no more importance in art than the sculptor and the painter, accessories after the fact. His real art is to meet every problem squarely, to know how to wrestle with and to solve it in its every complex detail and to master it in a masterful way, to make his building a perfect model of convenience and adaptability to the prime purpose for which it is built; to build it well, safely and lastingly, and then to embellish, to ornament its parts so as to make it beautiful. And there can be nothing more beautiful than something that is true, that admirably fits its surroundings and serves its purpose. Our average practitioner is too prone to "design" his exterior and then to try and beat an interior into shape to fit that. It's the sin of the age, the sin of the profession, and particularly an American sin.

And the architect has brought upon himself and has no one to blame but himself for the attendant punishment that results from that act. The layman has given thought to his requirements and he feels that he can plan his building just as well as any architect. He is generally compelled to and he does so. And he is rather disposed to listen to the contractors or builders who will make their own plans and erect the building in such-and-such a way for so-much money. Then they employ an architect to "design a front." The man feels aggrieved at being thus belittled: but it is his own and his brothers' fault. They have given so much attention to that "front" question that people have come to believe that the front spells the whole of architecture.

Much hullabaloo is made over the fact that some contracting concerns advertise that they will build and plan and do the whole thing for so-much money, without an architect. People take kindly to the scheme, too. Look at some of our big New York buildings, for example. They are erected by great construction concerns, on a percentage, or some other, basis direct with the owners, the engineering work is done by them, the building carried on by them and the chosen architect has blessedly little to say about it. He has made a typical floor arrangement and designed an exterior and if the builder wants to make changes. Mr. Architect has not the autocratic power to interfere that he used to have. We all know that in many cases, in such big commercial structures, the architect is really employed as a sort of sop to the profession. His services are not actually required. Now then, how much of a step is there from that state of affairs to these great building concerns throwing off all fealty to the profession and employing clever designers on their own staffs? And how much longer in that condition will the profession last as an independent, respected, important and recognized body of men? And whose fault is it?

Architects have wakened up in the past few years to what was going on, to the process of evolution that has upset many other things and bade fair to do the same for them. They are trying to become a more united body; they take more interest in public affairs and are endeavoring to impress their opinions and their importance upon their fellow citizens. It's a little late, but perhaps not too late. There is much to do inside the profession, however. Men should study more. They should be perfectly familiar with all the improvements and what is going on in the way of better construction. Why should they depend upon engineers and upon building companies and manufacturers to push improvements to the front? The very essence of their work is origination. Why should they always hold back and believe decadence to be conservatism?

The management of the profession, the men themselves, their early training, our schools of architecture are all to blame and should all be brushed up, refurbished. In our competitions, for instance, the experts, the professional judges, will adopt a rather attractive exterior, even though that competitor have a despicable plan. The theory is that the interior can easily be adjusted to the pretty outside, or someone else's plan may be used, and a premium is thus put upon men's whole effort being to make a show, a display—on the outside. In our schools the outside still obtains, holds the centre of the stage; that is architecture. The great *projets* and themes and theses are almost always architectural exteriors. Little attention is paid to adaptability of plan to interior, the easy running of machinery, for instance, or the proper exposure of rooms in a hospital. Those are all minor considerations. The building must have a perfect axis, and whatever is on one side of that line must be duplicated on the other, even though the reason is nowhere apparent but on paper. If you have a hall in the middle of the building, why, "architecture" demands that there be a stairway on each side of

it. The other parts of the building may go to thunder. A man may have to climb the fire-escape to get at them, but those two stairways have to be there, each side of that axis, six feet apart, perhaps, costing like the mischief and eating up valuable floor-area. I suppose I am something of an iconoclast but, verily, to me, architecture as it is understood to-day savors much of a species of insanity, insanity that the layman has to pay for and is shrewd enough to find it out, to rebel and to "have it in" for the man in the profession that has been the cause of such waste.

Few men in active practice have as much occasion to appreciate or realize this as I have in my consultation practice. And truly it is saddening, almost sickening, to see how little real intelligence is brought into play by the average practitioner in wrestling with the practical part, and after all the most essential part, of architecture. I get plans from and am consulted by all kinds of architects in all parts of the country. Of course, as a sort of father-confessor, a repository for all sorts of confidences, these things, so far as names are concerned, are all locked up in my innermost secrecy, but, like the father-confessor again, I am in a position to see the faults, to know them intimately and to deplore their causes; and, indeed, is it not a duty to do my utmost to better the situation by at least calling the general attention of the brothers, sinners as well as others, to things as they are, not as they seem? It is distressing in the extreme to observe how little is really known about good construction and to see the sinful wastefulness that is almost everywhere practised, wastefulness of material in places where it is not needed, in useless ornamentation lathered on where it is never seen or where it is most uncalled for, wastefulness in plan and space, rooms ill-shaped, improperly lighted, buildings misplaced on lots with insufficient light-courts or improperly arranged, wastefulness in ignorantly doing something or not doing something else, perhaps just a little thing, that jeopardizes the safety of life and all the investment in that building. Distressing? Why, bless you, its pathetic, and then again it makes one wonder oftentimes how such and such and such a man dare put out a sign as "architect" and what species of hypnotism he can exercise over intelligent, thinking laymen that causes them to place their money and their very lives in his hands.

The *Brickbuilder* editorially calls attention to the "insurgents" in architecture, applying that term to the new school, the younger men, converts to *le art nouveau*, in contradistinction to the "old boys," the votaries of Classic-at-any-cost, the pupils of the Beaux-Arts, the men generally who like to dig back into the ashes and ruins of long ago rather than face conditions as they are. It suggests that the two classes get together and mend their differences in debate, particularly at conventions of the American Institute. I doubt if much will come from that advice. The new school, like all new things, has run a bit daffy, it is true; it has gone to extremes, has become riotous, iconoclastic, revolutionary, but its basic purposes are all right. It really sees architecture as it should be, seeking merely to ornament structures and making the two absolutely conform, and truthfully. So as to cut entirely away from the old school, to have nothing in common with it, it has done some things grotesquely. But as the youngsters grow a trifle older and gain more experience, they will attain more balance and all that will be rectified and there are prospects of our having some architecture that is of to-day, elastic enough to fit our varied and complex and novel requirements and, withal, beautiful. But no sympathy need be expected in this new movement from the old school. It has everything down, cut-and-dried. The control of things Institutional is in the hands of the old school. It is set in its ways. It knows no compromise and must control. Its general policy savors much of that of any union. It is dictatorial and you must do exactly as it directs or you are black-listed or words to that effect. I fear me much that the "insurgents" will have to keep on insurging until such time as they are strong enough to get hold of the union themselves. Then it will be their turn to boss things and do it with a high hand. That's life.

Speaking of things purely architectural, I would advise my readers to peruse most carefully the article by Mr. Rietze in the *American Contractor* of April 7. He says much that is absolutely so, though not so noticeable to us as it is to a foreigner, and such reading cannot help but make men think, and thinking may impel them to do something towards correcting.

I started out to scold or at least to criticize adversely and I fear I have done nothing but that. A volume could be written about the good things that have been done, the splendid accomplishments of many of our architects and some very sweet-

smelling incense could be burned on the altar of their art. I do a little of that burning occasionally, but a man doesn't need much of it. He generally knows when he has done well and besides it's his duty to do so. That's what he is here for. For example, a citizen may go on to the end of his life obeying the laws and being in the highest sense a good fellow, he gets no remission of taxes nor does the community do anything to jolly him along particularly; but let him sin, let him raise a row or do something wrong and he is immediately jumped upon, shaken, arrested, fined, and so forth. True, his past good-behavior may tend to the mitigation of his sentence, but his punishment is going to be material, and it is right that it should be so. Well, this is a similar case, just an occasion where someone has to play policeman and do a little shaking and stirring up of our good friends in the profession who have grown a trifle lax. A not pleasant duty, and I trust I have not been over rough or too zealous in the shaking.

F. W. FITZPATRICK.

## ARCHITECTURAL FASHIONS:—II.

### SWISS HOUSES.

IT would seem that fashions in furnishings which were invented before Babylon was heard of might be considered old, but they are recent in comparison with some which are still in vogue in connection with building—not here, but in Europe. Every one has admired the Swiss houses, with their walls of timbers, locked into each other at the ends (Fig. 16), and projecting into brackets, which carry the wide-spreading eaves of the roof (Fig. 17) covered with rough shingles, or pieces of bark, which are kept from blowing off by branches of trees, laid on the shingles, and weighted with stones, placed on the

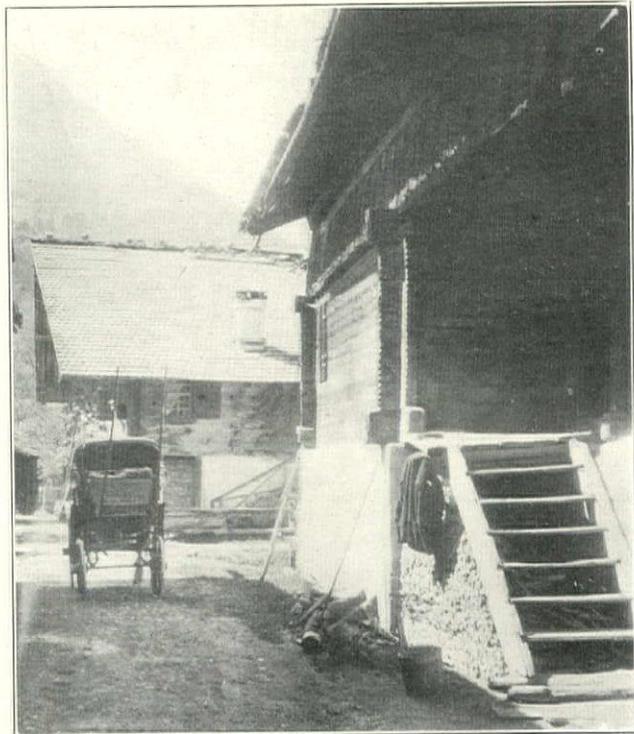


FIG. 16.

ends (Fig. 17). All these features, the notched and braced timbers of the walls, often prettily carved, the overhanging eaves, and the rough covering of the roof, with the boulders which keep it on, are very picturesque, and the critics patronizingly commend the Swiss for their "artistic feeling." It never, apparently, occurs to the critics to inquire into the origin of this sentimental eccentricity on the part of the hard-headed Swiss rustics, and it is left to the more prosaic practitioners of the building art to point out that nearly all the peculiarities of the timber construction of the Alpine villages are due to the fact that no nails are used in it. The roof is, undoubtedly, made to overhang liberally in order to shelter the bundles of flax, strings of dried-apples and piles of firewood which the Swiss cottagers place beneath its eaves; but every other detail of the structure is derived from the consideration that no nails are to be used in putting it together. Just as in the log-huts of North America and Norway, the walls of the Swiss houses are made of timbers

<sup>1</sup>Continued from page 105, No. 1578.

notched at or near the ends, and laid at right angles upon each other; but, in Switzerland, the construction is usually more careful, and, by the simple process of using longer logs for the upper part of the walls, the brackets are formed for supporting the overhang of the roof. Such partitions as are necessary are made with similar timbers, notched so as to lock in with those of the walls. As there is some risk, in notching a timber close to the end, that the portion beyond the notch may split off, the partition



FIG. 17.

timbers are allowed to project a little from the face of the wall, so that there may be wood enough left beyond the notch to avoid danger of splitting off. Upon the walls, thus built and strengthened, are laid the rafters of the roof, ingeniously notched, so as to hold firmly upon the upper timbers of the walls, without sliding off; and on these again are laid, or tied, horizontal sticks, which may be several inches apart. Sheets of bark, unless the builder chooses to take the trouble to hew out rough shingles, are then laid upon the horizontal sticks, in three overlapping courses, beginning at the lower edge of the roof, and, at intervals of two or three feet, poles, laid on the roof, and weighted with boulders from the bed of the nearest brook, hold down the stratified covering with sufficient firmness to resist any wind which is likely to attack it in the sheltered valleys of the Oberland. In all this structure there is no place for nailing, and, to this day, except in the more sophisticated towns, the houses of German Switzerland are built without a nail, the timbers, hewn to shape, being brought to the site ready notched and fitted, and often carved, in addition, and put together like a child's puzzle.

How does it happen that honest Hänsle and Gretel still build their habitations in this way, while the world around them is roaring with the sound of planing-mills and nail-factories? It cannot be that they have never heard of a newer fashion, for, ever since Cæsar set up his fortified camps among the Helvetii, the sound of hammers has been heard all about them. It is hardly probable that, after practising the Roman methods of construction, they would suddenly abandon them, and devise, and universally use, a system entirely different; and the only reasonable theory of the matter seems to be that they learned their mode of building before they came in contact with Roman civilization. But if the Swiss method of construction was invented before the Romans invaded Helvetia, how long before did it originate? The absence of metal fastenings in connection with it points unmistakably to an age when metal, or, at least, iron, was either unknown, or too rare and costly for such uses, as that in which it was not only devised, but brought to perfection. Even at this day there is many a new Swiss house in which there is not a piece of material which could not have been shaped, fitted and carved with a sharp-edged stone; and, except for the innovation of glass windows, there is no reason to suppose that a modern farm-house of the Kanderthal differs materially from that which the ancestors of the present proprietor may have built on the same spot before the Pyramids were founded. In fact, it is more than probable that the Helvetians, as a branch of the great Indo-Germanic stock, brought from the Himalaya Mountains the system of construction which was in use there before the Arya, or Heroes, descended from their valleys to carry their arms, and their language, over Europe; and that, in a timber house of Meiringen or Brienz, we see substantially the

same construction that our forefathers used in Asia when there were no Greeks, or Germans, or Persians, or Russians, or Scandinavians, but when the common ancestors of all these races lived together on the slopes of the Pamir, the "Roof of the World."

T. M. CLARK.

*(To be continued.)*

## THE R. I. B. A. REGISTRATION COMMITTEE'S REPORT.

THE following is the Report of the Registration Committee presented to a Special Meeting of the Royal Institute of British Architects on Tuesday, April 3:

THE committee have the honor to report that a sub-committee have held fifteen sittings, and have heard the evidence and views of twenty-four architects from various parts of England, Ireland and Scotland.

As a result of their deliberations, the committee is impressed with the desire of many architects (especially those who are practising in the provinces) that a legal status should be given to duly qualified practitioners in architecture, and they are of opinion that this can be met by applying to Parliament for a legal Diploma of Membership of the Royal Institute of British Architects, it being made compulsory that after (say) 1912 all architects, before receiving this diploma, must have passed through a definite course of architectural education in a recognized school.

The committee believe that in a short time, if this were done, the holding of such a diploma would prove to be of professional value to all practising architects.

It is generally admitted by the advocates of the present draft bill that the only chance of getting Parliamentary powers to carry out such a penalizing proposal as the registration of the title of architect would be: (1) By placing the registration in the hands of a board partly composed of members outside the Institute, though it is suggested that the Institute should be largely represented upon it; and (2) by exempting from its operations all the members of the Institutions of Surveyors and Civil Engineers. It is also generally admitted that the standard for admission to such registration would have to be a low one.

The committee believe that unless the profession can approach Parliament with approximate unanimity there is little chance, in the present state of public business in the House of Commons, of getting any contentious measure passed.

The committee therefore recommend that at present the Institute should confine itself to attempting to obtain Parliamentary recognition for its membership, an attempt, which, they believe, would meet with very general support. Such State recognition would encourage education and raise the qualifications of architects, and would at the same time avoid the temporary necessity of granting a statutory title to unqualified men.

The committee recommend that the title of the Institute be changed to that of "The Royal College of Architects," and that a temporary third-class of professional members be established.

As an appendix to this report the committee submit an outline of suggestions to give effect to the recommendations herein contained.

The committee beg leave to state that this report has been adopted by them unanimously at a meeting on March 20, 1906, at which the following members were present: Edwin T. Hall (Vice-president, in the chair), R. S. Balfour, W. H. Atkin Berry, A. W. Brewill (Nottingham), J. J. Burnett (Glasgow), J. T. Cackett, A. W. S. Cross, E. Guy Dawber, E. M. Gibbs (Sheffield), J. S. Gibson, W. J. Gilliland (Belfast), Alexander Graham (Hon. Sec.), E. A. Grüning, G. H. Oatley (Bristol), George Hubbard, H. V. Lanchester, A. N. Prentice, G. H. Fellowes-Pryne, John W. Simpson, John Slater, Leonard Stokes (Vice-president), C. Harrison Townsend, Paul Waterhouse, Sir Aston Webb, Edmund Woodthorpe.

The president, whose absence through illness was deeply regretted, together with Mr. H. T. Hare, Vice-president, and Mr. J. A. Gotch, who were unavoidably prevented from attending, have desired their names to be added to those appearing.

By order of the Registration Committee.

W. J. LOCKE, *Secretary.*

## APPENDIX TO THE REPORT.

## HEADS OF SCHEME FOR RAISING QUALIFICATION OF ARCHITECTS.

- (1) Revise the Charter, and
- (2) Submit a Bill to Parliament.

## CHARTER REVISION.

(a) Change name to Royal College of Architects, and the affixes F.R.I.B.A. and A.R.I.B.A. to F.R.C.A. and A.R.C.A.

(b) Substantiate provision—In future Fellows to be elected: (1) after 1906 from those who have passed the Associates' examination; or (2) by Council in special cases.

(c) To authorize the constitution of a scheme of education to be compulsory on all candidates coming up for examination after 1912.

(d) Create new subscribing class of temporary duration, without the power of voting, to be called Licentiates (L.R.C.A.), at a low fee, to admit bona fide architects who are not eligible for F. or A.R.C.A. All members of allied or other societies of architects, found eligible by the Council of the R. C. A., to be admitted as Licentiates without election. Admission to class to be closed within a year after the passing of the act. All to sign declaration and obligation as to professional conduct.

(e) F., A., and L. to be defined as professional members.

(f) Disciplinary powers to be increased with power of appeal.

BILL TO PARLIAMENT.

Declare it is in public interest that employers should be enabled to distinguish between architects recognized as qualified by a competent authority, and those not so recognized. Enact—

(a) Following the precedent of the Law Society, the Royal College of Architects, already recognized by Parliament as authority for granting certificates required by district-surveyors before they can receive appointments, be empowered and required, by its Council, to institute and supervise education and examination of architects for admission to the R. C. A., and to confer the titles F.R.C.A. and A.R.C.A. Confirming all such present titles.

(b) Give statutory force to present charters.

(c) Legalize scale of charges, to be approved by Privy Council, for all professional members of R. C. A.

(d) Municipalities and other public bodies acting in fiduciary position shall on the erection or alteration of buildings in cities or towns employ a professional member of the R. C. A.

(N.B.—It is a question if clause (d) should be introduced, but it is likely to commend itself to Parliament, and it follows a policy long supported by the Council and by a large number of the members of the Institute. At the worst it could be struck out of the bill.)

## ILLUSTRATIONS.

ACCEPTED MODEL FOR THE THOMPSON MEMORIAL DOOR: U. S. NAVAL ACADEMY, ANNAPOLIS, MD. MISS EVELYN B. LONGMAN, SCULPTOR, NEW YORK, N. Y.

The two main groups in these doors represent respectively "Peace" and "War."

In the former is seen a figure symbolizing "Science"—an old man seated in an attitude of deep thought in the act of pointing out to two youthful students the explanation to some difficult problem. The students wear the costume of the Training-School. One stands, holding a pencil in one hand, while the other supports the chart or parchment which is the object of attention. The other student sits upon a pile of books, on which are inscribed the names of some of the branches of study taught in the Naval Academy. In one hand he holds a small model of a man-of-war; under the other is seen a draughtsman's triangle. In the background appear ships and a light-house.

In the group called "War" the principal figure represents "Patriotism." A female figure has been used as being symbolic of the "home," the protection of which is the great underlying reason for the existence of the navy. Under the voluminous draperies appears a coat of armor. One clenched hand rests upon a cannon; the other points off to the distance where rise the masts of ships, showing that the destination of the marching figures in the background, wearing the uniform of the naval cadet, is the sea. One of these turns for a moment and waves his cap in farewell. In response to the call of Patriotism, a youth strides to her side ready to follow as she is directing him to do. Near the cannon appears a pile of cannon-balls.

In the upper panels of the doors are festoons supported by shells. These are of oak leaves in the panel over "War," and of olive or laurel leaves in that over "Peace." In the lower panels winged children support wreaths (of oak leaves on one side and olive or laurel on the other), in which appear names of men famous in our naval history. Between the three panels will appear on either side inscriptions suitable to the respective motifs.

The dedicatory inscription to the Class of 1868 will appear on the transom, with a design of dolphins and trident at either end.

The group above the transom represents "Fame:" two laurel-crowned figures sit upon either side of an altar-like pedestal bearing a shield with inscription to John Paul Jones, and surmounted by a tripod; the fire symbolizing enduring fame. One figure leans forward and points to the inscription on the shield, while the other is on the point of writing upon the stone tablet she holds. On either side stand attendant winged boys bearing the anchor and sword, symbols of naval warfare.

For the mouldings, conventionalized rope and sea-shells have been used.

EVELYN B. LONGMAN.

SECOND PRIZE MODEL FOR THE THOMPSON MEMORIAL DOOR: U. S. NAVAL ACADEMY, ANNAPOLIS, MD. MR. A. A. WEINMAN, SCULPTOR, NEW YORK, N. Y.

In the composition of the door for the Chapel of the Naval Academy at Annapolis, the dominant spirit is "Patriotism," as expressed in the figure of the youthful warrior offering himself to his country. The latter is represented in the figure of "Columbia," strong and benign, impressing upon the youth his duties to Almighty God.

Below the figure of Columbia is the seal of the United States, balanced on the opposite panel by the seal of the Naval Academy. Below these are introduced bosses of sea-shells and above handles of rope.

Surmounting this composition and above the transom, which bears a memorial inscription, is a panel with two kneeling cherubs supporting a wreath within which appears the cross.

A. A. WEINMAN.

THIRD PRIZE MODEL FOR THE THOMPSON MEMORIAL DOOR: CHAPEL OF THE U. S. NAVAL ACADEMY, ANNAPOLIS, MD. THE LATE PAUL NOCQUET, SCULPTOR.

As we cannot give any explanation of the sculptor's conception, we give instead particulars of his life, furnished by his friend, Mr. J. Nilsen Laurvik.

Paul Nocquet was born in Brussels in the year 1877, of French parents. At the age of 14 he began to study painting in the Brussels Art School, under Jean Portaels. After two years in that school he went to Antwerp, where he studied for some time, returning again to the Brussels Art School. Following a dispute with his teacher, he left his studio and entered the classes for sculpture, where, after three months' study, he carried off a prize, which encouraged him to continue modelling. It was here that he met the great Jef Lambeaux, who, on seeing some of his work, invited him to become his pupil, an invitation which he readily accepted.

In the year 1900, at the age of 23, he entered three annual sculpture contests in Belgium and carried off the "Prix Godecharle," Scholarship of Rome, which enabled him to continue his studies abroad. In place of going to Rome, however, as was the condition imposed upon the winner of the prize, he obtained permission to stay in Paris, where he studied sculpture with Mercié and painting with Gérôme. He began to exhibit in the Salon du Champ de Mars at once and two years later was elected "Associé," which entitled him to exhibit during the remainder of his life, exempt from jury.

He came to America in August of 1903 and immediately took out his first papers of American citizenship, as it was his intention to remain here, and he did not wish to profit by the advantages which the country afforded without assuming some of its responsibilities. He was a most ardent lover of America and its institutions and his patriotism will be sorely missed.

His interest in ballooning dated from a very early age and grew keener with the years. He had already won a considerable reputation abroad as a dauntless and very able aeronaut, whose many successful flights aroused the admiration of such a veteran as Capassa, who was one of his dearest and most intimate friends and in whose balloon he went to his untimely death.

FOURTH PRIZE MODEL FOR THE THOMPSON MEMORIAL DOOR: U. S. NAVAL ACADEMY, ANNAPOLIS, MD. MR. BRUNO LOUIS ZIMM, SCULPTOR, NEW YORK, N. Y.

Before commencing any design I believe it best to acquaint myself with any earlier solutions of like problems available, so I considered the recent and noteworthy bronze doors, as those of Trinity Church, N. Y., the Congressional Library, Washington, the Boston Public Library, and St. Bartholomew's Church, N. Y. The doors of the Baptistery at Florence, by Ghiberti, as well as the doors of the Church of St. Maclou, at Rouen, by Jean Goujon, were also studied at the Metropolitan Museum of Art.

The doors of Trinity Church and St. Bartholomew's appeared

to me, in their relief treatment, the most successful, while the doors of the Boston Library were least so. It seemed that in the latter doors the sculptor failed to take into account the modifying and softening effect of the outdoor light, and of the rather severe and decided nature of the surrounding mouldings and projections of the doorway itself, with the result that a rather flat relief is almost obliterated by this combination of competing elements. The doors of Trinity and St. Bartholomew's Churches, on the other hand, because of their higher relief and more prominent architectural lines, bear the open-air light and en- vironing architecture without injury. It would appear that in these two examples the problem has been well met.

The Ghiberti doors present in some of the panels figures in full relief. Surrounding the doors proper is a highly ornate frame projecting ten or more inches from the face of the door. The St. Maclou doors combine both high and low relief, the divisions and the figures that stand on a lintel-like cornice two-thirds of the way up from the bottom of the door being in very high relief; in these doors it is this which first attracts the atten- tion.

These investigations seemed to advise a high-relief treatment, and a further consideration of the style of architecture (Louis XVI.), of the chapel seemed to emphasize it, and to suggest a rich and decorative embellishment.

The next problem to solve was whether to treat the doors in one long and two, small panels or in a number of square ones, as in the Ghiberti doors and those on the "Monument Commemora- tif," a building erected in Paris to the memory of the victims of the Charity Bazar fire, and designed in the same style as that of the Chapel of Naval Academy. I decided in favor of the long panel. Twenty-six of the twenty-eight competitors also shared this opinion, though I feel that an architect whose entire attention was directed to attaining the most effective architec- tural result would have employed the square panels, as this has the advantage of breaking the monotony of long lines. The long panels, however, offer to the sculptor a better and more attractive space to treat. It is this professional bias which, on analysis, may be found to have influenced most of us towards this scheme of arrangement.

In each of the three or four preliminary sketches that I pre- pared I departed more and more from a figural and leaned more to an architectural treatment, though I had certain misgivings as to the reception of such a treatment as against the other at the hands of the sculptor members of the Jury. I believed the more architectural scheme would emphasize the significance of the figural panels. I next took up the subject of the panels, in which I sought to combine an ecclesiastical and martial spirit. "Martyrdom" is represented by a soldier in mediæval dress, who, having received his death wound, is falling into the arms of the Spirit of the Unknown, who is about to enfold him in her long mantle. "Patriotism" is depicted as a youthful soldier with sheathed sword and a shield bearing the sign of the cross, re- ceiving from the spirit that hovers over him the "Inspiration of Patriotism." Above these panels are two smaller ones in which, in sympathy with the subjects of the lower ones, is an indication of clouds with winged cupid heads. Connecting these two with the long one are shields bearing, one, a portrait of Paul Jones, the other a portrait of Admiral Farragut. Beneath both these panels is another panel containing the names of the illustrious commanders of our navy on a garlanded plaque. Around all of the panels, as a border, runs a molding of seaweed and shells. The panel above the transom shows, in a trophy arrangement, a shield bearing the national coat-of-arms, from which hang gar- lands of shells and sea grass; behind this shield are displayed sails, paddles, cannon, and other marine materials. The panel of the transom was to bear, in Latin, a non-sectarian line: "God is All." The programme of the competition directed that a space be designed for an inscription commemorating the donor, and I was prompted to give this record an unobtrusive place on a ribbon interwoven in the lower border of the moldings that sur- round the panels.

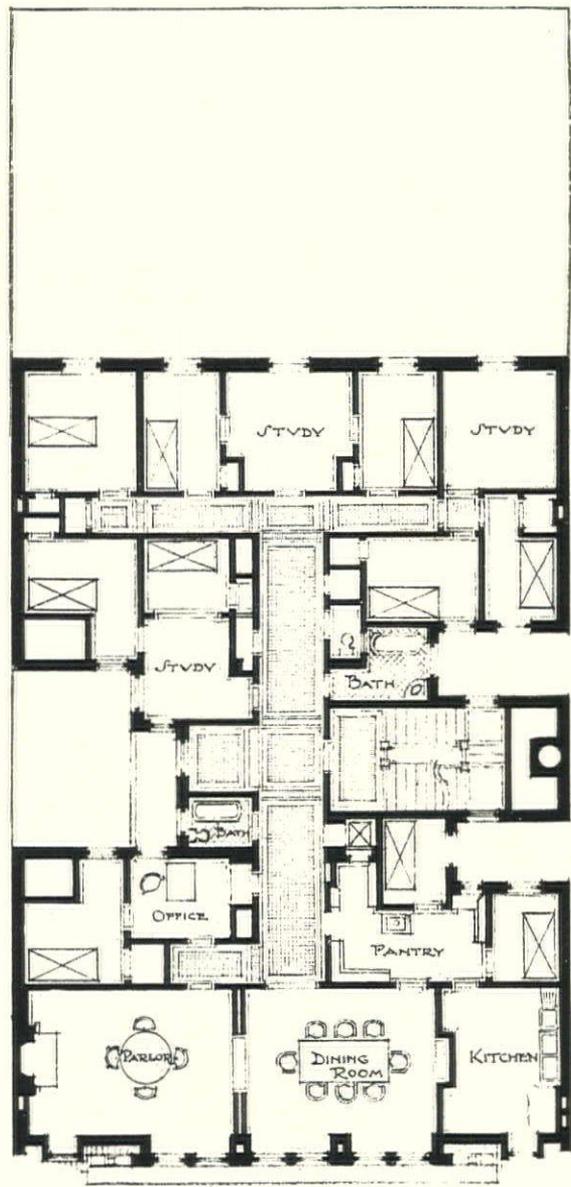
BRUNO LOUIS ZIMM.

STORE OF MESSRS. CHANDLER & CO., TREMONT STREET, BOSTON, MASS.  
MESSRS. PEABODY & STEARNS, ARCHITECTS, BOSTON, MASS.

THE SPEYER SCHOOL, LAWRENCE STREET, NEW YORK, N. Y. MR.  
EDGAR A. JOSSELYN, ARCHITECT, NEW YORK, N. Y.

This building is one of the adjuncts of the Teachers' College of Columbia University. The annexed plan exhibits the arrange- ment of the upper floor of the building.

PLANS OF THE SAME.



TOP ("SETTLEMENT") FLOOR, SPEYER SCHOOL.

HOUSE OF GEORGE BATY BLAKE, ESQ., LENOX, MASS. MESSRS. WINS-  
LOW & BIGELOW, ARCHITECTS, BOSTON, MASS.

Additional Illustrations in the International Edition.

A SWISS CHALET.

MAISONS DE CAMPAGNE AT NICE, FRANCE.

THE OLD BOURSE, LEIPSIK, SAXONY. HERREN CHRISTIAN RICHTER  
AND PETER SAUPE, ARCHITECTS.

The illustrations of this building, which was erected between  
1678-87, are reproduced from *Blätter für Architektur*.

THE NAUMACHIA IN THE PARC MONCEAU, PARIS.

COURT-ROOMS IN THE ROYAL LAW COURTS, BERLIN, PRUSSIA. HERREN  
P. THOEMER AND O. SCHMALZ, ARCHITECTS.

As the extraordinary character of the exterior of this building  
as shown in our issues for August 19, October 21 and December  
23 last inevitably suggests equally extraordinary interior treat-  
ment, our readers will welcome these two views, copied from  
*Blätter für Architektur*.

CASCADE AT THE VILLA REALE, CASERTA, ITALY.

"KNEBWORTH," ENGLAND.

DETAIL FROM MAISON À LOYER, PARIS, FRANCE. M. TH. PETIT,  
ARCHITECT. M. E. DURRÉ, SCULPTOR.

This plate is copied from the new monthly periodical, *L'Archi-  
tecte*.

## NOTES AND CLIPPINGS.

**THE CASTELLO S. ANGELO, ROME.**—The ancient castle of San Angelo, which has beheld time's changes since the pagan days of the Roman Empire, has been, after years of neglect and decay, restored to a condition worthy of an institution that flourished, before our era, as the burial place of the later Caesars before it became, first the great citadel of the popes and then the central prison of the Papal administration. The building was at all epochs ornamented with fine works of art. Some have been already restored to the surface from under successive layers of plaster, and quite recently there has been brought to light a sculptured recess in the Court of Alexander VI. Among the painters whose work adorns the castle are Giuilo Romano, Gian di Udine and Caravaggio.—*New York Tribune.*

**GERMAN ART EXPORT TRADE.**—The American Consul at Munich has just published for the edification of the Germans statistics of the picture export trade from that country to the United States. In the year 1905 paintings in oil and water-colors to the value of \$135,955 were exported to America from Munich alone. In 1904 the value was \$120,228, which shows that the sense of the Bohemian beautiful has increased in America to the extent of \$15,727 in a single year. The exports of pictures to this country from Berlin, the rival of Munich in the art market, offer entertaining parallels and contrasts. Thus in 1905, according to the report of the Consul General in Berlin, the value of paintings sent to the United States from Berlin was \$70,038 or \$5,917 less than Munich. From this comparison, observes a Berlin correspondent, with a sigh, it is evident that Munich still holds its place in the hearts of Americans as the greatest art and beer centre of Germany. It is also evident, he continues, that the Berlin art drummers are neglecting a very important territory. But no one will be surprised at this who knows that for years these dealers have given their chief attention merely to exhibiting pictures rather than to selling them. And this evil, he concludes, is even greater than that of exporting pictures to America.—*Boston Transcript.*

**THE CASTLE OF CHRISTIANSBORG.**—The lower house of the Danish Parliament has passed a bill, introduced by the Government, providing for the rebuilding of the historic Castle of Christiansborg, which was burned down in 1884. The Castle of Christiansborg, situated on a small island forming a part of Copenhagen, was built and fortified in 1168 by Bishop Axel, and occupied with its enormous dependencies a small quarter of its own. The building, of which the ruins are standing, was completed in 1828. It replaced a building erected by King Christian VI. in 1733-1740, which was burned down in 1794. The latter was destroyed by fire in October, 1884. The upper and lower houses of the Danish Parliament formerly met in the left wing of the palace, and the Supreme Law Courts at one time occupied the right wing. In the wings which escaped the fire of 1884 were the royal stables, the Court Chapel, and the Royal Library, which was founded by Christian III. about the middle of the tenth century, and contains 550,000 volumes and more than 20,000 manuscripts.—*New York Evening Post.*

**ARCHITECTURE OF THE OLD NORTH CHURCH.**—Who was the architect of the Old North Church at Boston, Mass.? The architectural profession have come to the conclusion that the design points to Sir Christopher Wren, of London, but, writes Willard French in the *Architectural Record Magazine* for March: While Sir Christopher did many magnanimous things, it is hardly probable that he presented the plans to the embryo parish with the condition that the fact and his connection with them be kept a secret, only to creep into legendary lore in ages unborn. But here is an explanation that explains, and I hold it in firm faith as the truth, the whole truth, and nothing but the truth: The Old North Church is identical with St. Anne's, Blackfriars, England. St. Anne's is one of the ideal miniatures wrought by Sir Christopher Wren. It antedates the Old North not many years, and two members of the original Old North parish came from St. Anne's parish, Blackfriars, England, over to the New World. There is much evidence extant that members of the North End clique were not overscrupulous about some little things in those great days, and I think it only requires the facts—which, of course, can never be obtained—to add the surreptitious borrowing of the plans of St. Anne's for the North Church of Boston. So

much of glory has hung about the church as the holder of the spire that held the lanterns for Paul Revere, that the rest has been neglected. But I believe it to be a fact—a most important fact, too—that we have, right in the Hub, one of the finest examples of Sir Christopher Wren's mastery in architecture. To save the fee, our worthy sires secreted the fact. Therefore is there no record.

**THE TURNER DRAWINGS AT THE NATIONAL GALLERY.**—The report of the trustees of the National Gallery for the year 1905 states that there have remained in the custody of the trustees many thousands of drawings, forming part of the "Turner Bequest," which have been kept in 11 tin boxes in precisely the same state as that in which they were left by Mr. Ruskin after he had, with the approval of the National Gallery Board, selected a large number of examples for exhibition. Early in last year these drawings underwent a careful examination by Mr. A. J. Finberg in the presence of the keeper. They had been disposed in about 300 parcels and classified by Mr. Ruskin in accordance with his theory of artistic value, 108 parcels being described as "entire rubbish," 124 as of "middling value" and 71 as "right in intention." As Mr. Finberg's private researches showed that sufficient evidence existed for determining with considerable accuracy the chronological order of the drawings, the trustees instructed Mr. Finberg to undertake a chronological and descriptive inventory of all the unexhibited Turner sketches, and, after taking a record of Mr. Ruskin's classification by preference, to arrange the drawings in chronological order in cabinets designed for the purpose. In order to make this rearrangement of the drawings of the greatest permanent value, it has been found necessary to include in the proposed inventory the whole collection of exhibited and lent drawings belonging to the Turner Bequest—drawings which had never been systematically dated, and of which many had been wrongly described.—*The Builder.*

**THE NEW SCULPTURE FOR THE PANTHÉON.**—France delights to honor the memory of its great men. M. Injalbert, a member of the Institute, has just finished a piece of statuary of large proportions entitled "The Apotheosis of Mirabeau," and it will be placed in the transept of the Panthéon. The sculptor has represented France's most brilliant orator in the act of delivering a speech before Parliament. Above the speaker a winged human figure, accompanied by a lion and typifying force, appears. At the four corners of the group are symbolic representations of Royalty, Revolution, History and Grief, the last being a figure weeping for Mirabeau's death. The group forms a superb piece of decorative work.—*New York Tribune.*

**RECOVERING TIN.**—Recovering tin from old cans can be accomplished in the following manner, according to the *Decorators' Gazette* of London: The scraps are left in a solution of ferric chloride till all the tin is converted into chloride. The tin chloride solution is then electrolyzed with a current of 25 volts and 500 amperes, the current strength being 60 amperes per square centimetre of the electrodes (386 amperes per square inch). This current will give 33 pounds of tin in 24 hours. The source of current is a dynamo driven by a 2½ horsepower motor. The average yield is 0.9 per cent. of the weight of the cans treated. The anode used is of graphite and the cathode, where the tin is deposited, is itself of tin.

**THE PEACE PALACE COMPETITION.**—Over 130 plans for the Temple of Peace provided for by Mr. Carnegie's donation have been received.

**THE AGE OF STONEHENGE.**—The British Museum now contains a beautiful new model of Stonehenge. The age of the original has been computed in a curious way. On the supposition that the temple was originally a sun temple, the main avenue is bisected by the rays of the sun on January 21. Last year the rays were about two inches out of the true line, and by comparing this angle with the known sun "shift" the date when the rays were true is estimated to be 3,581 years ago, thus giving the date of the temple as about 1680 B. C.—*Boston Transcript.*

**A LOVELY DRAIN.**—One of the loveliest things in the world is a drain (said Sir Wyke Bayliss at the annual dinner of the Sanitary Inspectors' Association), but he hastened to add: "When it is consecrated by art in the form of a gargoyle on the roof of a cathedral."—*Exchange.*

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THE San Francisco catastrophe was such a complex disaster that one hardly knows what are the really salient features, which the most poignant morals to be drawn. As later reports arrive, it appears that, vast as the mishap was, the first rumors were, naturally, too highly colored, particularly in the matter of the loss of life and the infliction of injuries. If the shocks had occurred during the "rush hours" of the evening, when the streets are usually full of people, the mortality would have been many times what it is now likely to prove to be. In the same vein, if the citizens had been forced to shelter unprotected in the open streets during a winter month, it would be inevitable that a greater amount of sickness would have resulted than is likely to attend a brief sojourn out of doors in the California spring time. In other words, matters might easily have been much worse than they are. How much better actual conditions are in building matters than was first reported it is yet too early to know. Every one, on reading the first reports, pictured to himself the precise aspect of the ruin caused by the shocks, and it is very likely that as photographic views come to hand the actual destruction both by earthquake and fire may prove to be less radical than was commonly assumed.

THE disaster proved once more a fact that nowadays needed no new demonstration—namely, that in face of a conflagration a fireproof building is for the tenant a snare and a delusion, for the owner a doubtful investment, but to the community at large a real boon. In other words, the exposure hazard, due to a conflagration in full swing, is something that even improved modern building methods can hardly cope with so as to give protection to the combustible goods of the tenants of a building. The combustible contents, if enough in bulk and quantity, may assist in so damaging a structure that its repair may easily cause a greater outlay than the investor feels justified in making. But as a fire-break giving protection to property beyond it, a fireproof building, or a row or block of fireproof buildings, is a valuable possession; but it is debatable whether owners can be expected to build such buildings, if the most clearly tangible result merely is to give protection to the

property of other owners, and it is an extremely doubtful question whether, in such a city as is Baltimore and still more in such a city as San Francisco was and inevitably must be again, a single fireproof building in the midst of combustible neighbors is a judicious investment.

THERE will be many homilies written on the sinfulness of building a large city of wooden structures. But, given the conditions, a wooden city was natural, was defensible economically and will, as we say, inevitably and justifiably be repeated. Not only is wood the natural and most economical building material for that locality, but the material was expressly selected, as universal experience teaches that in an earthquake country the flexible wooden building is safer than a masonry building—of course, the modern steel-frame buildings and reinforced-concrete buildings are out of the question for housing the greater part of such a population as San Francisco's. The city was essentially a wooden city—"ninety-per cent. frame" as a recent underwriters' report puts it—and it is inevitable that within three months the city will again be a wood-built city. Two-thirds of the inhabitants are now homeless and must be housed as quickly and cheaply as possible, hence they must be housed in wooden buildings, and three months from now San Francisco is likely once more to be arranged so as to provide food for as great a conflagration as that of last week. This result is seemingly certain and must be accepted. It remains only to apply such amelioration as may be practicable.

THE prairie farmer protects his crop from prairie fires by keeping freshly ploughed up a wide belt about his grain field. The forester protects the growing timber in his care by cutting fire-breaks through the forest and keeping them clear of underbrush. The same principle should now be applied to San Francisco, and as the authorities and citizens have practically a *tabula rasa* to deal with and are not hampered by the peculiarly conflicting conditions of leasehold and ownership in fee that stood in the way of reforming streets in Baltimore, it ought not to be a difficult task to assure a considerable degree of safety. It should not be sought to establish fire-limits of any great area but a small district; the financial and hotel district, say, should be governed by strict building laws that would allow the erection only of really fireproof buildings which would not only protect themselves but one another. Outside of this, there might be other *foci* of fireproof structures united with the central group along certain wide streets by connecting ranges of fireproof buildings. For the greater part of the city, however, safety should be sought by reducing inflammable areas to smaller units by the simple and entirely practicable method of dividing each section or quarter of the city from its neighbors by running between them extra-wide streets, parkways and parks, across which fire could not jump. With a new system of parkways subdividing and beautifying the new city, and with a wise restriction in the material that may be used for roof-covering, it is fairly certain that a general

conflagration could not occur again. In time, the citizens may find themselves satisfied that reinforced-concrete is the only material that meets the conditions of their problem and adopt it generally, but for the present they must use wood, and as a fire might begin at any time the authorities should make every possible provision that future conflagrations would be confined within small areas by surrounding them with wide parkways.

THE two conditions that stand in the way of as speedy a resurrection, or re-erection, of a new and better San Francisco as was manifested at Chicago, Boston and Baltimore are the inevitable hesitancy that capitalists will feel about investing in buildings upon earthquake-affected territory and the fact that the labor unions have secured so strong a throttle-hold upon the activities of the city. Capitalists and manufacturers might easily do a more foolish thing than to hold their hands until the principle of the open shop in every walk of life had been re-established.

MAYOR SCHMITZ has proved himself a most efficient and wide-awake executive, and in no way has he shown his alertness more than in at once, while the fires were still burning, telegraphing to the mayors of other cities asking them to provide for his stricken city not money, nor food, nor mechanics, but architects and architectural draughtsmen! Possibly the architects of the Golden State may think that this was quite needless, and that there is enough home talent to cope with the situation. It is possible, too, that, as the Mayor is a union man—belonging to the musicians' union, we believe—and knows that there has been of late some friction between the city authorities and the San Francisco Chapter A. I. A., he may have felt that the architects of the city would actually "go on strike" in this hour of need, and that he would show wisdom in having "strike-breakers" on the scene early. As to the "friction" we speak of, the following paragraph—which was in type when the news of the earthquake reached us—tells the story. We can only add that just now would be an admirable time for the city fathers to rescind an obnoxious and unreasonable ordinance.

CONTRARY to our hope and expectation, the San Francisco Chapter, A.I.A., has found itself unable to prevent the enactment of the ordinance creating the office of "supervising architect" for the official who is to have the supervision of the construction of all public buildings erected by the municipality, and who, for such service, is to be paid two per cent. of the cost of such buildings, this amount being deducted from the five per cent. commission which, under normal conditions, would be paid to the practitioners who designed the buildings. The ordinance has been enacted and Mr. W. D. Shea, already the official City Architect, has been appointed Supervising Architect, his compensation being computed at the new scale, a method he will hardly object to. Until now Mr. Shea has drawn an annual salary of four thousand dollars, but, now, for the next few years, if the facts are as stated, he seems likely to enjoy an annual income of between twenty-five and thirty-five thousand

dollars, for, including a hospital, a public library, sundry school-houses and certain important alterations to the jail and Hall of Justice, the city is said to have "in sight" the immediate expenditure on public buildings of more than five and a half millions of dollars; and as these buildings should, at the present rate of building operations, easily be finished in four years, it is plain that the annual income of the Supervising Architect must fall between the figures stated above. As it is not clear how and in what way the municipality is to profit by this holding-up of private practitioners, it is not easy to comprehend why the city fathers should interest themselves in at least quadrupling the income of the, doubtless very worthy, former City Architect.

IT is amusing to think what jeers and fleers and jibes and flings would have been showered upon a woman architect, if she had specified and attempted to build—it seems impossible to conceive that she could have persuaded any responsible builder to follow her instructions—such a façade as that which signalizes the new woman's club-house, "Colonial Dames," now building on Madison avenue, New York. The peculiarity of this unpleasantly uncanny front is that it is built, without quoins or string-courses of any kind, of small, hard-burned brick, laid all headers in every course, and not one single course breaking joint from bottom to top. It is the most immoral and ribald piece of brickwork that can be found in any city, although doubtless it may be a very good advertisement for someone's wall-tie and cement. Possibly it is merely intended as a challenge to Mr. Guastavino to "go it one better" and build a front of his wonderful little tiles, set on end, edge-on, and they, too, not breaking joint through twice as many stories.

THE obstacles in the way of building a stadium for Columbia University, upon made-land beyond the present Riverside Park, are not likely to prove insuperable, though amongst other discoveries seems to be one that shows that State's rights under certain conditions may be superior to those of the National Government, even upon a navigable stream. But this desirable undertaking is not the only case of land-making that interests architects just now. The Boston Society of Architects is said to be developing—amongst other schemes for metropolitan improvement—a plan for constructing in the upper reach of the Charles River Basin a long and narrow island, or group of islands, partly for the sake of breaking up the water view and partly with a view to screening off certain now undesirable backgrounds on the Cambridge side. At the point selected, the Basin is eight hundred feet wide, and it is thought that an island two hundred feet wide, or rather a range of islands of assorted sizes stretching along for some two thousand feet, connected with one another by bridges and with the mainland by the Harvard Bridge, would form an agreeable landscape feature. It is suggested, too, that, like the Ile de la Cité and the Ile St. Louis in the Seine, these islets would afford sites for more important municipal buildings than the kiosques, music-pavilions and so on that would naturally be looked for in such places. The suggestion seems to us more interesting than laudable.

## THE WINDOW IN ITALIAN ART.—II.

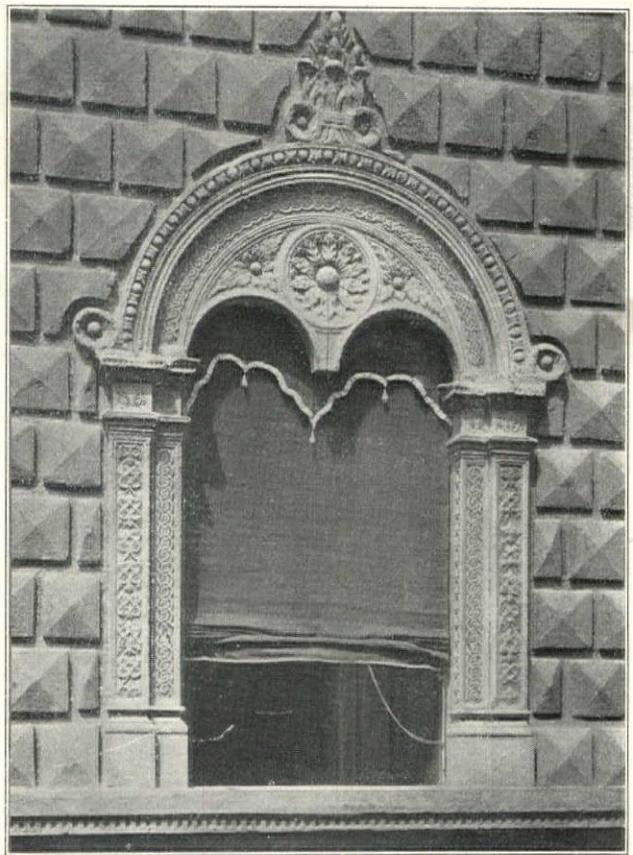
THE Renaissance? Yes, in our consideration of the window in Italian art we have come to the fifteenth and sixteenth centuries, to the glorious epoch of Italian art. Well, I believe that in this common feeling there is much exaggeration, and I think that the glory of the Italian Renaissance should be scaled down, and that its destinies are not just what the Michelets, the Taines, the Burckhardts and the Muntzes have conceived them to be.

The period of the Renaissance was not a movement in favor of artistic progress; it was rather a retrogression, being a return to forms that had already lived. This is especially true of architecture and the arts that are allied with architecture. As for sculpture and painting, the progress was more in the matter of form than in that of idea, and the naturalism of Donatello and Masaccio was already known to the mediæval artists, especially to those of France. Moreover, we cannot entertain the idea of independence, since thought halts at tradition, and the Renaissance, through addressing itself to Græco-Roman sources, abdicated its liberty of inspiration. It is not here a question of a natural reversion, it is rather a movement that is really somewhat artificial, and the writers, the erudite, the humanists have their responsibility for the singular fashion in which the art of the

ence, so, according to Serlio, the true Renaissance, from the architectural point of view, began at the time when the Urbino master, drinking at the Roman spring, showed the way of good architecture. Brunelleschi, Alberti, Michelozzo, all were timid souls, in no degree favored by their time, which was still sensitive to the movement of the architecture of the Middle Ages. Hence Alberti, when giving the model of the twin windows for the Palazzo Rucellai, at Florence, showed submission to those nearer ancestors whom the critical cinquecentisti despised, at least upon the theoretical side. Yet this palace is one of the most beautiful to be found in Florence, although it cannot rival the Strozzi, or the Pitti, or the Medici palaces, and it is often mentioned just because it marks the abandonment of the real Florentine style in favor of a stricter Classicism. Built between 1446-51, the Palazzo Rucellai shows in these twin windows one characteristic which stands almost isolated: the little cornice over the columns. In general, the Italian twin window does not combine this cornice with the full-centred arch, the small arches springing directly from the capitals, without the intervention of this intermediate member. What Italian windows of the fifteenth century usually are can be noted by glancing at the illustration of the window of the Ducal Palace at Urbino. Florence possesses numberless examples of twin windows without this inter-



FROM THE PALAZZO RUCELLAÏ, FLORENCE.



FROM THE PALAZZO BEVILACQUA, BOLOGNA.

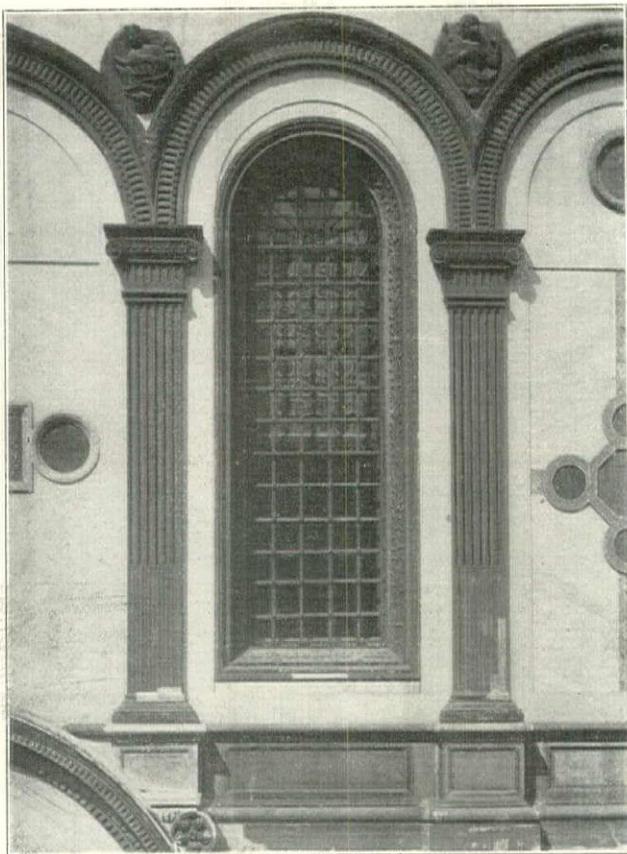
fifteenth and sixteenth centuries is going to be set before our eyes. Originality disappears, and the copy triumphs; and then when the copying is not pedantic, it is a matter of a translation of Mediæval motives into Classic forms. In fact, the Venetian architect, in the time of the Renaissance, translated the Gothic palace into the new language, feeling sure that in this way he gave a new beauty to art. This sort of thing was done in the first period of the Renaissance, before Palladio had the vision of his architecture, an architecture which is the mere exaltation of Roman formula. This much premised, we will not be surprised at seeing appear during the Italian Renaissance architectural ensembles and details that one might well credit to "sacred antiquity." The twin windows due to the imagination of mediæval architects are found during the Renaissance, even during the first period; historic fatality did not admit an abandonment which afterwards became a necessity when the good "Bramantesca" architecture, as Serlio used to call it, rejoiced the hearts of those who sought pure beauty. In the first moments the Renaissance architects did not possess themselves of the Græco-Roman architecture, as came to be the case after the might of Bramante had exerted its influ-

encing cornice, for instance, those in the Strozzi and Medici palaces.

On comparing the Rucellai twin windows with the others, one can perceive that the first unites two compositions in a way that is not very knowing; an entablature associated with arches is nonsensical, and one does not perceive the need of such a composition within the great rusticated framework which actually forms the window opening. If we consider the window of the Ducal Palace at Urbino, the inconsequence that I point out is attenuated, and the twin arches accord satisfactorily with the main lines of the composition. The same thing is apparent in the window of the Palazzo Bevilacqua, at Bologna; and here, though in this window (terra-cotta, like the one at Urbino) the median colonnette is lacking, we note that the organic principle of this ensemble is well preserved, and that, although it has not the elegance of the window at Urbino, it yet possesses an air of force which does not exclude beauty. So we have in these three windows three examples of the best work of the Italian "Quattrocento"; and if to them we add the majestic window from the lower story of the Scuola di San Rocco at Venice, the group of twin windows is complete, declaring to us in varied

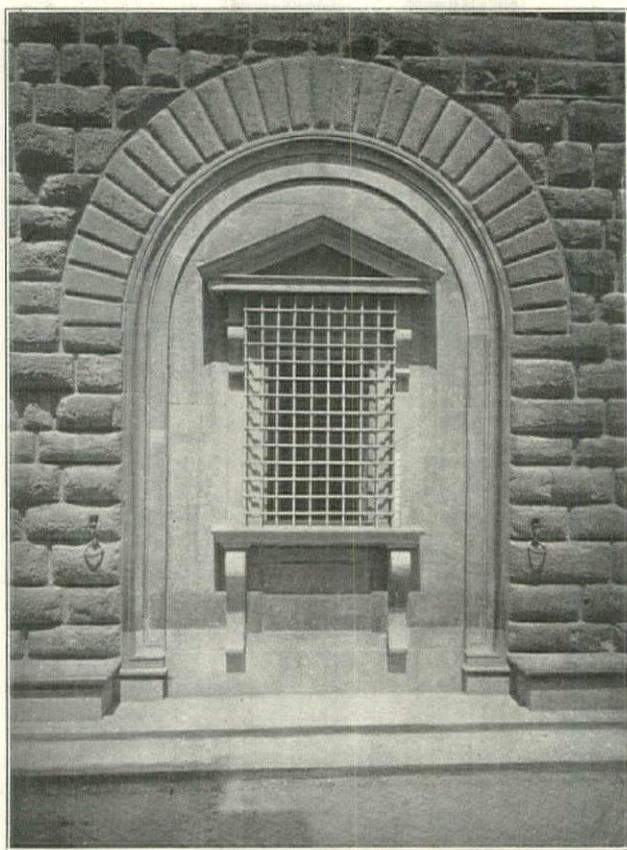
language the manner in which art can present a single motive, or rather how it can be presented by Italian architects.

Yet we say that the Scuola di San Rocco, built in the first



FROM STA. MARIA DEI MIRACOLI, VENICE.

half of the sixteenth century, after a design of Bartolomeo Buon's, by several architects, including Antonio Scarpagnino, is

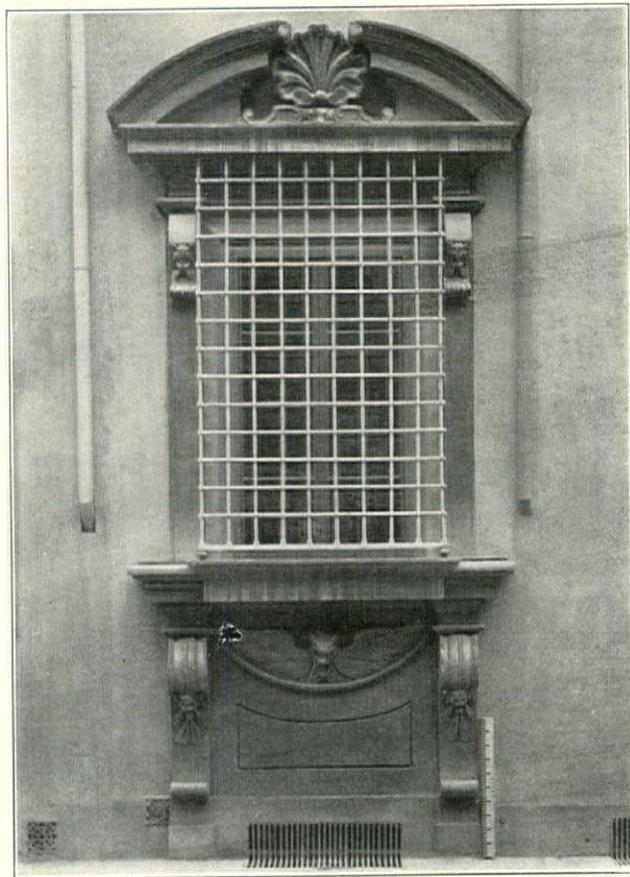


FROM THE PALAZZO RICCARDI (FORMERLY MEDICI), FLORENCE.

one of the most stately structures in Venice, and its splendor is signaled by these windows wrought in colored stones, very

chastely and delicately designed by Buon, who knew how to stamp his work with an elegance that was almost a tenderness, as these very windows prove. Comparison is here forced on us, and we note that it is the void that dominates in this Venetian window, as it usually does in the works of the Venetians, who aimed at lightness. We should note, too, that the Venetian architect, far from designing his window like those produced by the architects of Florence, Urbino and Bologna, has imagined a more complete composition, and by uniting the pilasters to an entablature which crowns the great arch of the window has produced an ensemble such as we cannot find in Florence, although the city of Dante is rich in Renaissance buildings.

I do not care to assert that the idea of uniting into a square or rectangular composition which is here perceived led up to the windows of the "Cancellaria" at Rome, or *vice versa*: the thing of importance is to draw attention to these celebrated windows which common repute ascribes to Bramante, and alleges that the master might have invented them without having recourse to tradition. Alas! here in a single opinion are two errors. In the first place, the Cancellaria was not designed by Bramante, but by a group of architects at the end of the fifteenth century; and, next, these windows, so often extolled, existed in Rome before



FROM THE PALAZZO BARTOLOMEI, FLORENCE.

they made their appearance in the façade of the Cancellaria; and the same sort of windows are to be found in Verona, in the famous Porta dei Borsari, a Roman structure dating from the third century before Christ. We have at Rome similar windows in the Ospedale della Consolazione, built in 1486 by the Florentine Nicciolo di Domenico, in a house on the Piazza della Rotonda, in another house, No. 27 Via Stelluta, etc. These statements are necessary because the reputation of these Cancellaria windows has been too much exalted, and historians should learn to curb their ardor. However these things may be, we have here a window with a single opening, and this affords a better opening for entering into the real Renaissance. The Latin spirit appears here more clearly than in the twin windows, and, in a general way, it may be said that the Italian window of the fifteenth century is less Roman in character than the windows of the sixteenth century; for the fifteenth century, when it designed its twin windows, was still gazing in the mirror of the Middle Ages.

The "Quattrocento," nevertheless, saw many windows with a single opening, and the window of Sta. Maria dei Miracoli, that architectural jewel in Venice, created in 1481 by Pietro Lombardo,

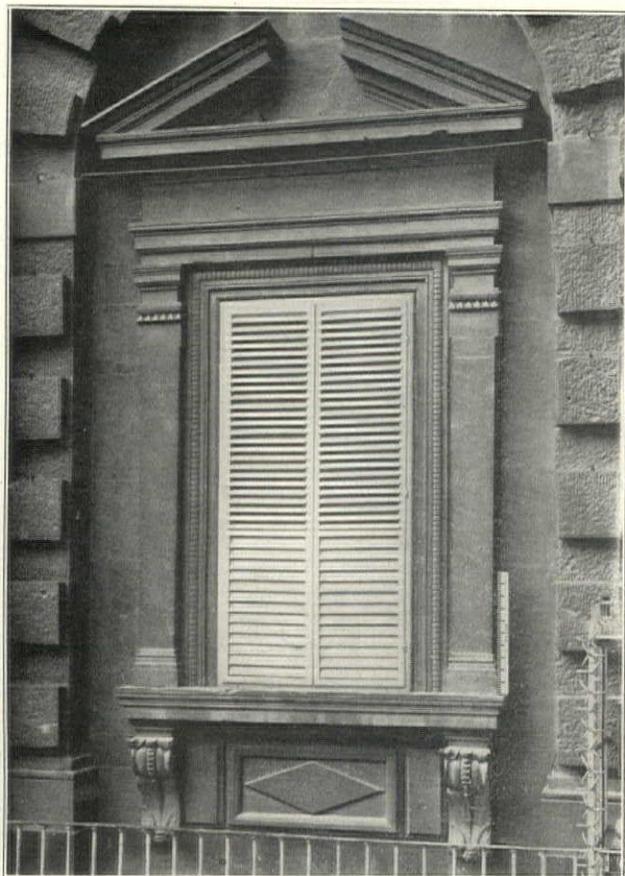
shows it in the rather elongated form that is habitual not only in Venetia, but in Tuscany as well, which at the epoch we are now discussing was the source to which architects turned. Its expression is due to Federigo de Montefeltro, Duke of Urbino, who was in no small degree the architect of the Ducal Palace at Urbino, already more than once here mentioned.

These narrow windows did not lend themselves to the creation of a rich effect, and so when luxury was to be expressed, a different treatment had to be devised, and this we find exemplified in Lombardy, that northerly section of the peninsula which had a predilection for pomp in its art. So the most ornate Renaissance façades are to be found in the "grassa Lombardia," that rich and fertile region which always gives outward evidence of the happy effect of its own abundance. The windows of the Certosa, at Pavia, afford the most signal proof of what I have just affirmed. This structure is one of the chefs d'œuvre of Italian decorative art, or rather decorating sculpture, and the windows have a claim to a good portion of the admiration which this incomparable building excites in all who in any way possess delicate perceptions. Treated in the richest manner, they have the con-

richness is sustained by knowledge, for Tomasso Rodari, sculptor-decorator, was one of the most exquisite of Lombard artists.

I have already told you in former articles that the history of Italian art has been all made over, for error had been heaped upon error. So, in the matter of the cathedral at Como it is good to recall, in contrast with former belief, that a certain Luchino Scarabotta, a Milanese, was the architect of the exterior of the cathedral, for some twenty years beginning with 1464, and that he was replaced by Tomasso Rodari, who, in so far as sculpture was concerned, carried on the work from 1484, and this Rodari, architect and sculptor, became one of the most important of the builders of the cathedral. And this carries us along to another sumptuous edifice, also Lombard, the Palazzo Pubblico, at Bergamo, with its windows, coldly Classic, designed by Palladio, an architect of Vicenza, an impenitent Latinist, who forced taste back to an architectural sobriety as different from Lombard luxuriance as a cold morning at the end of February is different from a hot July day.

But let us go on, and as briefly as possible. Another mind catches the attention, one which, in the middle of the sixteenth



FROM THE COURTYARD OF THE PITTI PALACE, FLORENCE.



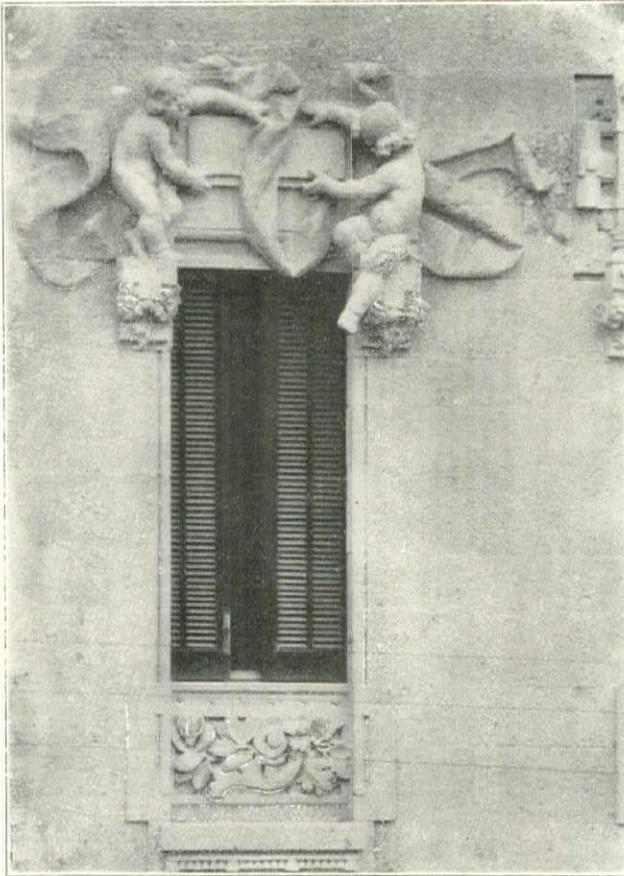
FROM THE PALAZZO PUBBLICO, BOLOGNA.

siderable dimensions of doorways, rather than windows: the colonnettes dividing the window have the form of candelabra of the richest design, and the acroteria are ornamented with praying angels. So, whenever in Italy any one begins to speak of the great triumphs of decoration, the claims of the windows of the Certosa, worked, as they are, like the entire façade, in marble, are never overlooked. Begun about 1473 by the brothers Mantegazza and Antonio Amadeo, after designs by Guinforte Solari, continued with the help of Francesco Brioso, Antonio della Porta, Gian Stefano da Sesto, and several other artists, it is a very miracle of decorative puissance. And although this incredible richness inspires us with some misgivings, it goes without saying that Italians take pride in the beauty of these windows, which we have here before our eyes, side by side with another window (I was on the point of writing doorway), the window in the Colleoni Chapel at Bergamo (still in "la grassa Lombardia"), the work of Amadeo de la Certosa, a curious creation of which the general effect should be disregarded, while all the more attention should be given to the details. A certain refinement is evidently one of the merits of this composition, but as a whole it is overdone. Ought the same criticism to be made of the window from the cathedral at Como? We will say so, if it will give you any pleasure, but let me add that here

century, did not know how to warm itself at the lamp of personal imagination, but knew only a slavish submission to Rome the eternal: Serlio, who judged that good architecture first showed its head the day when Bramante opened his eyes to divine beauty, was the author of this window in the Palazzo Pubblico at Bologna, sobre and almost shame-faced in its antiquated aspect, so much so that Palladio himself might be willing to acknowledge as one of his this window that introduces us to the "kneeling" windows of Tuscany, "*en ginocchio*," according to Vasari's picturesque expression. These kneeling windows, these ground-floor windows supported by consoles which seem to bend like knees, are particularly plentiful in Tuscany, sometimes affecting a simplicity that is full of charm, as at the Palazzo Medici at Florence, after a design by Michael Angelo, which itself is to be found in the Uffizi; sometimes greatly enriched in a manner full of nobleness, as at the Pitti Palace, in the great courtyard, designed by Bartolomeo Ammanati, and, better still, like the one at the Palazzo Bartolommei, the work of Gherardo Silvani, a Florentine architect, who worked during the seventeenth century, and whose fecundity never caused him to lose sight of good taste.

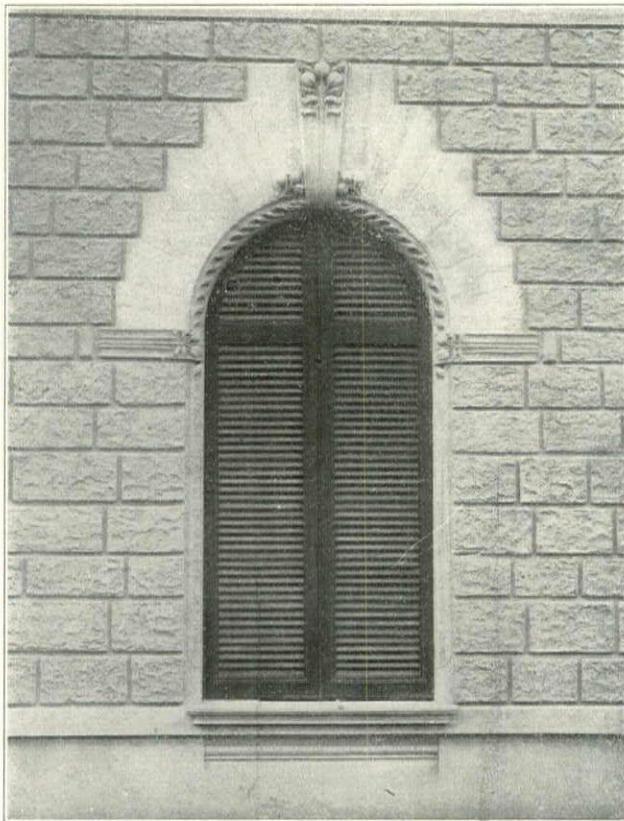
This century now leads us to the Baroco style, and we, who delight in good Baroco as much as in good Gothic, would like to

draw to this epoch the particular attention of all architects, friends of real beauty, and this means all friends of imagination. Italy



FROM THE PALAZZO CASTIGLIONI, MILAN.

possesses a quantity of Baroco windows, and prides itself in having in Bernini its Michael Angelo of the "Secento." The



FROM THE PALAZZO RUDINI, ROME.

scrollwork, the cartouches, the statues which enlivened the contour of Baroco windows, the exuberance of life which exudes

from this style, unjustly despised even in our own day, causes one to recall the battles declared in the name of the Baroco and, whether lost or won, of reason.

And since the Rococo, with its shells and rockwork, is the bastard offspring of the Baroco, I also point out the peculiarly feminine expression of this style which, in decoration, has added to the glory of France and her many Louis.

And here we are at length at to-day. Modern eclecticism does not appeal to me; in fact, I frankly prefer "le style nouveau" to the Gothic or Classic work that is done nowadays. In this line we have some interesting work, and in showing this window from the Palazzo Castiglioni at Milan, Giuseppe Sommaruga, architect, and one from the little palace that Ernesto Basile built at Rome for Sig. Antonio Di Rudini, I have a chance of naming two of the Italian architects who are most convinced of the need of this artistic movement, which is triumphantly leading us to the "dolce stil novo." Those who are of different opinion are many, and some day I may have a word to say to them. For the moment enough has been said, so shut down the window.

ALFREDO METANI.

#### THE ROMANCE OF ONE BOOK.<sup>1</sup>

IT has often been said that a very entertaining book might be written on the romance of book-collecting. The adventures of the two Talbot Prayer-books, one lost on the battlefield of Castillon, the other long buried in a German convent library, and both happily reunited in the twentieth century, may seem extraordinary enough. But my next story, which is also the last with which I shall trouble you, is, I think, still more remarkable.

Just three years ago in Wellington-street, Strand, not 500 yards from this hall, there was exposed for sale among the ordinary victims of the auction room, a large square volume containing a MS. of the early part of the fifteenth century. It contained in French translation the second half of the well-known history of the Antiquities of the Jews by Flavius Josephus. It was bound in a solid red morocco binding of the eighteenth century, such as clothes in the British Museum many of the volumes which formerly belonged to Sir Robert Harley. It had one fine illuminated miniature at the beginning, and had twelve pages, those at the beginning of each book of the history, cut out with a sharp knife, cut out evidently in a hurry, for the wicked person who thus maltreated the book in his or her haste had cut in many cases the adjoining leaf as well as that which was to be extracted. Otherwise the MS. was a well written book of the period and nothing more. There were, however, certain crasures, places where writing had been scratched out with a sharp instrument. Especially there was one such at the back of the sole surviving miniature, in which a trained eye could just detect a portion of the signature of John, Duc de Berri, the brother King Charles V., the book-loving King of France, who founded the National Library at Paris. Now the Duc de Berri was perhaps the greatest bibliophil that France ever produced, not excepting the Duc d'Aumale himself, and I was familiar with his writing because he was always careful to write his name in his books, and I was already the possessor of three other volumes which had belonged to him. So I felt that the book was probably in some way or other remarkable; it was at all events interesting from its provenance, and I got a judicious friend to go and buy it for me at the auction, which he accomplished for a very moderate price. Imagine our joy when we got it home. The one picture, though damaged, was a stately production. King Herod, the beau-ideal of a despot, has just entered the Holy City; followed by his knights and himself superbly mounted, he rides through ranks of slaughtered Jews, past the Piscina Probatica, the pool by the sheep-market, in which are seen a number of sick people, and approaches the gate of the Temple inclosure. In the background is an altar for the restored worship of Jehovah. The twisted columns which inclose the altar are identical with those which Raphael subsequently introduced in his famous painting of St. John at the Beautiful Gate of the Temple, and which Jean Fouquet, the celebrated French painter, the head of the French Primitifs, more than once represented in miniature, especially in the Book of Hours of Etienne Chevallier, which is one of the precious monuments of art preserved in the magnificent Château de Chantilly, and for forty pages of which the Duc d'Aumale gave £10,000. It sub-

<sup>1</sup>Extract from paper on Illuminated Manuscripts read by Mr. H. Gares Thompson, F.S.A., before the Society of Arts and published in the *Journal of the Society*.

sequently formed part of his munificent gift to the French nation. The occurrence of these twisted columns in the Herod picture, as well as the general style of the drawing, made us think at once of Jean Fouquet as the possible painter. But the writing in our MS. was nearly a century earlier than the date of Fouquet. How was this to be accounted for?

We next turned to the last page of our volume, where a good deal of writing had been obliterated. In the top right-hand corner were the final words of the book—we read, "Cy fine de livre de Josephus contenant en tout XXVII livres historiaux." Here ends the Book of Josephus, containing in all 27 historiated books. A further inscription at the bottom of the page stated that in this—the second—volume there were 13 illuminations. Now in my second volume, as a matter of fact, there was only one, that of King Herod. Twelve there remained to be accounted for in the second volume, and somewhere or other there should be found the first volume with its 14 pictures. Two conundrums were thus proposed to us. First, where was Vol. I.? Secondly, where were the 12 pages with their pictures which were missing in Vol. II.? The blank page where some writing had been obliterated revealed the mystery. You may know that there exists in chemistry a substance, dear to book-collectors, and known as hydrosulphuret of ammonia. It is made available as a liquid, and with a camel-hair brush and a careful hand you moisten delicately the place on the vellum where writing has been scratched out, and then, as by magic, the erased writing reappears. In the present case two inscriptions came into plain view, which we can read on the photograph taken at the time, though in the three years that have elapsed since the photograph was taken they have almost disappeared again. The inscriptions run as follows: The first is in the handwriting of the Duc de Berri, and says simply "Ce livre est au duc de Berri," and is signed "Jehan." The second, a little more difficult to read, is as follows: "Et de presant á son fiz le duc de Nemours, Comte de la Marck," and is signed "Jacques." Underneath is a further inscription which had not been erased, "Pour Carlat." Now these revived inscriptions tell us most of the history of the book. The first shows that it was written for the Duc de Berri, and as he died in 1417 it must have been written before that date. The second tells us that it belonged subsequently to Jacques d'Armagnac, who was beheaded by Louis XI. in 1477. Our next discovery was that the first volume of the book is in the National Library of France and has at the end exactly similar inscriptions. But the revelations do not stop here. After the two inscriptions in Vol. I. occurs another inscription which does not occur in Vol. II., and which is in the handwriting of a certain François Robertet, Secretary of Pierre de Beaujeu, Duc de Bourbon, and states that the first three miniatures (we are speaking of Vol. I.), were by the artist of the Duc de Berri, and the rest by the good painter and illuminator of King Louis XI., Jean Fouquet of Tours. It is, therefore, established that the whole book was written, and the first three paintings in Vol. I. made for the Duc de Berri; that the book then descended to his grandson, the Duc de Nemours, and was kept by him in his Castle of Carlat (Carlat was on a high hill in the Department of Cantal, not far from Aurillac), that Jacques d'Armagnac had the paintings in the first volume, and presumably also in the second, completed by Jean Fouquet; that, when Jacques d'Armagnac was besieged and made prisoner in Carlat by Louis XI., and executed in 1477, the book became the property of Louis XI., and when he died Vol. I. fell to his only daughter, Anne of France, and her husband, the Duc de Bourbon, whose secretary described it; that the second volume somehow got separated from the first and wandered to England, where after various vicissitudes it found its way into the library of Colonel Townley, at the end of the eighteenth century (his book-plate is on the first page), and was sold at the sale of his library in 1814. In the catalogue of that sale, when it was sold for a small price, it is stated to contain numerous miniatures. The twelve missing leaves therefore had plainly been abstracted subsequently to the year 1814, and one question only remained to be solved, where were those twelve pages now? I was sanguine enough to hope they might be found, and in an account which I printed of my little discoveries, I appealed to the librarians and collectors, in short to all the bookworms of the world, to look for them, and let me know in case they found them. Would you believe it, within two years, Dr. Warner, of the British Museum, discovered ten of them in an album in the King's Library at Windsor Castle. At the risk of tiring you to death, I have gone through this little history, and I conclude this paper with an appeal to my hearers, if ever they meet with two MS. pages from the history of the

Jews, one containing a large picture, and one a small one by Jean Fouquet, they will let me hear of them, and merit the thanks of all good bibliophils.

The chairman (the King's Librarian at Windsor Castle), in proposing a hearty vote of thanks to Mr. Yates Thompson for his excellent paper, said he was sure the audience would agree with him that the author possessed not only a most beautiful and interesting library, but that he was a most admirable exponent of his treasures. Among the last words of the paper, Mr. Thompson mentioned a circumstance which might seem a little suspicious—that ten of the missing pages of the precious volume described were discovered in an album in the King's Library at Windsor Castle. He hastened to add that he did not put them there, and he hastened also to disclaim for his predecessor any participation in the affair. It was a very curious fact that nobody quite knew how they got to the library. They were all bound, or rather stuck, in a volume, together with several other loose illuminated pages of no great value. There was a tradition, of which nobody knew very much, that they were given by somebody either to William IV. or Queen Victoria—probably the former. Whether that somebody's name was ever known he was unable to say, but if it was the person who used the sharp penknife and cut the leaves out of the book, he should imagine that he kept his identity concealed. The audience could well imagine that Mr. Yates Thompson loved his books; none the less it seemed to him a pity that Volume II. of Jean Fouquet's work should be in England, and that Volume I. should remain in the National Library at Paris. A few weeks ago, therefore, Mr. Thompson approached His Majesty the King, suggesting that possibly he might care to add the ten pages preserved at Windsor—he might call them the gems—to the rest of the book—the setting—and that not only as a matter of artistic service, but as a matter of loyalty and friendship towards an old enemy, but now a very great friend, the King should return Volume II. to the side of Volume I., from which it had been divorced for 400 years. The King had not read Mr. Yates Thompson's letter more than half through when he said, "These pages ought to go back to Paris." The leaves had, therefore, been placed in the care of Mr. Yates Thompson to be re-inserted into the volume from which they were taken; and thus, after a long interval the ten pages, and, he hoped, ultimately the two still missing pages, would be re-united in the volume. But, in any case, within two weeks or so, Volume II., of "Les Ancienetés des Juifs," after 400 years of separation, would be placed alongside Volume I., in the National Library of Paris. It was a little bit of romance, which he hoped the French nation would appreciate as much as the present owners of the volume, His Majesty the King and Mr. Yates Thompson.

Mr. Yates Thompson, in reply, after thanking the members for the cordial manner in which the vote had been passed, said he was quite certain, from his knowledge of the French literary world, that it would highly esteem the King's kindness in taking the principal part in the small gift which was to be made. It appeared small to people in England, but the rage in Paris for Jean Fouquet as a painter, as shown by the recent collection of the Primitifs, was something quite astonishing. French people were very proud of him, and would very much indeed value the acquisition of the eleven *bonâ-fide* Fouquet paintings, which he hoped would soon be given to them.

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## COMMUNICATION.

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### A CORRECTION.

New York, April 20.

TO THE EDITORS OF THE AMERICAN ARCHITECT:

Dear Sirs:—We notice in the April 14th, 1906, issue an illustration of the building which we designed for Messrs. Chubb & Sons, situated at the corner of South William Street, and which is erroneously credited to Kirby, Petit & Green.

Yours very truly,

CARRÈRE & HASTINGS.

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## ILLUSTRATIONS.

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ITALIAN WINDOWS—FOUR PLATES.

For description see article "The Window in Italian Art" elsewhere in this issue.

COTTAGE OF HON. J. M. GROSVENOR, JR., SWAMPSCOTT, MASS. MR. EDWIN J. LEWIS, JR., ARCHITECT, BOSTON, MASS.

LIVING-ROOM IN THE SAME.

STABLE ON THE SAME ESTATE.

OFFICE-BUILDING FOR R. A. LONG, ESQ., KANSAS CITY, MO. MESSRS. HOWE, HOIT & CUTLER, ARCHITECTS, KANSAS CITY, MO.

The R. A. Long Building is the first building of its class to be built in Kansas City. It is constructed with steel-skeleton frame for floors, outside and inside walls, and roof. This skeleton is clothed with an envelope of fireproof material, so that no part of the steel structural work will be exposed to the dangers of fire. The building is fourteen stories high, with a basement story which makes practically a fifteenth story on Tenth street, as at that point it is entirely out of ground, and an attic above the whole, so that at the southwest corner of the building it is really sixteen stories high.

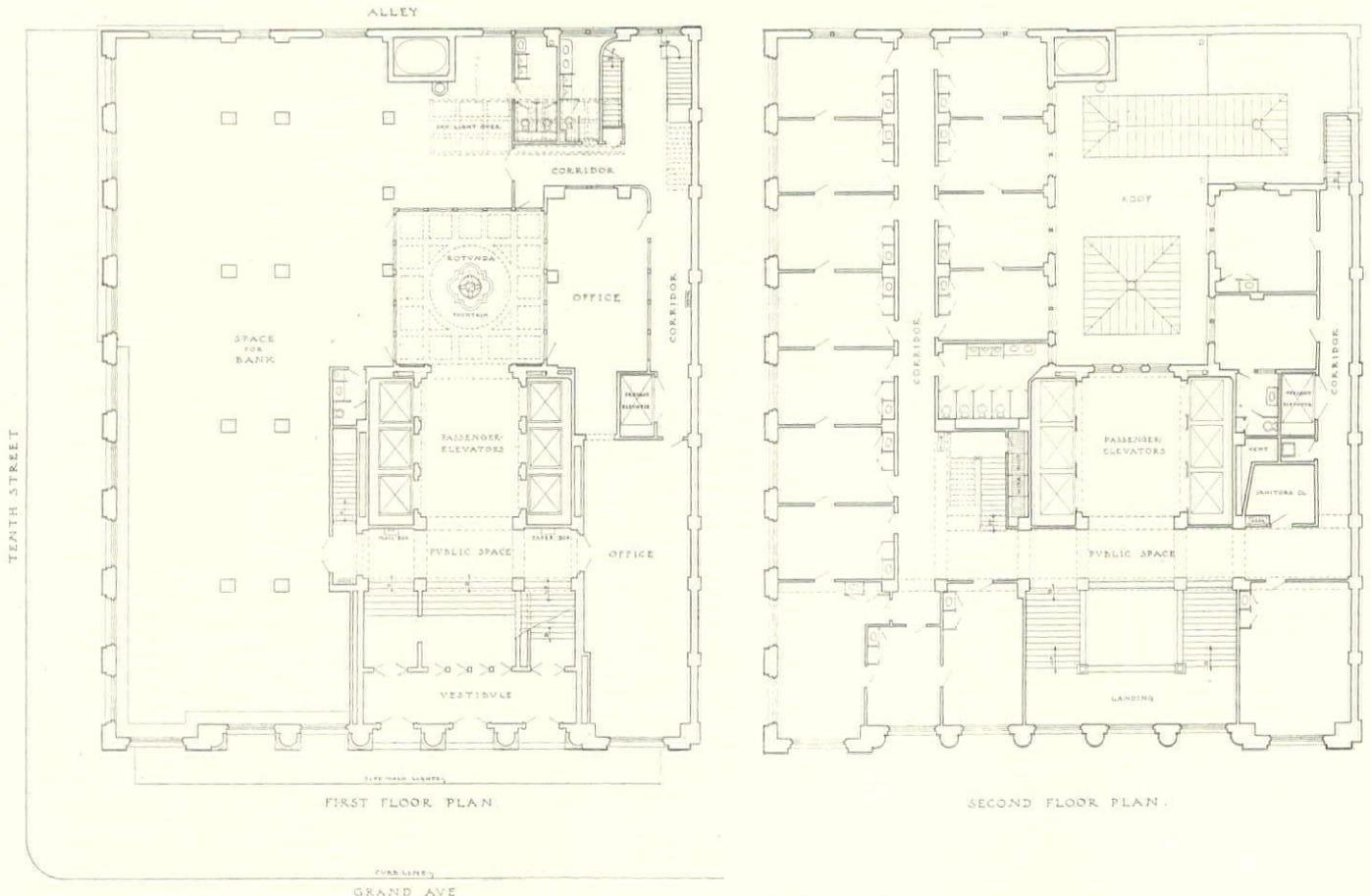
It is designed in what might be called an adaptation of the Greek style to modern usage; that is, all its general details, both inside and outside, accord with Greek lines.

three hundred offices, exclusive of the stores on Tenth street and the main floor on Grand avenue. The main entrance will be from Grand avenue by a broad flight of marble steps to the elevator approaches, just west of which is a grand central lobby surmounted by a domed ceiling and communicating with the interior of the offices of the first floor.

## NOTES AND CLIPPINGS.

**THE COLUMBIA STADIUM.**—Mayor McClellan has signed the Columbia College Stadium bill. The bill permits the city to enter into a contract with Columbia College for the construction of an athletic field on the water-front, between 116th and 120th streets. The bill provides that all the cost shall be paid by Columbia College, which shall also arrange for bridges to connect the made grounds with the existing roads and driveways.

**THE IMPERIAL OTTOMAN MUSEUM.**—The Tchynili Kiosk, the pavilion constructed by Mahomet the Conqueror at Constantinople, which constitutes one of the masterpieces of Ottoman architecture, and which has been used for some years now as



PLANS OF THE R. A. LONG BUILDING, KANSAS CITY, MO.

The basement story will be of polished granite; the first, second, and third stories of gray limestone; from the third to the eleventh, inclusive, the walls will be in gray brick trimmed with terra-cotta; the upper three stories will be in gray terra-cotta.

The interior of the building will be equipped with every device known to the best modern office-building. There will be six high-speed passenger-elevators running from basement to fourteenth story, and one freight-elevator; all of the plunger type, where the cars are not suspended on wire cables, but carried up by a vertical piston corresponding to the length of the travel, making them as nearly absolutely safe as it is possible for anything to be.

The building will be elaborately finished in the lower stories in white Italian veined marble, and wherever woodwork is used in any part of the building for trim or finish it will be in mahogany. Midway in the building will be a special reception-room for the comfort of lady visitors.

The building measures nearly one hundred feet on Grand avenue and one hundred and fifteen on Tenth street, with a height of one hundred and eighty-eight feet from the Grand avenue level to the top of the cornice, and will contain about

the Imperial Ottoman Museum, is much too small for the art treasures that are pouring into it. Under the direction of Macridi Bey, who is watching for the Museum the work of excavation and exploration carried on at present in all parts of the Turkish Empire, shipments are constantly being made to Stamboul from Smyrna and Ephesus in Asia Minor, Appolakia and Lendos in Rhodes, and Rika and Beirut in Syria. Last December, for instance, Bagdad alone sent the museum forty cases of marbles. To meet the demand, for more space, it was decided to build a new pavilion near the old, and the work is nearly finished. Its architecture bears comparison with the Tchynili which will contain hereafter only Mohammedan antiquities.—*N. Y. Evening Post.*

**A PERSIAN SCHOOL OF FINE ARTS.**—The Shah of Persia has decided to found at Teheran a school of fine arts and an industrial school. To help in the elaboration of his project he has asked the Turkish Government, through his ambassador at Constantinople, for the rules and programmes of the two similar schools at Stamboul.—*N. Y. Evening Post.*

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OF the many admirable things that have been done to relieve distress at San Francisco none seems to us to be more timely and praiseworthy than the action of Mr. H. E. Huntington, who, with a contribution of \$30,000, starts the raising of a fund for the relief of "professional men" and their families who have suffered by the fire. It is always the case in such a disaster that the severity of loss falls most heavily not upon the wealthy, who generally have some sort of reserve to fall back upon, nor upon the poor, accustomed to manual labor and hard living, but upon those whose duties in life force them to keep up appearances at the expense of the accumulating of a reserve fund for a time of need. While many men, of various callings, belong to this class, the professional man, the lawyer, the doctor, the engineer and the architect, is by such a disaster put much more at a disadvantage than the bookkeeper, the clerk and the salesman, since their usefulness depends largely on their having available for immediate use not only the tools of their calling, but also a fair working library; and it is the object of Mr. Huntington's thoughtfulness to provide such tools and libraries for those who need them. It is quite immaterial that most of the doctors and lawyers are already exceptionally busy, while the architects and the engineers are certain to have more work to attend to during the next twelve months than, a day before the fire, they could possibly have expected to come to them during the next twelve years. For the moment they are in distress, and as, because of their professional losses, they are unable to give their stricken community the full benefit of their knowledge and skill, it is a happy event that someone has thought to afford them this special relief.

DOUBTLESS the other cities to whom Mayor Schmitz appealed for the loan of architects and draughtsmen responded in a prompt and satisfactory way, but no one of them could have handled the matter in a more business-like way than did Boston, or rather the Boston Society of Architects. As soon as the appeal was made known the Society took the matter in hand, and in

the course of a few hours had discovered that there were seventy architects and draughtsmen who would and could go to San Francisco; but it was felt that what was needed was men of real efficiency and that those of less ability and the "floaters" could be left to await further calls, or could be trusted to find their own way to the scene of activity. Accordingly the officers of the Society subjected the applicants to a species of examination, the result being that eighteen men of assorted attainments were forwarded at once, with the needful drawing materials, each man being guaranteed by the Society a month's pay at something better than the "prevailing rate of wages." From this we apprehend that it is the idea that these men shall hold together, for a month at least, as an emergency force, doing what work is needful for Tom, Dick and Harry in the promptest and most efficient way, without thought of sending out bills "for services rendered." If other cities have organized their contributed architectural help in the same way, and if these units could be brought into working harmony and proceed on the same lines as the great draughting-offices organized by Mr. Burnham at Chicago and Mr. Taylor at St. Louis, the task of recreating a skeleton, yet habitable, city would be greatly helped.

ON the whole, we incline to feel that the one real warning to be deduced from San Francisco's disaster is that it is unwise for any tenant to believe he may safely leave his goods and chattels uninsured because he occupies a so-called—or a real—fireproof building. The testimony of Pittsburgh, of Baltimore, of San Francisco is the same in each case: it is at present almost an impossibility to preserve the contents of a building. Now, the thing that most of us—who are to the owners of buildings as twenty or more to one—particularly desire to preserve is the contents of a building, whether animate or inanimate. If we can but preserve the contents the fate of the container is to most of us of very minor importance. Yet, curiously enough, the clamor, the demand for sympathy, is raised largely in behalf of the building and its owner, when really they least deserve it, since they have sinned against their too-confiding tenants—innocently, of course.

IF the public were not simply what it is, a great brutal bully, it, or the fraction of it represented by San Francisco, would recognize that there lies before it an admirable chance for putting into practice the theory of municipal ownership. Until now the propagandists of this theory wait until private energy and private capital have developed a business which has grown to be of such general service that it is called a "public utility," and then, when it has reached that stature and acquired that name, the upholders of the municipal-ownership idea appear on the scene with the plea that the public ought to own such public utilities and therefore should wrest them from the men who have created them. Now, it should be patent to these idealists that at San Francisco there is a

first-rate chance for the community to set up as a municipal owner in good shape, since by the simple process of an exercise of the right of eminent domain over now unimproved real estate that community is in position to erect for itself such fireproof and earthquake-proof buildings as pleases it, and can thereafter lease them on short, long, or perpetual leases to such citizens as wish to occupy them.

**I**NSTEAD of doing this, the community, in its usual bullying way, will try to place the burden on the shoulders of individuals, and will seek to protect itself by prescribing possibly impracticable conditions under which buildings may be erected. If the conditions imposed by public ordinance were always respected and there were no such things as scamping and Jerry-building, the resulting buildings erected by controlled private enterprise might be as good and perfect as buildings carefully erected by the community itself; but every one knows how successfully private selfishness can evade public responsibilities. Yet, as we said last week of the parties in interest, the general community has greater interest in the erection of indestructible buildings than have either the private owner or the owner's tenants. For that reason it is for the interest of the community to encourage the erection of such buildings, not by making compliance with the law bear unfairly on the investor, but by actually lightening his load. If, for the mere sake of increasing the architectural beauty of its street effects, Paris is willing each year to abate one-half of the taxes upon the six houses built during the preceding twelve months judged successful in the *Concours de façades*, a wise American community should perceive the utility of abating, for a term of years, the taxes upon new fireproof buildings until the rebate has equaled the excess, at least, of cost of indestructible over destructible buildings. Put in extreme language, the man who in an ordinary American city erects a fireproof building commits folly, since he confers a boon on his neighbors and the community at large for which he receives no return. The community ought to even up the obligation in the only way within its power, and that is by remission of taxes.

**W**HILE most persons would willingly concede that it would be proper for the National Government to build and operate its own railroads, because of the common value and desirability of having lines of military communication unbroken and the systematic transfer of mail matter uninterrupted, they would unquestionably feel it ought to be unconstitutional, even if it actually be not so already, that the National Government should enter into trade as competitor of private enterprise. The entire business world would rise in protest, if it should be attempted to eliminate from the daily market the best customer there is. But there are circumstances under which the Government may temporarily "go into trade," as Charles Reade put it. For instance, just now, progress upon the twenty-four irrigation projects in the West, to whose prompt execution the Government is pledged, is just now seriously interfered with, because it is impossible to obtain in the regular market at an economical price

the vast amount of cement that these great engineering projects call for. At a recent "opening" of proposals for two thousand barrels of cement in Idaho only one bid was received, and in this case, owing to the present pressure on the market, the rate was fifty per cent. higher than the market price of a few months ago. In face of this obstacle the Government is inclined to seek relief by establishing its own cement-mills, and has actually in operation in the Salt River district in Arizona a small plant that is turning out daily a few hundred barrels of cement of a satisfactory quality. As a temporary expedient for avoiding costly delay, little valid argument can be advanced against this undertaking; but it may prove the small end of a wedge that would seriously affect the great cement industry which has had such a phenomenal growth in the last five years. How disastrous it might be to have the Government disappear as a customer in the general market may be inferred from the fact that the Louisville & Nashville Railroad has just closed a contract to deliver at New Orleans during the next thirty days twenty thousand carloads of cement for use on the Panama Canal.

**T**HE project for building in New York, at a cost of some two million dollars, an endowed theater which shall be maintained essentially in a class with the *Théâtre Français* is interesting for at least two reasons. First, if the programme is correctly reported, the architects of the building are to be paid six per cent.—a very different affair from the sliding scale adopted for the Cook County Court-house, and, in the second place, we believe that no one of the nine firms invited to take part in the preliminary competition has ever built a theatre, although all of them are men of large general practice. It seems possible, then, that the resulting building may be unconventional, perhaps even delicate and chaste, in its decorative treatment and so distinctly refreshing to the jaded frequenter of the ordinary tawdry and vulgar play-houses. The first competition has left as final competitors Messrs. Carrère & Hastings and Warren & Wetmore.

**I**N the course of certain comments upon the late "tin-plate conference" which he addresses to the *Metal Worker*, Mr. W. U. Follansbee expresses the belief that a large part of the trouble is due not only to the careless handling of roofers and those who frequent roofs but still more to their careless footing, and he recalls how, twenty-five years or so ago, he was not infrequently warned by the workman to keep off the roof because he was not at the moment "wearing rubbers, as were the workmen, as was insisted upon by all firms then that had a reputation for good work." This point is well taken, as everyone must know who has noted the nail-mark of heel and sole trampled all over a roof, whether new or old. The old saying "there is nothing like leather" should be abandoned and roofers, at least, should substitute rubber; in fact, in view of the danger from slipping and the ever-present danger of electric shock, a paternally-minded municipal council might easily pass a more foolish ordinance than one forbidding any one from going upon a roof unless shod with rubber-soled shoes.

## OUR ANNUAL ASH-HEAP.

THE Baltimore fire was appalling; the San Francisco holocaust simply staggers one, horrifies, dumbfounds. And so soon upon the heels of the other! View it as you will, poor buildings are to blame for the major part of this great sacrifice of life and property. We have heard it stated in the pulpit that the earthquake was the "act of God" and that no human power could stay it. Granted. And that the earthquake was also to blame for the breakage in the water-service is also conceded, as well as that numerous fires were started by reason of the earthquake. Nevertheless and notwithstanding, had there not been so much fuel for those incipient fires to feed upon, there would have been no conflagration, no such loss of life, such desolation, such irreparable loss.

People depend too much upon water, Providence, good luck, reimbursement from the insurance companies. We are gamblers with Fate and have taken awful chances in many directions, and particularly with our buildings. In Baltimore, spite of water and the superhuman efforts of her own and borrowed fire-brigades, the fire burned itself out only at the water's edge in one direction and spent its fury upon the splendid bulwark of skyscrapers in the other. The actual extinguishing of fire cut small figure there. The great buildings were damaged in all their non-fireproof parts, true, but they saved the city beyond them. In San Francisco the fire burned itself to the water's edge, too, but in the other direction encountered no bulwarks, no opposition; her tall buildings were few and far apart, and the rank and file of her buildings, commercial, domestic—all, were miserably poor; one of the worst-built cities in this country of flimsy construction. And yet the friends who abet us in our gambling propensities, the insurance companies, wrote policies at *low rates* in San Francisco, knowing that the buildings were most shabbily built, but depending upon the efficiency of the city's splendid fire-department! As things have turned out, it was indeed a poor speculation for them. The big fellows can stand it, though it will make a considerable hole in their surplus, and the small fry, having gotten what premiums they could, simply fade out of existence.

Estimating that the total losses will amount to \$250,000,000, fire is directly blamable for \$200,000,000 of that;<sup>1</sup> and it is doubtful if the sufferers will get back \$125,000,000 in insurance. Add the \$200,000,000 wiped out by fire to the \$200,000,000 more that it is reasonable to expect will burn up during the year—if all conditions remain normal and no further catastrophes happen, though it would take but a turn of the wheel of Fate to almost parallel San Francisco in New Orleans, in New York, in Boston, in any of our large cities where much flimsy building is congested in sections—and you have \$400,000,000 in smoke as the record for 1906! 1905 footed up \$175,000,000; 1904, \$230,000,000; 1903, \$150,000,000. Or, assuming that the Nation has put \$12,000,000,000 in building since Colonial times, we have actually burned \$3,000,000,000 of it. Earthquakes have shaken down and we have torn down fully \$3,000,000,000 more of buildings, because of their old age or juvenile senility—and we have built badly so persistently that it is small wonder that more building has not had to be replaced or did not burn down ere this. Generally, when we talk of losses, the word is used qualifiedly. In a speculation or depreciation of stock or anything of that kind, someone gets the money—what is one man's loss is another man's gain; not so with fire; that loss is *absolute*, doing no good to anyone; it is represented solely by smoke: that is, it is a net loss. Other sums can be included in the general term, though someone does derive some benefit therefrom. For instance, poor construction necessitates the maintenance of fire-departments and high-service water equipment. Just in salaries for firemen, we pay out on an average of a million dollars per year per city, while water and apparatus eat up fully a hundred million dollars a year. Then there is loss of business by reason of fire, an item that is incalculable. Next in the list of losses comes insurance. True, we got back in 1905 \$95,272,488 from the companies on account of our \$175,000,000 losses. The individual was recouped to a certain extent. He got back on an average perhaps 60 per cent. of his actual losses. But for this ninety-five million we paid to the companies in premiums \$196,352,347. In other words, they paid out 48.4 per cent. of what they took in and the balance represents profit, expenses and a surplus fund with which they can gamble with us on big risks. Sometimes the "house" loses, as just now in San Fran-

cisco. But, mark you, the insurance people are not in business for fun; watch the rates and note the surplus being built up again.

The folly of it all is pathetic, and certainly a reflection upon the intelligence of the people. A million buildings are wiped out of existence inside of ten years. In New York they average 8,700 fires a year; in Chicago, 4,100. Our normal record is three theaters, three public halls, twelve churches, ten schools, two hospitals, two asylums, two colleges, six apartment-houses, three department stores, two jails, twenty-six hotels, one hundred and forty flats and sixteen hundred homes burned up every week in the year. Last year we indulged in 45,000 fires. The year before we burned up over 6,000 people. Fifty-eight thousand of us live or spend part of our time in buildings in which there is an immediate, present and great danger of fire; 36,000 of us are in daily imminent peril; that is, that many of us escape from burning buildings, are carried out or are otherwise actually in great danger. We spend our one life, in most part, in shabbily built affairs; we send our children to equally poorly built schools, and then we hold up our hands in horror when these things happen that any sane man must needs expect. In 1904 a few of us who were called "cranks" used the data that was available then to point out the terrible possibilities of fire, the senselessness of it all and the urgency there was to build better. We were called "croakers" and the figures we quoted were scoffed at. The Baltimore affair was something that probably wouldn't happen again in a man's lifetime. A great windstorm had helped that fire along, etc. There was no occasion to be alarmed. It was all right for millionaires who build skyscrapers to use fireproof construction, but wood and more wood was good enough for the average man. And when 1905 passed by and the record of 1904 was not equaled, why, the same wise ones clicked their heels in glee and scoffed at us again, saying: "See, 1904 was an exceptional case; we will never have anything like that again; lo, we have such good fire-departments and so much water." Ah! water; that's the cure. Say "water" to a city and it is ready to spend any number of millions in a vain endeavor to cure fire; suggest prevention of fire, better building, and they will laugh at you. What did water do in San Francisco? O, true, that was an accident, too, but see where the 1904 record will be alongside of that of 1906. And remember we were told that not again in a lifetime would 1904 be equaled.

But even without San Francisco we had started off on a pretty lively pace this year. The average of our losses for 1903 was \$12,500,000 per month; for 1904—including Baltimore—\$19,166,000; for 1905, \$14,583,000. But our losses in February last were \$20,580,910, and our 2,038 fires in March cost us \$19,383,560; and those of April will certainly go to \$220,000,000!

No wonder we have to exercise what is generally supposed to be phenomenal activity in building. If we destroy so much, perforce we must produce at a corresponding ratio, or where would we be? We put up \$528,000,000 of buildings in 1905 and our building record this year will not fall far short of \$800,000,000. 350,000 of our men are directly engaged in building operations, while 2,000,000 more are employed in quarries, iron-works, etc., whose products go into building operations. In New York alone they will put up \$200,000,000 worth of buildings this year. That city spends at the rate of 12c. per day per inhabitant in building developments; the country at large spends 2-2-3c. per inhabitant, but on the other hand our waste equals 4-7c. per day per inhabitant. This great activity, I say, is necessary; it is commendable; but much of it is misplaced, foolish.

The distressing part of the affair is the almost impossibility, whatever we do, of appreciably diminishing these colossal losses for yet many years. We have built so poorly so persistently that, however well we may do and have done in the last few years, there are everywhere about us such enormous cities, such great piles of inflammable matter, such congested districts of tinder-boxes, that anything in the nature of a cure within any reasonable time is a hopeless dream. We must pay for our folly, and it is only a question of time when each of our cities suffers, if not as grievously as San Francisco, yet far too grievously.

Our architects are much to blame and our insurance companies share in that blame. All we can do to-day is to build well, to absolutely eliminate wood from the structural parts of buildings, to bar everything but entirely fireproof structures in congested districts and to throw such safeguards about the old buildings as we can. For instance, if a roof requires shingling, don't shingle it with wood; use asbestos shingles. If the sides of a house are rather dingy and the woodwork rotted out, don't repair with

<sup>1</sup>We will hear much about what the earthquake did to the tall buildings, the steel frames; but we may reasonably charge up three-fourths of the apparent "quake" damage to the dynamite used in great excitement and most unskillfully.

wood; put on some form of metal lath and stucco the thing. As repairs become necessary, do the repairing, even in highly inflammable buildings, with non-inflammable materials, and thus, little by little, less and less fuel will be offered for fire. When painting is necessary, use something that has been proved fire-retardant to at least a slight degree. In new buildings close in stair and elevator wells in fireproof partitions; in old ones use wire-glass and metal. Minimize the fire-risk everywhere. It is simply a matter of using less inflammable stuff and more—intelligence. Architects are to blame, I say, because so many of them think only of the pretty exterior and the dainty effects to be had inside with fine wood, etc. Everything is sacrificed to those considerations. The safety, the stability of the structure are minor considerations. The average architect knows in a general way that fireproof construction costs perhaps 10 per cent. or 12 per cent. more than the flimsiest way of building. He does not know that that difference in cost is wiped out inside of five or six years and that a good building is an absolute economy from its very start. The chances are ten to one—with the average architect, of course—that he will not even mention fireproof construction to his client; and if he does do so and the total estimates amount to a little more than the latter cares to pay, the fireproofing, the well-being of that building, is the very first thing to be wiped off the list—anything to save the pretty outside. The average layman knows but little about fireproof construction. It is the architect's province, nay, his very duty, to educate his client in that respect. He has been derelict in that duty, and just to that extent do I charge him here with being an "accessory before the fact" to as near a crime as one can well come.

And the insurance people, they, too, have sinned grievously. With them it is simply a business proposition. Heavy as the losses have been, the premiums have been proportionally heavier. No country on earth suffers so from fire and no country on earth pays as heavy premiums. The insurance companies make a brave front in defining what they deem a good risk. A building built according to their schedule of requirements is a perfect building; I have no quarrel with them on that score. But they don't make their rates accordingly. It takes the average business-man but a minute to figure up that, as far as insurance is concerned, there is no inducement offered him to build well. The difference in rates between a good building and a poor one is only such as to prove a bait, a temptation to him to build just as poorly as the law permits. He doesn't know any better. He says in answer to your argument, "Why, the insurance people know what's good building, and they only make such-and-such a difference in my rates whether I build one way or the other. Why should I invest my good money without hope of return?" And there the matter lies. The insurance people have aided and abetted, literally tempted, the man of average intelligence to build flimsily.

It all resolves itself finally into a question of what the municipality permits. It has been proved beyond doubt that people will build only as well as they *have to*. It is in the blood. Generations that have built of wood and still more wood have left their hallmark on us.

The one thing to do to lessen the peril, little by little, the very great peril there is in every one of our cities and towns, is to put a sudden stop to any building or repairing of buildings with inflammable materials. After the Iroquois disaster and the Baltimore fire there was quite a scurrying in building-departments, great activity in revising building-laws, and some good was accomplished. But after the proverbial nine days' excitement, interest lagged again. People chafed under what they called unwarranted hardships. It was claimed that the poor man—ah, how the poor man is always used as an argument!—would be barred from building his modest home. This last disaster may shake us up more thoroughly and satisfy every one that our only salvation is the law of compulsion, and that given good building-laws and repairs, it then remains for us to see that the personnel of our building-departments is such that those laws will be enforced without fear or favor.

San Francisco is in a position now to surprise the world with not only her growth but the manner in which she will rise Phoenix-like from her ashes. But will she do it? At Baltimore there was a chance to do good things. There have been some fine buildings put up, but the rank and file, the three and four story stores and warehouses are pitifully like their predecessors. What happened two years ago could almost be duplicated to-day.

Naturally, in San Francisco, people will be anxious to get back into homes and places of business with as little delay as possible. To build well takes time. Their inclination will be

to run up something, anything, that can be quickly occupied, and those so-called temporary structures will, as in every other case after a great fire, remain and be a menace to the other buildings that have meantime been properly built. There, as well as generally, laws should be paramount, the authorities should take the matter in their own hands however loud the protests and severe the criticism. It would seem that the most sensible way to proceed would be to build camps, or the most temporary of shelters and houses in the parks, or in remote districts, for the immediate occupancy of the people. Get the water-supply, sewage, lighting and car-service in perfect working order, build up temporary sheds in the business district and repair the least damaged buildings so that the business enterprises may be housed for the time and transact their affairs. Build these sheds on alternate blocks, so that each block may be surrounded by vacant ones. That will limit the possibility of fire doing damage to more than a block. Business will be somewhat congested and men will work at a disadvantage; but it can't be helped now. It's like martial law the first few days after a fire. It is for the people's good. Then permit only permanent, well-built structures, fireproof in available and are occupied, raze the temporary structures just mentioned and continue your good buildings there. That would be an orderly, sane way of resuscitating the great city and making it what it was planned to be, but was not—the well-built, grand, magnificent "Metropolis of the Pacific."

F. W. FITZPATRICK.

#### THE TOPOGRAPHY OF SAN FRANCISCO.

**N**ATURE itself made San Francisco unique. Topographically its site is unparalleled in the world. The peninsula stretches northward like a great thumb, seven miles wide. At the north is the Golden Gate, to the west the Pacific, to the east the bay, encircled by mountains, wild and bleak and terrible. At the top of this great thumb the city itself is built upon a series of hills. Some cities have single dominant heights, remote, unvisited by most of the population, but San Francisco is all hills; they are a most vital part of the town. They march down to the centers of life and one cannot escape them; they stride north and west and must be climbed. The important lines of traffic accept these conditions and plunge boldly up and down upon their ways, and so, going or returning, the city is always with the citizen.

And so from a dozen points of vantage the pagantry of the bay and ocean and mountain is unrolled for all to see. Never was a city so prodigal of its friendship and its wealth. She salutes one on every crossing, welcoming the visitor openly and frankly to her Western heart. In every little valley where the slack, rattling cables of her car lines slap and spatter over the pulleys some great area of the town exhibits a rising colony of blocks of gray, wooden houses rising up and over a shoulder of the hill to one side and to the other. Atop every crest one is confronted with farther districts lying not only opposite but beneath, across low-reaching levels to the right and left. From Water Front and Chinatown to the palaces of the Western Addition, the town sprawls in multitudes of flats and cottages, garish, dun or fantastic.

All this variety is accented by the astonishing way in which the streets have been laid out. When the first little port of entry was laid out, in 1846, there was an ideal site for a city, romantically placed between the Golden Gate and the bay, picturesque with mountain and water views. It might have been made beautiful with terraced roads, with driveways conforming to the natural features of the topography. But, instead, the checker-board plan was adopted. Later, the alcalde of Yerba Buena still had a chance to modify the rectitude and severity of the old system, but the street lines were pushed into the hills without mercy. As one might constrict the wayward fancies of a gypsy maiden to the cold, tight-laced ethics of a Puritanical creed, so the city was bound to a gridiron of right-angled blocks and narrow ways, pursuing their lines up hill and down dale without regard to grades or expense. Streets were hacked out of rocks and cliffs until now the city is bizarre, incredibly grotesque. Some streets are so steep that horses cannot mount them, and the grass grows high. Houses stand perched on absurd heights and are reached only by flights-on-flights of stairs.

But still not all its views could even then be ruined. From many vantages one might command a fair semicircle, a panorama unsurpassed in any civilized land. From the Pacific and

the narrow Golden Gate rise, abrupt and treeless, the Marin County hills, Mount Tamalpais to the north, Mount Diablo in the east, and between them the islands of the bay, the foothills of the Contra Costa shore.

The very names of San Francisco's districts are stimulating to the imagination—the "Barbary Coast," with its water front and sailors' boarding-houses; "Tar Flat," with its tenements and its manufactories; "Chinatown," with its Oriental reek and squalor and color—the "Western Addition," with its magnificent residences—the "Presidio," with its miles of sweeping tree-clad spaces—the "Mission," with its thousands of little houses.—*Gelett Burgess in Boston Transcript.*

#### THE LEGAL OWNERSHIP OF ARCHITECTURAL DRAWINGS.

A JOINT meeting of the Architectural Association Discussion Section and the Law Students' Debating Society was held March 28 in the Law Society's Hall, Chancery-lane, W. C., when an interesting discussion took place on the subject of "The Legal Ownership of Architectural Drawings," which *The Builder* reports as follows:

The discussion was opened by Mr. William Woodward, on behalf of the Discussion Section of the Association, who said that he might subdivide the subjects as follows, viz., (1) the Sentimental, (2) the Practical, (3) the Legal, (4) the Remedy. As to the sentimental view, we must differentiate between the architect of fifty years ago and the architect of to-day.

Fifty years ago the architect was permitted by his employer to occupy a far longer time in the preparation of his designs than he is now, and this resulted in a careful inking-in and finish of the drawings which would astonish some of the younger architects of to-day—not only inking-in and coloring, but perspective views and elaborate shading of full-size carved work and ornament—so that really and truly, apart from design, these drawings might be appropriately termed works of art. Therefore, to deprive the architect of these particular sheets of paper was an injury to his sense of right, and his sentimental views were considerably upset. He took the pride of an artist in the result of so many weeks and months of study, of the work of pencil and of brush. As an evidence of this just pride he even went so far as to put into frames what were really pictures possessing considerable artistic merit, apart altogether from design. As to the average architect of to-day, days were allotted to him in place of the weeks and months to his confrère of half a century back; he had frequently to be content with hastily-produced one-eighth-of-an-inch scale pencil drawings, which he thrust into the quantity surveyor's hands as soon as he possibly could; he scarcely ever inked-in these small-scale drawings; tracings were made from them to supply to the builder; the half-inch scale and full-size details followed on as soon as possible, all in pencil, and the photographer's art was called in to reproduce as many copies of these tracings, within an hour or so, as might be desired. So that, regarded as works of art, these drawings were as different as possible from those of fifty years ago, and probably the last wish of the up-to-date architect would be to produce them in court, and, except for other reasons, the sooner these drawings were put out of sight the better the architect would like it. They would, therefore, probably agree that, apart from other questions which naturally arose, the sentimental idea of retaining the drawings depended a good deal upon the amount of work and of finish which had been bestowed by the architect upon the particular sheets of drawing-paper under consideration at the time. The late Professor Kerr had dealt with this question of ownership of drawings in a broad, business-like way, and, no doubt, what it must all come to was that if we could not establish custom we must get what we want by contract. He assumed that when architects' drawings were referred to as regards "ownership," the contract drawings were meant, and he thought the late Alfred Waterhouse, appreciating this, made the tracings the contract drawings, and thus defeated the client as regards the retention of the original drawings in the event of dispute as to ownership.

As to the practical point of view, and the injury which might arise to architects unless the present state of the law was altered, he would quote a case which had recently come to his knowledge illustrating the desirability of some change in the law. About fifteen years ago a Roman Catholic church was built in Warwickshire, under the superintendence of an architect, who handed over the drawings to his employers at the finish of the work, but

whether compulsorily or voluntarily he (the speaker) did not know. Quite recently another church had been erected in another part of England from the very drawings left with the original employer, who handed them over to the new employer, who placed them in the hands of a builder to proceed with the work without the aid of an architect, only making such modifications as became desirable in the second church.

He (the speaker) built a house at Hampstead, and, most curious to relate, a gentleman, who wished to build a house and stables on the adjoining piece of land, took a fancy to his design; but, instead of coming to him, he found out the builder, went to him, and, saying that he supposed he had the drawings from which he built the house, asked him whether he would build him a similar house, thus, no doubt, thinking he would save the architect's charges. The builder had the drawings, but was honest enough to decline to have anything to do with the matter unless the gentleman employed an architect. He (the speaker) then received a visit from the employer, and ultimately built him a house and stables at a cost of over £12,000.

Another reason—it might be a selfish one—for the non-parting with the drawings was that it occasionally happened that additions and alterations had to be made to premises, and there were many employers who thought, very wrongly no doubt, that they could save money if they got rid of the architect and went direct to the builder with the drawings, who would thus see the nature of the construction, and be enabled to make the proposed alterations or additions without the aid of the architect. Another important point was that frequently questions arose years after the completion of the building, when it was absolutely essential, for his own defence, that the architect should be in possession of the original drawings, and, finally, it was perfectly clear to him that architect's drawings could be of very little value to an employer, unless he intended to use them in some way or other to the ultimate injury of the architect. All this might arise in the case of executed works, but the door was opened for greater mischief in the case of abandoned works. In these cases his employer could get the drawings, and having paid only half of the charges which he would have paid if the contemplated building had been completed, he could hand the drawings over to a builder, and so save 2½ per cent., or, at all events, he thought he would. But whether he did or not, the architect lost a job.

As to the law on the subject, the first case fought was the well-known one of *Ebdy v. McGowan*, and in this it was decided that upon payment of the balance of his charges, an architect must deliver up the plans, unless it had been stipulated that they were not to become the property of the employer, and, in his book on Building Contracts, Mr. Hudson gave a note on a case at Quebec, in which it was held that plans formed an essential part of the contract, and, in the absence of proof that they were the property of the architect, were deemed to be the property of the employer, and they could not be reclaimed by the architect. The court denied the existence of any general binding usage to the effect that the plans belonged to the architect and not to the employer. This case was apparently decided upon that of *Ebdy v. McGowan*, and apparently no case had been subsequently tried in this country except the important recent one of *Gibbon v. Pease*, which resulted in the defeat of the architect's contention, and, upon appeal, the same unfortunate decision was arrived at. A case somewhat bearing upon the subject was fought some years ago by a firm of quantity-surveyors. It was the *School Board for London v. Northcroft*, in which the Board had demanded from the surveyors the delivering up of their dimensions, abstracts, and bills of quantities for some work they had done for the Board. The surveyors declined to give these documents up, and they were supported in their contention by Mr. Justice A. L. Smith, who held that the dimensions, etc., asked for were the private property of the defendants. The ink, paper, and brains, he said, used in making the documents were all the defendant's, and "they are right in law in refusing to give them up." He should have thought that a similar train of argument to that used by Mr. Justice A. L. Smith would have been appropriate in the case of an architect's drawings as against the surveyor's dimensions. Perhaps lawyers had somewhat confused the issue by an interpretation placed upon the document issued by the Royal Institute of British Architects, and entitled "The Professional Practice as to the Charges of Architects." In clause 1, detailing the services covered by the commission of 5 per cent., it stated, *inter alia*, "the necessary general and detailed drawings and specifications" had to be provided by the architect, but that, of course, only meant that in the 5 per cent. was this provision

for the drawings, etc.; it certainly was never intended to mean that the drawings became the property of the employer.

As to the remedy, it seemed to him that the whole case lay in the fact that the employer did not really pay for the drawings at all when he had secured his building. He employed the architect, not to make drawings, but to erect a structure, and when that had been done the material which had produced the architect's work, composed of brain, paper, pencil, brush, etc., was no concern of his, and he should have no power to demand their delivery over to him. Many of the details of a building were made verbally and by rough sketches on the job itself, and these also it would be difficult to hand over to the employer. In France and in Germany it was the acknowledged custom that the architect retained the drawings, and, if the employer wished for copies, he might have them by paying for them a distinct extra fee. He knew one architect who inserted a clause in the specification that all drawings and documents, together with all copies of same by whomsoever received, were to be returned to the architect within fourteen days of the issue of the final certificate. If the law was not to be altered they must make the matter the subject of a special contract with the employers. They must make it clear that the original drawings are the property of the architect, and that copies would be supplied on the client paying the cost thereof, on condition that these copies were not used for any purpose other than that in connection with information which might be legitimately required after the work was finished, and that such drawings were not to be used for reproducing any structure from them or in any other way to the detriment of the architect who supplied the drawings. Architects might also provide for all drawings and specifications and all other documents supplied by them for the purposes of the building being delivered up to them at the end of the job, and this would include the builder, the clerk-of-works, sub-contractor, etc. If the law could not at present be altered they might ask the Council of the Institute to consider a revision of the scale of charges, and to insert in that scale, as the acknowledged custom of the profession, a paragraph to the effect which he had set forth. He was glad to see that one of the subjects for discussion at the forthcoming Congress of Architects in London was "The Architectural Copyright and the Ownership of Drawings," and no doubt the result of that discussion would be some improvement on the present condition of matters.

Mr. C. M. KNOWLES, of the Law Students' Debating Society, quoted from the Master of the Rolls in *Gibbon v. Pease*, that he found some difficulty in distinguishing the case from a contract to paint a picture or design a coat-of-arms, and he (the speaker) felt it was unreasonable to suppose that the ownership of the drawings should be in the hands of the architect and not the client. Mr. Woodward said that the drawings were of no value to the employer unless he intended to make use of them in some way injurious to the architect. That he emphatically traversed. It frequently happened that some sort of repair to a building was necessary—the drains, or the flues, for instance—and how was the owner to discover where the defects were without the drawings? That was sufficient to rebut the suggestion that the building owner had no use for the drawings. The client, on the other hand, might think that, if the drawings remained in the hands of the architect, someone might take a great fancy to the house and might ask the architect to build him one just like it, and the building owner might very well object to that—the drawings, remaining in the hands of the architect, might, in such a case, be used injuriously against the building owner. There was considerable point in what was said as to an architect's drawings being used again by the building owner or someone else after they passed out of the hands of the architect. It was a complicated question; but there was a distinct grievance from the architect's point of view, and it would be interesting for the architectural societies to bring up some test case, as it was possible that, by a process of injunction, an architect might find some remedy. There was no reason why a *prima facie* case might not be made against a building owner for using the drawings in the illegitimate manner suggested. As to the custom in the architectural profession, no judge could recognize it. To make a custom legal it was necessary, not only that it should be general, but also that it should be reasonable. In the matter under discussion were two decisions alleging that the custom was not reasonable, and therefore there was not much prospect of success for the contention of architects. The judges had considered the case on its merits, and had decided that the custom was not reasonable on the client's point of view. And there was a simple remedy for all this, *i.e.*, by contract. He did not

know why architects were not satisfied with the opportunity of embodying in their contract a distinct clause stating that the ownership of drawings was in the hands of the architect.

Mr. E. W. M. WONNACOTT, Chairman of the Discussion Section of the Association, expressed, on behalf of the Section, the appreciation of the members to the Society for the invitation to join in that debate. He hoped that it was the initiation of a new policy, which in the future, would be extended to the benefit both societies. The question of the ownership of drawings was intimately connected with the question of copyright, but the number of legal cases bearing on the former was small. In addition to the cases of *Ebdy v. McGowan* (1870) and *Gibbon v. Pease* (1904), there was the Westminster County Court case of *De Castro*, which, however, did not establish a precedent, and, in that case, the architect was called upon, six years after their preparation, to produce the drawings. The trouble which had arisen over the claim to the ownership of drawings was due to the fact that there was a misunderstanding of the architect's function. Architects contended that they were employed to erect a building, and when that was done the client had all he bargained for; the use of the plans was only incidental to work, and were the architect's instructions to workmen and explanations of his ideas. The fixed idea in the legal mind, however, was that the architect was a man who sold plans, and would not part with them when paid for them. The architect was employed to impress upon his work his own individuality—those little touches, which might be called his handwriting, by which he appealed to the emotions, and which, primarily, indicated that the architect was an artist, though that was the view that architects could not get lawyers to see. How his ideas were expressed to the workmen was no concern of the clients, and, really, plans were not essential to the erection of a building, nor was there any obligation to prepare them. Why should the architect deliver up his drawings? The sculptor did not deliver up his sketches, models, or even his full-size studies. In the case of *London School Board v. Northcroft*—in which the defendant won—the ultimate object of the quantity-surveyor, Mr. Northcroft, was to make a bill of quantities, and he was held to be right in refusing to give up the means by which he prepared his quantities. The ultimate object of the architect was to deliver to the building owner a completed building, and the materials with which he was enabled to do that should by analogy be his. The case of *Gibbon v. Pease* was not put fairly and clearly before the court, but the defendant gained his case on the question of quantities and other documents, and was actually awarded costs on this part of the case. It had been suggested that the remedy was by simple contract, but why should the architect be called upon to enter into a contract in regard to a matter which, by custom, he claimed as a right? If the drawings were given up, the architect's position was a hopeless one, for his designs might be carried out by someone else. He became a planning machine, deprived of those credentials of his professional ability. Drawings were often wanted for the purpose of sending to would-be clients so that evidence might be afforded of ability, and especially in important competitions. If evidence of custom had been called in the case of *Gibbon v. Pease* they would have been more satisfied even if the case had gone against them, but the learned judge simply ruled that there was no custom. As to the remedies, why should architects give up the whole principle they were contending for by making a contract in regard to the drawings—a contract which was unnecessary abroad? If the contract were entered into it would pave the way to discord, and by making the ownership of the drawings a special right the onus would be put on the architect to prove the right which was his by reason. As to special legislation, on the Continent architects had the law almost in a nutshell, and a decision like *Gibbon v. Pease* was regarded as absurd. In France, Belgium, Italy, Roumania, Austria, Spain, Switzerland, Hungary, Russia, Denmark, and Norway architects were protected. In France, the architect kept and had an absolute right to his drawings, but by an act of courtesy and the payment of extra fees, the client could have copies. He had not the slightest right to them except by special agreement. In Germany the client had the right to a copy of the drawings, but could not use them for future building operations. The only countries in which there was no legislation governing the subject were Great Britain and the United States, but there was a movement in the States in favor of legislation on Continental lines. As to the view that if the client was not allowed to have the drawings he could not know about the drains of his own house, there was a statutory deposit of plans as to drainage, as the judges in *Gibbon v. Pease* might have been told, and drawings for nearly all other purposes were useless to

the building owner. In conclusion, Mr. Wonnacott gave, as an instance of the law in France, a decision as to the reproduction of the Palais de l'Industrie of the 1855 Exhibition. It was held that the exclusive right to reproduce this monument and to publish the plans lay with the architect.

Mr. A. E. RIDDETT, a member of the Society, in supporting the views of architects, asked what was the contract which the building owner made with an architect. Did he contract for the plans or for the building which was to be erected, and of which the plans were but means? If there was nothing specially stated in the contract about the drawings, which he understood was generally the case, then he thought that the contract was for the building and not for the drawings. There were many analogous cases to that under consideration. In the erection of a derrick the scaffolding was not given up, nor did the tailor hand over his patterns. As to the case of Ebdy, where tenders had not been invited at all, he thought it was reasonable to hand over the plans to the building owner, as otherwise he got nothing at all for his money, but in the case of the completed building he thought that the plans ought not to be handed over, as the building was all the client contracted for. Even for purposes of reference it was more convenient for the plans to be kept by the architect.

Mr. FRANK DAPHNE, who acted for Mr. Pease in the case of *Gibbon v. Pease*, said the point was not whether it was more convenient for the architect or the building owner to have the plans, but it was a question of contract. He did not think the case of Ebdy had any bearing on the case of Pease; it was a question of contract between the parties. He used to think that the architect was a man who prepared plans, but he knew now that he was more than that—*i.e.*, that he was an artist; but in the case of Ebdy, the client bought and paid for plans, just as he might have paid for boots; the contract was to prepare plans, and the ordinary 5 per cent. rule of the Institute of Architects seemed to imply the preparation of plans, and but for that he should say that the ordinary contract between architect and client was to build a building and not to prepare plans. There was no doubt that the Institute rule mentioned the preparation of plans. If the contract contemplated the preparation of plans, those plans would be the property of the building owner; if it did not, the drawings should remain the property of the architect just as much as scaffold-poles remained the property of the builder of a house. He could not see how the means by which the ultimate end of the quantity-surveyor was achieved differed substantially from the means employed by the architect, and he ventured respectfully to differ from the decision of the Court of Appeal.

Mr. HART, for the Society, said that the sentimental arguments of Mr. Woodward might more euphemistically be described as selfish arguments. Architects seemed to fear that the unfortunate client had some sinister motive in asking for the plans, but surely it was hardly politic to impute such motives. There was no important principle involved; it was all a matter of contract. Why did not architects stipulate in their contracts that the plans should be their property? Had they the courage? Did they fear that to do so would mean some reduction of the 5 per cent.? That 5 per cent. had been fixed for something, and surely for something more than artistic touches. He suggested that there was something else, and that it was the plans. The short principle was what was meant by the contract, which was entered into between the building owner and the architect. Mr. Riddett had suggested that it was analogous to a number of examples he gave. As to the tailor's pattern, no one went to a tailor for anything but the clothes, and the pattern was of no use except for the purpose of making clothes for a particular person. As to a photograph, the person whose photograph was taken had an unanswerable right to the negative. The negative belonged to the person who ordered the photograph, and that was obviously fair, because it would prevent the duplication of a picture. When one ordered and paid for a picture one had a perfect right to it. The architect's plans fell within the Copyright Acts, but not, he thought, within the Artistic Copyright Acts. They came within the Literary Copyright Act, just as maps, etc., did, and there was a right to prevent the multiplication of them. If anyone, it was the building owner who had the right to object to his building being duplicated, and surely the architect need not complain if the earth was studded with his masterpieces. The whole difficulty seemed to be as to

who should bear the expense of making the tracing of the plans. In his opinion there was no valid ground for altering the law.

Mr. C. H. BRODIE, for the Association, said that two of the ablest lawyer-speakers had taken the architect's point of view, and the last speaker would do the same when he had studied the question. Mr. Hart said that when he employed a man to paint a picture he had a right to the picture. Who said he had not? But he had no right to the 100 sketches which were made in the production of the picture. There were great artist's sketches of priceless value throughout the galleries of Europe and America, and they were not the property of the owner of the picture which had been the outcome of those sketches. That case was analogous to the case of architects. There was only an implied contract, and what they arranged to do was to give a man a building. As to the photo. negative, the fact that the photographer had been compelled to hand over the negative did not affect the case, as there was no art in a negative. It was purely a mechanical piece of work. That was not the case with architects' designs. As to Mr. Riddett's contention that in the case of a building which was not carried out the building owner was entitled to the drawings, as otherwise he would get nothing for his 2½ per cent., what about the time and skill and experience of the architect? That was what he paid for. If a man went to a physician in Harley street he paid for advice, not medicine; the architect was paid in the same way, and paid badly. Unfortunately, there were dishonest men, and therefore dishonest builders, and it might be law, but it could not be sense, that a man could engage an architect for the erection of a house and then use the plans for erecting fifty more houses without further payment. The case was mentioned of the lawyer's draft being handed over, but the draft could not be of use in another case. ("Oh, yes it is!") Then he was sorry they had to hand over the draft. ("We keep copies.")

Mr. PLEADWELL, for the Society, said that there was no doubt that under statute the man who commissioned the architect was entitled to the production of the drawings. The fact that there might be duplication was certainly a grievance, but there was the suggested remedy of entering into a contract. As the law at present stood, he thought that the legal ownership of the architect's drawings belonged to the building owner.

Mr. HAMP, for the Association, said it would be quite unfair if they had to hand over to clients all the drawings they produced. A great deal of work was done in the preparation of drawings, and if the architect felt that the client could demand them, and later on get someone else to carry out the work, the architect would not devote the time, etc., to their preparation that he did now.

Mr. WOODWARD, in replying to the discussion, said he thought that the point as to the tailor's pattern was a good one. If a high-class tailor had to give up his patterns, what was to prevent a man getting his clothes made from them in the Bethnal Green Road at very much less cost? As to the charge of selfishness, he was selfish; if a man tried to take advantage of him he did what he could to protect himself. He had never been asked by the client for a copy of his drawings. Architects were not in favor of the repetition of similar designs; they desired to get originality in all the work they did. The rough sketches an architect did not much care about it, but he felt that the finished drawings, if handed over to the building owner, might be misused.

The Chairman said it had given the members of the Society great pleasure to have the members of the Association with them, and he hoped it was not the last debate they would have together. He then asked them to vote on the following motion—*i.e.*, "That the legal ownership of architect's drawings should be in the architects."

There voted in favor of the proposition 27, and 19 against.

## ILLUSTRATIONS

MINOR CHATEAU:—PLATES 15-22.

**I**N Normandy there are several farms or "*manoirs*" of the Renaissance period which well repay a visit. The Ferme de Turpes, with its loggia and projecting wings, has inspired the design of several country houses, and is too well known to illustrate. The Manoir d'Ango, near Varengeville, is

more pretentious in its design than the slate and half-timber construction of the *ferme* above mentioned. The *ferme* is built on a U-shaped plan, while the *manoir* buildings inclose a central courtyard, with a circular pigeon-house near the lower end. This type of plan was influenced by the considerations of protection and concentration, but to our modern ideas the outlook on a stable courtyard is neither sanitary, nor desirable as an aspect for a residence. The design and carefully studied detail of that portion devoted to the residence has earned it a place among the "Historical Monuments" of France. The use of stone and black flint in its construction and the charm of its detail make it one of the most interesting of the smaller buildings of this period. The mantelpiece is unique, the upper part containing a carefully worked-out perspective effect which reveals skill of the carver rather than good taste of the designer.

In the accompanying illustrations the gradual change from the U-shaped plan to a central body with slightly projecting wings is clearly shown.

The Château de Mesnières appears to have been built originally around a central court. One side of this was broken through when the alterations in the Middle Renaissance were made, opening the courtyard to the outer air and providing a large terrace.

In the Château de Baclair this same plan is traceable, though the towers on the corners are square. As in most of the châteaux built during this period, namely the Middle Renaissance, the steep roofs and chimneys are the principal elements of their picturesque character.

The Château de Granville is on this same plan, the wings, however, being detached as if stretched to a breaking point, forming a group of three buildings. One of the detached wings can be seen on the left of the illustration, and the remaining pavilion from which it was withdrawn, on the corner.

A rear view of Crasville-La-Roquafort shows much the same type of pavilion. At Mesnil-Guillaume is a very small late-Renaissance château, preserving all of the features of the Gothic fortress. The only clue to its date is in the bracketed corners, a feature running through the period of the Henris. It is difficult to assign dates or to place these buildings in proper chronological order, as they were built slowly, while the details of this period became rapidly more and more formal.

The plan of these small buildings was doubtless dependent upon the protection afforded by their vicinity to or remoteness from central fortified points, the more remote buildings demanding greater protection against marauders.

The mass of the buildings at Bagnoles-les-Eaux is more compact, but the end wings and towers are roofed independently. The bell-shaped roof used here is noticeable in the three châteaux mentioned above, and apparently paved the way for the Mansard roofs of the later buildings.

The Châteaux of Ormesson and Gournay are similar in their masses, the end pavilions of Ormesson being supported on *trompes*, more interesting structurally than artistically.

The Château de Champs falls *en règle* and marks a type of building with which we are all familiar—dignified and refined, but very conventional. W. T. P.

ALMSHOUSE FOR SCRANTON POOR-DISTRICT, CLARK'S SUMMIT, PA.  
MR. E. H. DAVIS, ARCHITECT, SCRANTON, PA.

TOWN-HALL, LENOX, MASS. MESSRS. HARDING & SEAVER, ARCHITECTS, PITTSFIELD, MASS.

HOUSE OF H. G. TREVOR, ESQ., MADISON AVENUE AND FIFTY-SECOND STREET, NEW YORK, N. Y. MR. A. N. ALLEN, ARCHITECT, NEW YORK, N. Y.

HOUSE OF MRS. FOSTER, CLINTON, MASS. MR. H. D. CARTER, ARCHITECT, CLINTON, MASS.

#### Additional Illustrations in the International Edition.

STUDIES FOR A GARDEN POOL. MR. E. ELDON DEANE, ARCHITECT, NEW YORK, N. Y.

HOUSE OF BAYARD THAYER, ESQ., LANCASTER, MASS. MR. GUY LOWELL, ARCHITECT, BOSTON, MASS.

LAWN FRONT OF THE SAME.

GATE TO FORE-COURT OF THE SAME.

## NOTES AND CLIPPINGS

COMPIÈGNE'S ROMAN THEATER.—Not long ago a Roman theater was discovered by excavators on the edge of the forest of Compiègne. Now that the remains have been laid bare I am told that they are almost perfect. The inhabitants of the district hope that their theater will become as well known as the famous one at Orange. Compiègne is so near Paris that there is no reason why it should not become even better known. It has been decided to have a fête and inaugural performance on the first Sunday in July, and M. Claretie has promised to lend the services of the Comédie Française.—*London Standard*.

TEMPLE OF ONIAS DISCOVERED.—That he has discovered, beyond a doubt, the remains of the Temple of Onias, the fugitive nephew of the high-priest of Jerusalem, at the Mound of the Jew, the famous Tel-el-Yahoodieh, eighteen miles north of Cairo, and solved the riddle of the Hyksos, thus making the most important addition of recent years to the results of Egyptian research, is the news Professor W. M. F. Petrie, of the newly-formed Egyptian Research Account, sent in a private dispatch received lately by his friend, Rev. Dr. William Copley Winslow of Boston. Professor Petrie, who is one of the foremost Egyptologists of the world to-day, dates his letter to Dr. Winslow at Tel-el-Yahoodieh. He says, in part: "Our discovery of the actual town and temple-site of Onias is beyond a doubt. It is a very clear case of all the known requirements being satisfied as to date, place, conditions, and building. Besides the temple-site and city," continues Petrie in his communication, "we have a remarkable historical subject here in clearing the Hyksos cemetery and the great fort of the Hyksos. The tombs contain scarabs of the Hyksos age, and we have got at this place scarabs of Khyan, Apepi II., and Skhanra, three foreign kings who were probably all Hyksos. There can be no doubt of the importance of this place under the Hyksos kings. Now, on examining the great fortifications of this town, I find that it is curved and irregular in outline, unlike an Egyptian plan; and it was an immense earthwork with a sloping face and not gateway, but a very sloping causeway leading up over the earth bank. Evidently the builders did not know of brick and stonework; all their fighting was done with bows and arrows, and they could not build a gateway. But a generation or two later they remodeled all their fortifications and put an immense stone wall around all their earthwork, having learned such defense from the Egyptians." Referring to the Hyksos puzzle, Professor Petrie continues: "The above agrees exactly with what we might expect to find done by the Hyksos. We have at last touched their work in the Delta, and learned that they were archers who used great earth defenses, like the Turkomans in later times. More than this, I have found the Temple of Retebeh. That town goes back before the twelfth dynasty, and has child sacrifices buried under its first fortifications. Then Rameses II. built a temple of which we have half the front and other inscriptions. Rameses III. rebuilt the entire walls of the town. One inscription makes it very probable that this was the Rameses of Exodus i., 11, and the position leaves no other site possible for that city."—*Boston Transcript*.

A NEW ELECTRIC FOUNTAIN FOR VIENNA.—Londoners, accustomed to the tame display in dirty, dingy Trafalgar Square, will hear with envy of what is to be done in the fountain line in Vienna. It will be the largest in the world, and will be built on the Schwarzenbergplatz, the hub of the city. The illuminating apparatus will give a light equal to a fabulous number of candles, and by means of immense reflectors seventy variations in light effects will be produced every seventeen seconds.—*The Sketch*.

A NEW WATERPROOF CEMENT.—A waterproof cement has been patented in Germany. A mixture of vegetable wax and caustic lime, in boiling water, is added to unground Portland-cement clinker, and all ground together. The inventor makes the claim that one half-inch coating of this cement placed on a brick wall will render it absolutely waterproof. The formula is given as follows: To each 200 cwt. of cement clinker is added a mixture of three-fourths pound of Japan vegetable or berry wax, and one ounce of caustic lime which has been dissolved in fourteen pints of boiling water. These ingredients are thoroughly mixed, and when cooled are dried and ground very fine with cement clinker.—*Boston Transcript*.

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THUS far, curiously little in the way of fairly cool-headed observation of the real effect of the earthquake on the San Francisco steel-frame buildings has found its way into print. Almost the only thing of this kind we have seen is the account given by Mr. Holman, editor of the *Sacramento Union*, who happened to be in San Francisco and awake at the time the shock developed. He was in the Pacific Union Club, "a building quite new and entirely modern, with steel frame and heavy outer walls of stone." He says: "The noise was terrific, but whether from the earth itself or from the creaking of the steel frame of the building and the grinding of the stones in the outer walls, I cannot say." It is hardly probable that contemporaneous observation can come any closer to real fact than this, and we must trust to such deductions as can be drawn from the surviving relics where traces of earthquake strain have been obscured or obliterated by the later action of fire or dynamite. It is unfortunate, for it is precisely the effect of earthquake on the skin of the steel-frame building that architects were most desirous of observing. [As we go to press, the mail brings us, too late for use this week, a very interesting technical analysis covering the points in question.] Few thoughtful persons could have feared the actual overturning of one of these buildings by earthquake shock, while very many did expect that, owing to concussion and vibration, large sections, perhaps all, of the masonry skin of the upper stories would be whipped out of place—just as were actually the walls of the tower of San Francisco's City-hall—leaving the steel frame upright and supporting an essentially uninjured dome. Among the foolish things that have been put before the public is the boast of "the president of one of the large construction companies," who is alleged to have proclaimed the perfect safety of the steel-frame system

since, "even if one-third of the foundation of such a building were shaken away by an earthquake, the stability of the building would be unaffected." Yes, but suppose the fault declared by the earthquake ran under the entire building and two-thirds of the supporting area sank three or four feet, how stable would the building be then?

IF no fire had occurred following the earthquake, we believe each steel-frame building in the city could properly have hung out an appeal reading: "Lost, during the earthquake, a factor-of-safety. Those who can prove it was neither lost nor injured will be properly rewarded." In face of the greater calamity caused by the fire, and because of fear that investors may hesitate to aid in the rebuilding of the city, San Franciscans seem now inclined to assert that the earthquake shock was not, after all, much of an affair. But unfortunately for them the seismographic records prove that it was an unusually serious one. This being so, it is impossible to feel that the factor-of-safety is as stalwart as before, and as its actual condition of decrepitude cannot be known, it would be the part of wisdom on the part of the authorities to limit the future loadings of all buildings in the city to some assumed fraction of their former conceded safe capacity, at least until thorough examination had established beyond question their entire escape from any weakening loss. There is some little risk in accepting the belief that the steel frame has proved its pre-eminency. If the shock was severe enough to really test the modern type of building, how comes it that so many buildings of the old, inferior construction also survived the shock, as the photographs now coming to hand show that they did? Also, it must be remembered that this shock took place in mild weather, and that if the temperature had been fifty or sixty degrees lower, it is probable that more of the metal-work would have failed to withstand the sudden strain.

ONE trivial but useful lesson can be drawn from this disaster. It is evident from the photographic views that much damage was done by the shaking down of improperly secured cornices and chimneys, particularly the latter. While the way in which chimneys are built for the average run of buildings is sufficiently indefensible, the manner in which they are neglected by the owners afterwards is nothing short of criminal, and it needs only a stiff breeze, still less a tornado or an earthquake, to bring down a few such chimneys in any city of the land. Whatever else reinforced concrete may be good for, it is surely admirably adapted for the topping-out of chimneys, and a section of the building laws compelling chimneys to be so topped-out would prevent many an accident.

THE architects of California are now said to be agitated and irritated because Mayor Schmitz's appeal for architects and draughtsmen has been acted on so promptly by well intending volunteers in the East. The State Board of Architecture now declares that there are

in the State 351 "certificated architects" and 1,000 draughtsmen. But what if there are? It is not possible for so small a force, however able—and the younger architects on the Pacific coast are distinctly able and have succeeded in working out what approximates very nearly to a "school of architecture"—to cope satisfactorily with the present situation. We did not hear before the disaster that these architects and draughtsmen were "sitting on their thumbs" and crying because they had no work to do. No, we heard of them as exceptionally busy—as almost all the building fraternity everywhere is in these present days—and if they are busy with the regular run of work, how can they, unaided, do justice to the thousands of owners who, each, must have their particular job handled with unfaltering expedition and precision? A very little ciphering would show how unreasonable is the alleged attitude of the California architects. It should be borne in mind by them, too, that it is the common desire and expectation, not only of their fellow-citizens, but of the country, the entire world in fact, that San Francisco shall be rebuilt as "a city beautiful." Now, beautiful architecture cannot be turned out at the desirable speed by 350 architects in such odd moments as they can spare in days already occupied with their ordinary work.

**T**HERE is something very incongruous and not a little that is very disheartening in the attempt that will doubtless be made to make the new San Francisco a "city beautiful." Time—speed—is of the essence of the contract, and one shudders before a mental picture of what is only too likely to be the result when an attempt is made to build with a rush an imperishable city of steel-framed and reinforced-concrete buildings, to the architectural treatment of hardly one of which the all-compelling exigences of the case have allowed proper attention to be given. For this reason, if for no other, the suggestion made by Mr. Fitzpatrick in our last issue, that building should proceed upon alternate squares, has its useful side, since more time for the needed study of the designs could in this way be secured.

**B**UT while San Franciscans have before them a chance to create a very noble city architecturally, theirs is not the only place where an entire city is just now being created as a single undertaking. San Francisco lies in latitude 38°, and far to the north of it, also on the Pacific coast, in latitude 54°—almost as far north, that is, as Edinburgh and St. Petersburg, while further north than any large city on our eastern seaboard—the new trans-continental railroad, the Grand Trunk Pacific, is to build at Prince Rupert, near the mouth of the Skeena river, a terminal city which shall compete with Seattle, Tacoma and Vancouver for rank next to San Francisco. Besides this, which may be called a "general proposition," there is a particular one involved in the upbuilding of the town of Gary, at the lower end of Lake Michigan, where the United States Steel Corporation spent ten and one-half million dollars last year and proposes to spend a similar sum during each of the next six years in erecting not only a model steel-making plant, but a model industrial city, perfect in municipal and hygienic equipment.

**I**F the newspapers may be believed, Chicago engineers and constructors have at length come upon something in the way of foundation-work that they cannot do. Although the new court-house for Cook County was to be a heavier building than its predecessor, the twin half of the City-hall-Court-house block, and so required deeper excavation and heavier foundation-work, those responsible for the undertaking conceived that the work could be carried out without injury to the City-hall half of the structure. This belief proves to have as untrustworthy a foundation as the City-hall itself, for that building is undergoing such distortion, owing to the unequal settling that is going on, that it may actually be abandoned by its occupants by the time this issue leaves the press.

**I**T is with no inconsiderable personal satisfaction that the writer records the fact that the House Committee on Coinage, Weights and Measures has voted against reporting favorably the Littauer bill, that would force the adoption of the metric system upon all who have dealings with the Government. We wonder whether the faddists who seek to "reform" the English systems of spelling and weights and measures realize how vast a rape they are seeking to bring about. It is commonly conceded that a man's education properly represents the capitalization of the money expended in its acquirement, and those who have a fancy for figures may perhaps be able to figure out the "impairment of capital" that would be involved in making nugatory the time and money spent by the present generation of English-speaking peoples in learning to spell and cipher in the time-hallowed, if unscientific, ways.

**O**RDINARILY, architects, in spite of the fact that their own private interests have been seriously affected by them, have been indisposed to take any very active part in resisting the unreasonable and arbitrary acts of the different trade-unions of building mechanics. This makes all the more noteworthy the recent action of the Cincinnati Chapter A. I. A., who, at their last monthly meeting, voted to eschew for the present the use of all brick arches in their buildings. The action, it appears, was occasioned by the declaration of the Bricklayers' National Union, that the Union would "strike" any building in which arch-bricks had been cut by machinery. Now, as the cost of hand-rubbed brick arches is about 75 per cent. greater than where the bricks are shaped by machine grinding, it is obvious that it is worth while for owners, builders and architects to resist the dictum of those who live by organizing strikes.

**I**T seems as if only the other day, although it is actually a score of years, that we were called on to chronicle the death of Detlef Lienau who, though of Danish birth, yet became an American architect in 1850, and now we have to make a similar record for his son, J. August Lienau, who, in his fifty-third year, died in New York last week. Like his father, the younger Lienau was occupied with private practice, most of his buildings we believe being dwelling houses erected in and near the city of New York.

## THE LITERATURE OF REINFORCED CONCRETE.

THE increasing use of reinforced concrete as a structural material has led to the production of many books treating of its properties and applications.

The first to be published written in English (omitting the brief analysis of reinforced-concrete beams in the late Prof. J. B. Johnson's "Materials of Construction") was "Reinforced Concrete Construction,"<sup>1</sup> by L. J. Mensch. The author is a practical designer of and a contractor for this method of construction, and he writes as an advocate, first, of reinforced concrete as a superior substitute for other structural materials, and, second, of certain forms or systems of reinforcement. But, while largely an argument for the practices and opinions of the author, the book contains many suggestions for the constructor.

The next book in order of publication was "Reinforced Concrete,"<sup>2</sup> by A. W. Buel and C. S. Hill. This work, of which a revised edition will soon appear, is a general treatise on its subject. It aims to give equal prominence to computation, design and methods of construction. Part I. states and discusses formulas and methods of calculation for beams, columns, walls, arches, conduits and tanks, and sets down those facts relating to the properties of concrete and steel which are of most use to the designer. Part II. describes and illustrates forms and types of structures that have been built of reinforced concrete. Part III. describes various forms of reinforcement and the methods of construction employed in foundation-work, bridges, buildings, conduits and tanks.

To the general reader Part II. will probably prove the most interesting part of the book. It describes perhaps two hundred reinforced-concrete structures: foundations, piles, floors, columns, walls, roofs, sewers, aqueducts, tanks, bins, arches, dams, chimneys. About two hundred drawings illustrate this portion of the text, and these are fully dimensioned. The structures shown are not critically discussed, the idea being to place actual structural details before the reader in such variety and number that he may be practically sure of finding something about any particular detail in which he is interested and may see how it has been worked out by other designers.

The hundred pages of Part III. are intended principally for the contractor. They tell briefly of the quantities and composition of concrete, describe various kinds of reinforcement and illustrate forms and methods of concreting for foundations, buildings, bridges, tanks, reservoirs and conduits. This part has a final chapter on methods of facing and finishing exposed concrete surfaces.

"Reinforced Concrete,"<sup>3</sup> by Charles F. Marsh, was first published in England. Like the American work just reviewed, it is an attempt to cover the whole field of reinforced concrete—computation, design and construction. The author has, however, derived his information chiefly from the practice of Continental Europe; in fact, comparatively little of the book, aside from the author's deductions, is of English origin. This is doubtless due to the fact that the British building laws and ordinances are or were such as almost to prohibit this form of construction. The book is divided into seven parts. Part I. reviews the subject in general and discusses the advantages and disadvantages of reinforced concrete. The ninety pages of Part II. are devoted entirely to descriptions and illustrations of systems of reinforcement. Some fifty systems are considered, and the reader who desires to see the versatility of invention in this particular will find this part an interesting study. Part III. treats of materials and their combination and deals entirely with European practice. The sixty pages of Part IV. are devoted to forms, falseworks, methods of concreting, forms of reinforcement, and the facing and finishing of surfaces. One of the most suggestive sections of this part deals with the molding of members before putting them in place. Part V. presents the data resulting from the experimental researches of the European experts and the constants of strength, elasticity, adhesion, etc., recommended by the author for use in computation. Part VI. discusses methods of calculation. The author presents first his own analyses and formulas and follows with those of Hennebique, Ritter, Considère, Christophe and others. It is for this part and for Part V. on tests and Part II. on systems of reinforcement that the book is to be chiefly

commended. In Part VII there are assembled a large and rather miscellaneous list of descriptions and illustrations of reinforced-concrete structures.

Next in order of publication come two American books, whose similarity of scope makes it most convenient to consider them together. These are "Concrete, Plain and Reinforced,"<sup>4</sup> by F. W. Taylor and Sanford E. Thompson, and "Cements and Concrete,"<sup>5</sup> by L. C. Sabin. In each of these the consideration of reinforced concrete is an incidental feature of a general treatise on cement, mortar and concrete. Briefly characterized, the latter is particularly strong in its discussion of cement-testing and its presentation of original results of tests of cements, mortar and concrete, while the former is a thorough and generally excellent work on the making and practical handling of concrete. Most of the rules laid down in these books for the mixing, handling and placing of concrete are quite pertinent to work in reinforced concrete and are presented with far more thoroughness than in any of the books dealing especially with that material. The need for a strong and reliable concrete is so imperative in reinforced-concrete construction that this feature makes the books in question of particularly great value to the constructor. Both books begin by describing and classifying the various hydraulic cements, and contain instructions for testing, results of tests, directions for choosing sand, and aggregates and for proportioning mixtures, and directions for mixing and placing concrete in building-work, piers, dams, retaining-walls, arches and other structures.

In the next book, "Concrete-Steel,"<sup>6</sup> by W. Noble Twelvetrees, a well-known English structural engineer, no attempt is made to cover the subject of reinforced concrete and its application to construction. The work is rather a discussion of fundamental principles. Beginning with a statement of the physical properties of concrete and of steel and of concrete and steel in combination, the author then takes up the theory of reinforced concrete and gives rules for correct design and calculation of strength and practical examples of the chief types of members employed in construction. His presentation of the subject is excellent in all cases; but it is unfortunate that many of the data accepted by him are matters in dispute or have been discredited by more recent investigations.

"A Handbook on Reinforced Concrete,"<sup>7</sup> by F. D. Warren, is the only book on this subject which has so far appeared in 1906. Part I. is introductory and contains references to provisions for securing good construction. Part II. has sixty-seven pages devoted to tests of beams, floors and roofs; which tests, according to the author, justify the use of certain constants and coefficients used in his tables. Part III. contains tables giving safe loads, bending moments, deflection under load, etc., for beams, floors and columns, and also the comparative cost of reinforced concrete, cast iron, steel and timber construction. Part IV. gives similar information for roof-trusses up to 125 feet span. The idea of making up the publication in handbook form is a good one; it is all the more to be regretted that the author is, in the reviewer's opinion, frequently in error in his assumptions and his reasoning. The book is therefore one which it would be unsafe to put in the hands of the inexpert.

In addition to these seven more or less complete and general works, there are others which take up special phases of reinforced-concrete construction. First is Prof. William Cain's little book on "Concrete-Steel Arches,"<sup>8</sup> which is a discussion of the analytical and graphical calculation of arches. Next comes Mr. Leon S. Mossieff's translation of Considère's papers and their compilation in a book entitled "Experimental Researches on Reinforced Concrete."<sup>9</sup> The subjects treated in these papers are: Reinforced concrete in bending; the deformation and testing of reinforced-concrete beams; effects of changes of volume of concrete; tensile and compressive resistance of reinforced concrete; resistance of concrete to shearing and sliding; effects of cracks, and compressive resistance of hooped and reinforced concrete. These books of Cain's and Considère's are essentially books for the computer and designer.

<sup>1</sup>"A Treatise on Concrete, Plain and Reinforced," by F. W. Taylor and Sanford E. Thompson. New York: John Wiley & Sons. London: Chapman & Hall, Limited. Price, \$5.

<sup>2</sup>"Cement and Concrete," by L. C. Sabin. New York: McGraw Publishing Company. Price, \$5.

<sup>3</sup>"Concrete-Steel," by W. Noble Twelvetrees. London: Whitaker & Co. New York: The Macmillan Co. Price, \$1.90.

<sup>4</sup>"A Handbook on Reinforced Concrete for Architects, Engineers and Contractors," by F. D. Warren. New York: D. Van Nostrand Co. Price, \$2.50.

<sup>5</sup>"Concrete Steel Arches," by Prof. Wm. Cain. New York: D. Van Nostrand Co.

<sup>6</sup>"Experimental Researches on Reinforced Concrete," by Armand Considère. Translated and arranged by Leon S. Mossieff. New York: The McGraw Publishing Co. Price, \$2.

<sup>1</sup>"Reinforced Concrete Construction," by L. J. Mensch. Chicago: William Seafert. Price, \$2.

<sup>2</sup>"Reinforced Concrete." Part I.—Methods of Construction, by A. W. Buel. Part II.—Representative Structures; Part III.—Methods of Construction, by C. S. Hill. New York: The Engineering News Publishing Co. Price, \$5.

<sup>3</sup>"Reinforced Concrete," by Charles F. Marsh. New York: D. Van Nostrand Co. Price, \$7.

The constructor will find his needs specially considered in Mr. H. P. Gillette's "*Handbook of Cost Data*,"<sup>10</sup> some 140 pages of which useful work are devoted to records of costs of materials, forms, mixing, handling, depositing and finishing.

The highest and earliest development of reinforced-concrete work occurred in France and Germany, so that the foreign literature of the subject should not be overlooked. Probably the best general treatise is "*Le Béton Armé*,"<sup>11</sup> by Paul Christophe. This book covers computation, design and construction. Part I. discusses general principles and systems of construction. Part II. describes and illustrates the application of reinforced concrete to buildings, bridges, reservoirs, etc. Part III. has to do with the execution of work in this material. Part IV. discusses the theory and methods of calculation. Part V. treats of the advantages and disadvantages of reinforced concrete as a structural material.

#### THE LIGHTING OF TOILET-ROOMS.

"What a happy day it will be \* \* \* \* when light, the revealer, shall be made to shine into every corner to shame dirt and filth away."

IT is well known that great diversity of opinion exists among architects and sanitary engineers respecting the important question whether natural light is a necessity for the lighting of toilet-rooms and water-closet compartments. Although windows to the outer air are usually provided in designing dwellings, there is no uniformity in arranging such direct communication for the toilet-rooms in large office-buildings and institutional structures.

By reason of the public spirit of the Municipal Museum of Chicago, there have been available for ready comparison twelve of the designs recently entered in competition for the new building to serve the Cook County courts and offices. The proposed structure is of monumental character and will, in general, follow the established lines of steel-frame office-buildings, although its cost will probably exceed \$3,500,000. A detailed examination of the locations of toilet-rooms in these plans has shown that about 60% of the total number are provided with openings to the street or to large courts, and that the remaining 40% depend for their lighting entirely upon artificial means. Only one architect of the twelve has adhered consistently to the principle of immediate communication with the outer air, although two others have submitted designs in which only a proportionally small number of the toilet-rooms are interior ones. Most of the other designs show an intention to provide the public toilets with outer windows, but to feel satisfied with interior locations and artificial lighting for the compartments which are for private use only. In one scheme a single floor contains fourteen interior toilet-rooms, none of which have any windows.

While it is doubtless true that the obstacles encountered in attempting to devise such a location of the toilet-rooms as will afford opportunity for windows are in such a building very much greater than similar obstacles in private dwellings, it still appears that the lack of agreement on this point among able designers is mainly due to a lack of appreciation of its sanitary importance.

In the requirements imposed by various cities which provide for the lighting of water-closet compartments through the operation of regulations and ordinances, we find a notable lack of uniformity. Indeed, it appears that where the phrase "light and ventilation" is used its import has, in the minds of the framers of these regulations, very little reference to the adequate lighting of toilet-compartments.

The Municipal Code of Chicago, adopted March 23, 1905, reads as follows:

"Section 1719. Water-Closet and Urinal Compartment Ventilation.—Water-closets and urinals shall not be installed in an unventilated room or compartment. In every case the room or compartment shall be open to the outer air or be ventilated by means of an air duct or shaft, or be mechanically ventilated. \* \* \*

"Section 1722. Light and Ventilation.—All urinals, bath, or water-closet compartments hereafter constructed in any building shall be lighted and ventilated as hereinafter provided for. \* \* \* All such compartments shall be adequately lighted by either natural or artificial light."

"Section 1724. Window-Area in Toilet-Compartments.—In every building hereafter constructed every such compartment, where there is not more than one story under ground, shall have

a window not less than one foot wide and of an area of at least four square feet for a floor-area of 45 square feet or less, opening directly into the outer air, or special light-and-air shaft, into which no other rooms or compartments other than toilet-compartments are ventilated. For upward of forty-five square feet of floor-area there shall be a window-area of at least one-tenth of the floor-area. The windows in all cases are to be arranged so as to admit their being opened at least one-half their height. The urinal, bath, or water-closet compartments on the top floor of any building may be lighted and ventilated by means of a skylight and ventilator. The area of the skylight shall conform to the above specified areas for windows."

The Regulations of the Board of Health of Philadelphia, which took effect Sept. 1, 1904, are as follows:

"Rule 88. Water-closets shall not be located in the sleeping-apartments of any building, nor in any room or apartment which has not direct communication with the external air either by a window or air-shaft having an area to the open air of at least four (4) square feet."

"Rule 91. \* \* \* The outside partition [of water-closet apartments] must include a window opening to the outer air, to the lot whereon the building is situated or on the street; or it shall be ventilated by an air-shaft opening to the outer air having an area of at least four (4) square feet. Where there is more than one water-closet apartment having an opening into an air-shaft the said air-shaft shall have an area equal to four (4) square feet of area for each water-closet apartment."

The Plumbing Regulations of the District of Columbia prescribe:

"Section 112. No person shall locate, or cause to be located any water-closet in any sleeping-room, apartment, or vault which is not in direct communication with the external air or a vertical air-shaft by means of a window or air-space having an area of at least four (4) square feet for the admission of light and fresh air.

"Indirect communication of a water-closet apartment with the outer air will be allowed only through a vertical air-shaft, which shall have, if over two stories in height, a horizontal cross section of not less than 24 square feet. If for two stories only, this section may be reduced to 15 square feet. The least horizontal dimensions of such an air-shaft shall be three feet, and each such shaft shall be either open at the top or extend above the roof and be there provided with side openings fitted with movable sash, having a total area at least equal to the cross section of the shaft."

Regulations of the Bureau of Buildings of the City of New York:

[Paragraph.] "120. In all buildings the outside partition of such [water-closet] apartment must extend to the ceiling or be independently ceiled over, and these partitions must be air-tight. The outside partitions must include a window opening to outer air on the lot whereon the building is situated, or some other approved means of ventilation must be provided. When necessary to properly light such apartments, the upper part of the partition must be made of glass. The interior partitions of such apartments must be dwarfed partitions."

Plumbing Code of Rochester, N. Y., April 1, 1903:

"Section 53. A water-closet shall not be located in a sleeping-room or pantry, or in any room in which provisions are stored, nor shall such a fixture be placed in any room that is not well lighted and in direct communication with the outer air.

"The amount of light and ventilation required in water-closet room is as follows:

#### "Dwellings.

"Section 54. Light and ventilation shall be furnished by a window of at least three (3) square feet area, opening to the outer air; or, light may be furnished from another room by means of a tight window of at least three (3) square feet area and the ventilation furnished by means of a ventilating stack or pipe of at least twenty-eight (28) square inches area in cross section connected to a chimney-flue above the highest opening or run through the roof and properly capped.

#### "Factories, Schools, Hospitals, Stores, Etc.

"Section 55. The water-closet room in factories, stores, etc., shall be tightly partitioned off from other rooms. Where there are not more than three water-closets in one closet room, light and ventilation may be furnished as provided in Section 54, except that at least twenty-eight (28) square inches area in cross section shall be allowed in the ventilating stack for each closet.

"Where there are more than three water-closets in a closet room, light and ventilation shall be furnished by a window, or

<sup>10</sup>"Handbook of Cost Data for Contractors and Engineers," by Halbert P. Gillette. New York. Myron C. Clark Publishing. Co. Price, \$4.

<sup>11</sup>"Le Béton Armé et ses Applications," by Paul Christophe. Paris: Ch. Beranger. Price, \$7.

windows, of at least one (1) square foot for each water-closet opening to the outer air or into a ventilating shaft of at least nine (9) square feet area in cross section; or, light may be furnished from another room by a tight window of at least one (1) square foot area for each water-closet, and ventilation by a ventilating shaft in which at least twenty-eight (28) square inches area in cross section are allowed for each water-closet."

The Building Ordinances of the City of Cleveland, adopted June 20, 1904, read as follows: Title XXXI.:

"Section 11. Windows in Water-Closet Compartments and Bath-Rooms.—In every building hereafter erected the total window or skylight area in every water-closet compartment or bath-room shall not be less than three (3) square feet, and no such window or skylight shall be less than (1) foot in width, measured between stop beads.

"When any water-closet compartment, bath or toilet-room contains more than three (3) plumbing fixtures, either a water-closet, urinal, slop-sink, bath-tub, Turkish-slab or washstand, the window or skylight area given above shall be increased one (1) square foot for each additional fixture in excess of three (3) and when a skylight is provided it shall contain an automatic ventilator or ventilators of an area of at least twenty-eight (28) square inches for each fixture."

If it is conceded for the sake of argument, that an interior toilet-room may be as well ventilated as an exterior one, the only remaining question to be discussed is whether artificial lighting has the same sanitary efficiency as natural lighting.

If we examine first the scientific aspect of the case, our inquiry takes the form as to the effect of natural light, either direct or diffused, upon the pathogenic organisms which are especially likely to be present in rooms containing plumbing fixtures. Fortunately there are available a number of indisputable statements upon this point.

That eminent authority, Surgeon General George M. Sternberg, considering the influence of physical conditions upon the development of bacteria, after discussing the work of various observers, beginning with Downs and Blunt, who first (1877) called attention to the fact that light had an injurious effect upon bacteria, and noting the investigations of Strauss, Arloing, Roux, Momont and others, writes: "Koch states that the tubercle bacillus is killed by the action of direct sunlight in a time varying from a few minutes to several hours, depending upon the thickness of the layer [of substance] exposed. Diffused daylight also has the same effect although a considerably longer time of exposure is required." His summation is: "We may conclude, with Duclaux, that sunlight is one of the most potent and one of the cheapest agents for the destruction of pathogenic bacteria, and that its use for this purpose is to be remembered in making practical hygienic recommendations."

Professor George Newman, M. D., F. R. S., demonstrator of bacteriology in King's College, London, in his book "Bacteria" (1900), stating the influence of external conditions on the growth of bacteria, writes: "Light acts as an inhibitory or even germicidal agent." After referring to the protracted experiments of Tyndall, Duclaux, etc., he concludes: "A large number of experimenters on the Continent and in England have worked at this fascinating subject since 1877, and though many of their results appear contradictory, we may be satisfied in adopting the following conclusions respecting the matter:

"(1) Sunlight has a deleterious effect upon bacteria, and to a less extent on their spores.

"(2) This inimical effect can be produced by light irrespectively of rise in temperature.

"(3) The ultra-violet rays are the most bactericidal, and the infra-red the least so, which indicates that the phenomenon is due to chemical action.

"(4) The presence of oxygen and moisture greatly increases the action.

"(5) The sunlight acts prejudicially upon the culture medium, and thereby complicates the investigation and after-growth.

"(6) The time occupied in the bactericidal action depends upon the heat of the sun and the intrinsic vitality of the organism.

"(7) With regard to the action of light upon pathogenic organisms some results have recently been obtained with bacillus typhosus. Janowski maintains that direct sunlight exerts distinctly depressing effects on typhoid bacilli. At present more cannot be said than that sunlight and fresh air are two of the most powerful agents we possess with which to combat pathogenic germs."

<sup>1</sup>"Manual of Bacteriology" (1893), page 6.

The matter has been more recently discussed in the book "Disinfection and Disinfectants" (1902), by M. J. Rosenau, M. D., Director of the Hygienic Laboratory of the United States Health and Marine Hospital Service at Washington, D. C. He writes: "Sunlight is an active germicide. It destroys spores as well as bacteria. The importance of the sun's rays in destroying or preventing the development and growth of micro-organisms in nature cannot be overestimated. \* \* \* Even diffused light retards the growth and development of micro-organisms, and if strong enough may finally kill them."

Professor Percy F. Frankland, the distinguished investigator, author and lecturer, referring to the action of light on micro-organisms, summarizes his observations in the words: "We have the most abundant evidence that the solar rays have this powerfully destructive effect on bacterial life."

With such evidence as this on the part of such authorities the conclusion is inevitable that direct light should be provided in toilet-rooms because of its germicidal effect on harmful bacteria.

Turning from the theoretical study of the matter to the practical question of the necessity for natural light, it is a common experience of those who have given this subject attention that the cleanliness of toilet-rooms is, with rare exceptions, directly proportional to the amount of natural light admitted. There is rarely found in a building having any public use a toilet-room lighted by artificial light where the standard of cleanliness is satisfactory, but on the other hand we are all familiar with well lighted public toilets which are kept clean more on account of the fact that any other condition would be self-evident than for any other reason.

This opinion of the ordinary observer is supported by the observation of those who have written on the subject. The Imperial Board of Health of Germany in its hand-book on Hygiene and Sanitation for 1904 asserts that "Light, which illuminates the most remote corner of a room, impels us to cleanliness and destroys many of the minute bacilli which are the causes of decomposition, putridity and disease. On the other hand, dirt and dust easily accumulate in dark rooms."

Sir Douglas Galton, an eminent English sanitarian, in discussing healthful dwellings, writes: "An abundance of light, and in this country direct sunshine, is always necessary for maintaining purity of air. A dark house is an unhealthy house, an ill-aired house and a dirty house, therefore light should penetrate to every part. \* \* \* Every room in a building should have access to light and air by means of a window in an outside wall. The rooms appropriated to the removal of refuse, such as housemaids' closets and water-closets, require more light, and therefore proportionally larger windows than other rooms."

S. Stevens Hellyer writes: "No water-closet, slop-sink, wash-up sink, draw-off sink, bath, urinal or lavatory must be fixed where light and air cannot freely reach it, i.e., all such fittings and appliances must be fixed in a room or apartment which has a window opening to the external air."

It appears, therefore, that far greater uniformity is desirable both in the regulations of our cities and in the practice of design under them, and that, as well from the application of scientific investigation as from practical experience, it is necessary to construct all toilet-rooms, and especially such as are for any public use, with direct windows to the outer air. CHAS. B. BALL.

#### A COMPARISON OF ENGLISH AND AMERICAN BUILDING LAWS<sup>1</sup>—I.

THE erection of buildings in this country [England] has been for many years so much influenced by various regulations that it seems surprising that there is very little in print either in the proceedings of institutions devoted to furthering the interest of good building or in the professional press which gives in comparative form our own building regulations and those of other countries.

In the present article an attempt will be made to institute a comparison between building legislation in London and the provinces and that in the cities and towns of the United States. Rural by-laws being of such a diverse nature, no general conclusion can be arrived at, and they have therefore not been dealt with.

It may, however, be considered that building legislation in the United States is hardly able to be favorably compared with that in this country. It is indeed true that administration in the American cities has often been justly condemned for the want of honesty and integrity, to which on the whole we are accus-

<sup>1</sup>A paper by Mr. Horace Cubitt, A.R.I. B.A., in the *Builders' Journal*.

tomed, but the great improvement in this direction which has recently taken place still continues, and it will be shown by subsequent quotations that when properly administered American regulations in many respects tend to the erection of better buildings than our own by-laws.

The subject in its entirety is so wide that it is only possible to deal with it at all successfully in a short article by devoting special attention to one of the main branches. It has therefore been decided to limit the review to regulations having reference chiefly to the construction of buildings, the question of sanitation, sufficient in itself for another article, not being touched upon.

Typical American legislation will be taken and compared with that current in places with similar populations in this country, and thus, the conditions of life being not very dissimilar, it is hoped that a fair comparison will be made. The building laws of the State of Massachusetts will first be considered, then the special laws relating to the city of Boston, and in conclusion the New York Building Code will be dealt with. The first two enactments will be compared with the well-known original Model By-laws issued by the Local Government Board, upon which the building regulations of almost all our provincial towns are directly based, and the last with the London Building Acts of 1894 to 1905.

The laws of Massachusetts, dealing with the inspection of buildings, besides being what we should call adoptive, are also of a very elastic nature, it being stated that every city or town which accepts these provisions may "for the prevention of fire and the preservation of life by ordinances or by-laws not inconsistent with law," and applicable throughout the whole or any defined part of its territory, regulate the inspection, materials, construction, alteration and use of buildings and other structures within its limits. The expression "any defined part of its territory" evidently presupposes the establishment of building-limits in accordance with a common American custom, the most thickly populated part of the district being contained within these building-limits, and outside which limits modified by-laws, if any, are in force. The fact is more clearly illustrated in a regulation prohibiting the erection of dwelling-houses more than 8 feet in length or breadth and 7 feet in height unless made of or covered with incombustible materials, "within such limits" as the town may from time to time prescribe. Structures situated more than 100 feet from any other building are, however, exempted from this regulation.

In addition to such by-laws as each town may frame on its own account, other provisions are compulsory in those towns which take advantage of their power of making by-laws. These provisions, which refer to (1) proper ventilation, (2) sufficient means of escape in case of fire, (3) proper fire-stops in floors, walls and partitions, can be enforced with regard to all buildings except dwelling-houses which are more than two stories in height and have accommodation for more than ten persons above the second story. Other regulations deal with the safety of elevators, the provision of fire-alarms in hotels, and the means of escape from theatres.

Compared with our Model By-laws, the building-laws of Massachusetts appear to lack the standardization, if the term may be used, which the existence of a model code provides, and if adjoining towns are able to frame no slight proportion of their building regulations with the single proviso that they must not be inconsistent with law, a very chaotic condition of affairs seems likely to prevail.

One of the other hand, there is the very desirable absence of the cast-iron system we know so well in this country; and although the American method of instituting building-limits is probably not the most desirable solution of our problem of building legislation, yet it can hardly be doubted that such an arrangement would render impossible the present unfortunate condition of affairs in some of our districts, which, though rural in themselves, yet happen to form part of an urban district and come under urban by-laws. The opinion of many English authorities appears to be rather in the direction of allowing buildings at specified distances from highways and lands of adjoining owners to be exempt from the operation of by-laws dealing with construction, and it may thus be desirable to repeat the previously stated fact that in the State of Massachusetts all structures 100 feet from any other building, although within the building-limits, are yet exempt from the by-laws.

The regulations dealing with the means of escape in case of fire from buildings have no parallel in our Model By-laws, no provincial authorities having any power in this direction except

with regard to places of public assembly and factories and workshops in which more than forty persons are employed.

The method of procedure with regard to dangerous structures in all the instances of American legislation dealt with in this paper is very similar to that in this country. One very important point is, however, worthy of notice: under the Public Health Act, 1875, which applies to the whole of England with the exception of the Metropolis, dangerous structures cannot be dealt with unless they are dangerous to passengers or to inhabitants of adjoining buildings. In the American instances referred to such structures come within the operation of the law if they are unsafe or dangerous to life or limb in the case of any person whatever, this being also the state of affairs under the London Building Act, 1894.

The special laws relating to the city of Boston are on the whole of a very far-reaching character, but probably less stringent regulations would not be sufficient to safeguard the interests of so large a town as Boston, the population being considerably over 400,000, and consequently slightly larger than that of Birmingham.

One of the first points which call for attention in the Boston building laws is the existence of a Board of Appeal. It can hardly be denied that such an arrangement is far better than our custom of allowing a disputed matter to go before a magistrate with the option of an appeal to the courts, so that in no case whatever can the questions in dispute be decided by men with the necessary technical knowledge. The constitution of this Board of Appeal may perhaps be considered to be based upon rather too liberal grounds; it is formed of three persons, one appointed by the mayor and holding office for three years, one an architect chosen by the Boston Society of Architects and holding office for two years, the third member chosen by the local Master-builders' Association, holding office for one year. Such a body can undoubtedly be trusted not to make the building restrictions press too hardly upon property owners, but it is to be feared that its lack of continuity of tenure must render it liable to be too easily swayed by the public opinion of the moment.

A department to administer the building laws is provided, headed by a building commissioner. No building can be erected or altered except upon a permit from the building commissioner, and in conformity with the provisions of the act, and plans may be required to be deposited.

Buildings in Boston are classified as follows: First-class buildings, of fireproof construction throughout; second-class buildings, all not first-class whose external and party-walls are of brick, stone, iron or "other equally substantial and incombustible materials"; third-class, wooden-frame buildings; composite: part second and part third-class construction.

The American custom of establishing building-limits has been followed in Boston, and the Building Act gives the city power to extend such limits from time to time. Every new building erected within the building limits must be a first or second class building, and only a few specified third-class structures used for certain purposes are allowed. Every new building (except armories and churches whose assembly halls are not more than 7 feet above street-level at the principal entrance) which is capable of seating 800 persons or more and also every theatre must be a first-class building. The height of a building in the Boston building laws is given as the distance from the curb of the street to the level of the highest point of the roof. Every building in the city of Boston erected or raised to over 70 feet in height must be a first-class building, and so also must every building erected or converted for use as a hotel, or a tenement-house for more than two families above the second story.

Every second-class building has to be erected in accordance with specified regulations regarding the provision of what are termed fire-stops at each floor of such a building. These fire-stops are required to consist of a "solid air-tight cohesive layer at least 1 inch thick of tile, brick, terra-cotta or like fire-made material, plaster, cement, cinder or ashes, or of a combination of the same, or of equally non-inflammable non-heat-conducting materials laid between the upper and under floors or occupying all the spaces between the timbers under the "under floor." Second-class buildings of 45 feet or more in height which are used above the first floor for storage purposes must have, instead of the ordinary fire-stops, a tight splined or tongued-and-grooved under floor of at least 2-inch plank with an upper floor 1 inch thick; staircases to such buildings must be enclosed in walls or shafts of non-inflammable material, with all openings fitted with iron doors.

No space inside any first-class building may exceed 10,000 square feet, or in a second-class building 8,000 square feet, without being subdivided by party-walls.

Composite and third-class buildings may only be erected outside the building-limits. Fire-stops are required to be provided in a similar manner to those in second-class buildings, and no third-class building is allowed to be more than 45 feet in height if a dwelling-house or 55 feet if otherwise, nor to have an external wall nearer than 3 feet or 5 feet respectively to an adjoining lot, unless such wall is built of 12-inch brickwork. These requirements do not apply, however, to buildings erected at a distance of 50 feet from any other building and from any other street or way.

These regulations relating to the main outlines of construction, if compared with the few similar provisions existing in our provincial by-laws, appear to touch the extremes of rigor and leniency. While few structures similar to the Boston third-class buildings are allowed to be erected in our provincial towns, yet not even in the Metropolis itself are there such requirements, other than those applicable to public buildings, for the compulsory fireproofing of a large class of new buildings and for special construction to prevent the spread of fire in those of everyday type. No doubt the greater proportion of the best class of buildings in this country are now erected of fire-resisting construction, but entirely at the option of the owners, professional opinion here apparently not having yet reached the point of considering compulsory measures desirable. On the other hand, buildings in Boston can be erected to a greater height than in London, they being allowed to be 2½ times the average width of the street, but in no case more than 125 feet high. Buildings in London in wide streets may be 80 feet to the top of the parapet, with two storeys in the roof—in all about 100 feet.

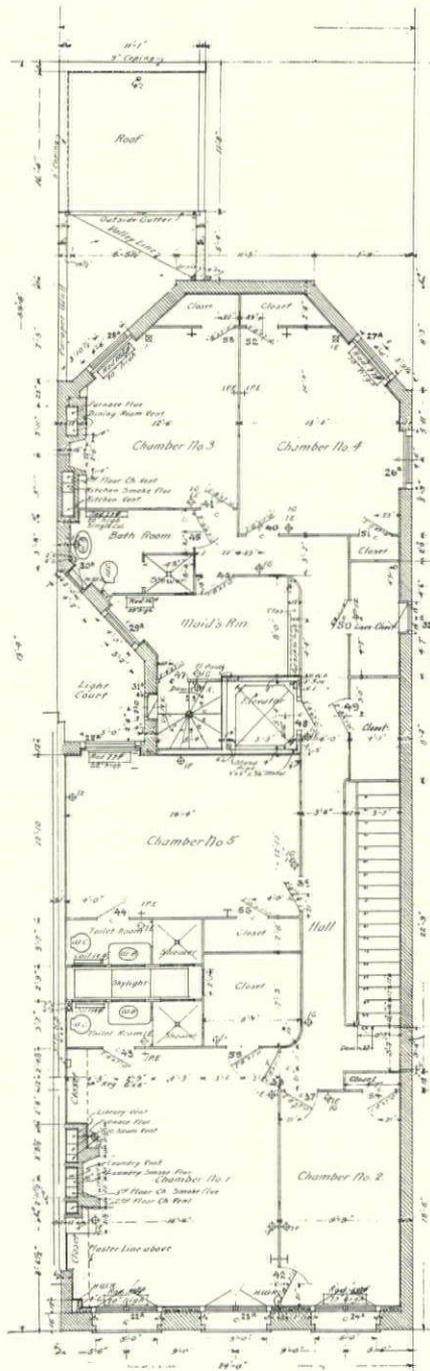
When details of construction are touched upon the contrast between American and English provincial legislation, though noticeable, is not of quite such a striking nature. The really essential difference between the Boston regulations of construction in detail and those of the Model By-laws is that, in accordance with the common American practice, tables are given stating the maximum loads that may be put upon various materials, and the existence of this provision enables, without any ill effect, many variations to be made from the detailed regulations familiar to us in our own by-laws. It is possible that the fact of many of the requirements of the Boston building laws being directly based upon scientific principles, and thus open to the investigation of all parties, not only tends to good construction but also to the existence of a more tolerant spirit between architects and surveyors and the municipal officials than is the case where our own hard-and-fast rules prevail. The Model By-laws contain clauses specifying the class of materials to be used, but there is no restriction as to the load which may be put upon any particular material, although it is true that urban authorities who have adopted Part III. of the Public Health Act Amendment Act of 1890 are able to make by-laws regulating "the structure of floors, hearths and staircases."

(To be continued.)

THE REAL CONDITION OF WINCHESTER CATHEDRAL

MR. T. G. JACKSON reported to the Dean of Winchester on March 25 on the work done to the south and north sides of the east end of the south aisle of Bishop de Lucy's building. Mr. Jackson first shored up, in August last, the greater part of the south side, and bonded across the cracks in the wall with long blocks of hard Yorkshire stone, which were grouted with a Greathead machine. The roof is now to have tie-rods fixed to take the strain, and this is expected to be completed about the end of this month, when the underpinning will be proceeded with. Mr. Jackson called attention to the fall, in February last, of an ashlar filling-in stone in the north aisle vault of the Waynfleet Chantry, and he says that the scaffolding which has since been erected has enabled an inspection to be made, which shows that it is seriously affected. The underpinning, which is the chief difficulty, was started in the crypt of the Lady Chapel. The mischief was found to be due to the sinking of the central pillar, a large square stone on which the column stood being broken and tilted up at the corners. Below was a 15-inch timber pile, which was so rotten that it could be cut with a spade, like cheese. The new foundation, of cement-concrete and brick, has been put in resting on the gravel, and the second column is being treated like the first. When the underpinning of the main

walls was proceeded with it was found that these had been erected on two layers of trees laid across one another in a mass of loose chalk. Some were decayed, while others were still sound. The builders, Mr. Jackson thinks, seem to have gone down with their foundation to the water level, and not knowing how to deal with the difficulty used timber. Had this timber foundation been a good deal wider than the walls, so as to increase the supporting area, it might have been successful. As it is, it has been crushed down into the soft ground overlying the peat, resulting in the settlement that is causing the trouble. Toward the east there seems to have been a bog, for there is a layer of peat five feet thick above the gravel bed. In consequence, the building has slipped eastward, parting at the great cracks which are now exposed. In November last the underpinning at the east end—i. e., the east wall of Bishop Langton's chapel—was begun, Mr. Jackson's proposal being to put in a foundation on the gravel bed to arrest the slipping tendency. When the layer of peat was pierced, however, the water sealed down by this impervious layer was tapped, and it rushed up from the gravel bed. The attempt to dredge out the peat from under the water was unsuccessful. Pumping was found not to remove the gravel, so that has been resorted to, the peat scooped out, and cement-concrete in bags laid on the gravel, upon which the final underpinning with brickwork in cement was done. The next piece of underpinning, Mr. Jackson states in a supplementary report, dated April 7, presented fresh difficulties,



TOP FLOOR: HOUSE OF ERNEST FLAGG, ARCHITECT, NEW YORK, N. Y.

as a thin layer of chalky matter was found to overlies the gravel, and as this would have been drawn out by the pumping the only thing to be done was to act on a suggestion made by Mr. Francis Fox and employ divers. These divers have now taken out the peat and laid down the first stratum of the new foundation, so as to seal down the spring, leaving only the surface water to be dealt with by the pump. Mr. Jackson states that he thinks now they will be able to make more rapid progress. The results will be watched with interest.—*The Builders' Journal*.

## ILLUSTRATIONS

HOUSE OF MR. ERNEST FLAGG, ARCHITECT, 109 EAST FORTIETH STREET, NEW YORK, N. Y.

The house an architect builds for himself is always interesting, since it more nearly represents his real ability as an artist and a business man than the houses he has to build to satisfy the whims of an exacting owner. In the present case, too, in view of the known extent of the designer's practice, he can hardly be assumed to have been hampered by a too-groveling consideration of cost.

PLANS OF THE SAME.

HOUSE NO. 28 EAST SEVENTY-EIGHTH STREET, CORNER MADISON AVENUE, NEW YORK, N. Y. MESSRS. M'KIM, MEAD & WHITE, ARCHITECTS, NEW YORK, N. Y.

MAIN DOORWAY: HOTEL GOTHAM, WEST FIFTY-FIFTH STREET AND FIFTH AVENUE, NEW YORK, N. Y. MESSRS. HISS & WEEKES, ARCHITECTS, NEW YORK, N. Y.

CATHOLIC CHURCH, WILLIAMSBRIDGE, NEW YORK, N. Y. MR. THOMAS J. DUFF, ARCHITECT, NEW YORK, N. Y.

THE MUNSEY BUILDING, PENNSYLVANIA AVENUE, WASHINGTON, D. C. MESSRS. M'KIM, MEAD & WHITE, ARCHITECTS, NEW YORK, N. Y.

HOUSE OF PAUL HUNT, ESQ., READEVILLE, MASS. MESSRS. WINSLOW & BIGELOW, ARCHITECTS, BOSTON, MASS.

MUSIC-ROOM IN THE JECLIAN BUILDING, FIFTH AVENUE, NEW YORK, N. Y. MR. J. H. MORGAN, ARCHITECT, NEW YORK, N. Y.

For this illustration we are indebted to Messrs. H. F. Huber & Co., who were charged with the decorative treatment of the interior of the building.

### Additional Illustrations in the International Edition.

RIGGS NATIONAL BANK, PENNSYLVANIA AVENUE, WASHINGTON, D. C. MESSRS. YORK & SAWYER, ARCHITECTS, NEW YORK, N. Y.

DOORWAY: BALTIMORE STOCK EXCHANGE, GERMAN STREET, BALTIMORE, MD. MESSRS. HOWELLS & STOKES, ARCHITECTS, NEW YORK, N. Y.

A view of the façade of this building may be found in our issue for May 13, 1905.

## NOTES AND CLIPPINGS

NEW FACTS ABOUT POMPEII.—The question whether Pompeii was a seaport in the strict sense of the word or whether it was separated from the sea by a strip of land was solved *de facto* in 1879 by a network of trenches opened by Ruggero across the disputed district. It was ascertained on this occasion that the story of a three-masted ship, in fact of the flagship of Pliny, alleged to have been found near the farmhouse of Messigua in 1833, was absolutely groundless. The masts, seen and described by the naval architect Giuseppe Negri, were simply trunks of cypress trees. Many such trunks of cypresses have been found since. They measure, as an average, m. 1.42 in circumference, m. 0.47 in diameter, which seems to be the proper size for a tree forty to forty-five years old. Their roots are still planted in the antique humus of the mouth of the Sarno, whereas the trunks are embedded in the lapilli of the eruption of '79. With the help of these fossil remains the line of the ancient seacoast has been traced from Torre Annunziata to Castellammare, crossing the River Sarno three thousand feet above its present mouth. The picturesque rocks of Rovigliano, the "petra Herculis" of the Romans, which before the eruption were separated from the mainland by a channel 1,550 metres wide, come now within 420 metres of the shore.

Among those who showed an equal but far nobler self-posses-

sion, and who remained faithful to duty in spite of the appalling circumstances, were the few soldiers garrisoning the city. Sixty-three skeletons have been discovered in the barracks.

These facts, which I have quoted from memory, prove that the number of the victims of the eruption within and near the ill-fated city is greater than was generally supposed—viz., from six to seven hundred for the portion excavated up to 1889. This portion represents four-tenths of the whole surface. If the ratio be the same for the districts yet unexplored, the total number of the victims may be put at a minimum of thirteen hundred. Admitting the number of ten or eleven thousand as the most probable for the population, this means that of nine Pompeians one perished, while eight succeeded in saving their lives. The latest discovery deserving consideration is that of a trunk of laurel—*laurus nobilis*—the plaster cast of which is an admirable reproduction. In the mass of ashes in which the trunk lay buried prints or marks of leaves and berries—*bacca lauri*—have been identified beyond any doubt. The discovery, studied and analyzed by the professor of botany in the University of Naples and other eminent specialists, is very important, because it brings forth a new argument, as decisive as it was unexpected, on the controversy concerning the exact date of the eruption and of the disappearance of Pompeii.—*Harper's Weekly*.

NEW ARCHITECTURAL EXHIBITS AT SOUTH KENSINGTON.—Some important additions have been made to the collections of architectural details in carved stone in the Victoria and Albert Museum, consisting of four examples of French origin dating from the time of Francis I. The most striking of them is a complete dormer window, standing some twenty feet high, from the Château de Montal, a ruined manor-house situated on the high ground overlooking Saint Céré in the Department of Lot. This château was built for Jehane de Belsac, dame de Montal, and was begun in 1523; it is thus contemporaneous with the better known edifices at Blois and Chambord. It was from one of these dormer windows, perhaps from this very one, that, as the story goes, Rose de Montal, forsaken by her lover, Roger de Castelnaud, flung herself with the cry, "*Plus d'espoir*"—a motto which is engraved on the pediment of the window now in the museum. The second example is the upper part of a similar dormer window, evidently dating from the same period, as the crowned salamander in flames, which forms so striking a piece of ornament on this pediment, was a favorite device of Francis I. Below this is placed a portion of an arch-soffit from the Château de Bonnavat, situated some twenty miles from Poitiers, and built by Guillaume de Gouffier, Amiral de Bonnavat, a favorite of the same king. The fourth example is a canopy for a statuette formerly in the Church of St. Etienne du Mont at Paris. It is composed of delicate Renaissance work, betraying in its disposition traces of the Gothic style which even at that period were still apparent in French architecture. It is enriched with beautifully modeled figures, scrolls, and shields of arms. Replicas of these shields may still be seen on the tall columns and brackets at the back of the high altar of St. Etienne.—*New York Evening Post*.

RODIN'S "PENSEUR."—The famous "Penseur" by Rodin, of which the Metropolitan Museum has a copy in plaster, was set up last Saturday in front of the Panthéon in Paris. The city is rejoicing that this great statue, which Rodin designed on a smaller scale to be seated above his "Gates of Hell," has at last become a public possession.—*New York Evening Post*.

ROMAN PALACES FOR ART GALLERIES.—The Villa Falconieri, which was bought by Herr Mendelshob, the Berlin banker, and presented to the German Emperor some months ago, has just been visited by prominent German officials sent to Rome for the purpose, among whom are the German Minister of Finance and the Secretary of the Ministry of Public Instruction, to see if it would be suitable as the residence of the German Academy of Fine Arts. The United States Government is trying to buy the Farnesina Palace in order to unite in the same building the American Art Academy and the Archaeological Institute, which are now located in separate residences.—*New York World*.

TO REBUILD ASSEMBLY STAIRS.—The State Trustees of Public Buildings have asked the Legislature for an appropriation of \$50,000 to reconstruct certain parts of the Assembly staircase. An appropriation of \$48,000 will be requested to take down thirty-six feet of the stonework of the tower section of the building.

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IT is interesting to speculate as to how soon it would be possible for San Francisco to emerge from a condition of "Shantytown," if, as certain unpractical idealists pretend to desire, there were at hand no individual or corporate millionaires with the knowledge and the willingness to make abundant capital do the things that only abundant capital can do. Even as things are, the work of recuperation, even partial revivification, is going to take much longer, we fancy, than those sanguine souls who prate about the wonderful potency of the California spirit are willing to believe. The simple fact is that almost every movement in the way of reconstruction by private individuals is predicated on the action of the insurance companies; action which, after the lapse of several weeks, seems more obscure than seemed likely the day after the disaster. The underwriters must, in self-defense and in fairness to their other obligations, forego the pleasure of being generous: they must content themselves with being as nearly just as circumstances will permit, and as it is, as everyone knows, part of their daily experience that frauds of all kinds are attempted against them, it should be plain that under such very unusual circumstances they must scrutinize all claims with the utmost care. Now, scrutiny implies consumption of time. How much time and how great the inconvenience of the entailed delay may be can be inferred from a statement we have seen made within a few days, on what appeared to be good authority, that, although the loss on the Baltimore fire was adjusted for something like forty-eight million dollars, less than a quarter of this sum had been paid within a year from the breaking out of that fire.

THE first real clue to the amount of actual loss at San Francisco is given by the reports just made to the New York State Insurance Department by the insurance companies doing business in that State who suffered loss through the California disaster. The net draft to be met by the exchequers of these underwriters, supposing all companies to be solvent and no claim contested, appears by the reports now filed to be \$113,441,595, a very sizable building-fund, if only the needy owners could but lay their hands on it promptly. But they cannot, and we fancy it will be several years before the last contested claim is disposed of. Aside from the debatable matter of liability for destruction by fire of a building partly or wholly shattered by earthquake—and, so, no longer by insurance practice the property upon which the policy was issued—aside from this perplexing matter is a still more dubious one: To whom must the owner of property that was dynamited or cannonaded out of existence look for relief? Surely not to the insurance companies. The dynamiting was done by authority, but by whose? By the city, by the State, or by the Nation? The three powers were acting coterminously, and it is going to be a difficult matter to know where responsibility really lodges and where a prayer for relief may properly be addressed.

THESE matters, which inevitably will result in delaying private undertakings, may turn out to be of real advantage to the future city. It seems possible that the authorities, perceiving how private owners are hampered in undertaking building operations of their own, and that in consequence the working population is no longer able to support itself, may perceive that this is the time of all times when the community can find justification for undertaking those large and genuine public improvements without which all attempts to create a "city beautiful" inevitably must fall short of the possibilities.

THE National Society of the Fine Arts—an organization quite unknown to us, though during more than thirty years we have endeavored to keep the run of matters of art in this country—has, through Mr. Wiley, of New Jersey, secured the introduction in the House of Representatives of a bill providing for the "Organization of a National Advisory Board on Civic Art," the text of which may be found in another column. The bill reaches us accompanied by a "plea" prepared by Mr. Glenn Brown, the Secretary of the American Institute of Architects, which seems to indicate that the act in question is the outcome of President Roosevelt's efforts a year ago to assure the carrying into execution of the plan for the improvement of Washington prepared by the Burnham-McKim-Olmsted Commission, efforts which finally resulted in the formation of an Advisory Board by grace of an "executive order" then issued. As the arguments contained in Mr. Brown's "plea" seem to be applied solely

to conditions in the District of Columbia, it is rather doubtful whether the bill now referred, as such bills always are, to the Committee on Library, was intended by its propounders as a general law having application to other places than the District of Columbia. Yet the language of the bill gives it a general scope, and more than this is carelessly sweeping in its phrasing. For instance, it gives the new Board advisory power in the case of any "opening, modification, or embellishment of any space belonging to the United States." This wording, while it might not prevent the Government from "opening" to "sooners" new lands now belonging to the "Nation's wards," would clearly prevent, say, the Commandant of the Brooklyn Navy Yard from "modifying" the arrangement of the pathways and grass-plots now under his direct control, and might stand in the way of dredging channels in the national harbors.

**A**NYTHING that can properly be done to make certain that the future growth and artistic adornment of Washington shall conform to the scheme that has met with the approval of the Senate, we believe in; but we are not yet disposed to feel that "official art" inspired, directed or even merely "advised" by a National Board is a good ardently to be sought, and certainly we do not believe that such a Board should be appointed at the mere whim of the Executive—great as our admiration must be for the all-round capacities of the least of the "Rough Riders." The reason why the various municipal art commissions have done such effective work is that their membership has been confined to the ranks of certain societies or educated classes universally acknowledged as having real knowledge of the work to be done, and the fact that the members of such art-commission serve without pay has prevented the work from falling into the hands of mere bureaucrats of the usual political type. It seems to us that the President's choice might wisely have been restricted by the bill now pending to such men as might be suggested, say, by the presidents of certain stated artistic associations and the presidents of the Museums of Fine Arts in cities of a certain rank. Doubtless some will be disposed to argue this to be unnecessary, from the fact that our Presidents have usually, in cases of real importance, made acceptable appointments, and in proof to point to the character of the members of the Supreme Court. Yes, but at this very moment our present Chief Magistrate seems to be doing what he can to discredit United States judges and giving indications of a determination to appoint hereafter only those who will be subservient to his will. Now American Art deserves to be as free from personal dictation and as untrammelled as American Law and Justice.

**M**R. BROWN argues that because "Cleveland, Buffalo, New York, Philadelphia, St. Louis, New Orleans, Hartford, New Haven, Seattle, San Francisco, Los Angeles, St. Paul, Baltimore, Denver, Chicago and Cincinnati" have "as a business proposition taken active steps to secure systematic and artistic plans for their future growth," there is need for a National Advisory Board.

To us it simply means that the times are ripe and the people, having acquired knowledge, are ready to do for their own communities what their selected advisers recommend—not that they are ready to open their minds and city treasuries and yield compliance to the dictation of bureaucratic art. There is no mistaking the magnitude and the reality of the interest now felt in this matter of municipal improvement in art and architecture; but we think there is a grave danger that the official mind may misconceive its causation, and conceiving that it is but one more outward token that the people of this country feel at last they are a Nation and a "World Power," proceed to treat the matter theatrically.

**M**AYOR McCLELLAN this week has vetoed the bill passed by the New York Legislature which essentially condoned the trespass upon public rights committed by the Knickerbocker Trust Company, on Fifth avenue, and the New Amsterdam Theater, on Forty-second street, and confirmed them in their encroachments, under conditions to which we referred a couple of months ago. This is a very satisfactory outcome, and architects in New York will now watch for the beginning of the work of remodeling the offending façades. Meanwhile they are wondering what it is that differentiates the very trivial encroachment of the theater building from the very impressive and space-absorbing one that is constituted by the portico of the new Knickerbocker Hotel, only one block distant.

**T**HE case of encroachment beyond the building-line in Rochester, N. Y., to which we referred a few weeks ago, has had such an opera-bouffe *dénouement* that we commend the incident to the Washington Architectural Club as the theme of their next histrionic undertaking. When Mr. Arthur B. Headley, the architect and, we believe, owner of "The Oxford," refused to rebuild the steps to that apartment-house, so as to bring them within the building-line, unless every other trespasser in the city should be made to toe the mark in like manner, the Commissioner of Public Works sent a gang of stone-cutters who, hewing to the line, soon made "The Oxford" very difficult of access. Mr. Headley at once took steps to procure writs of mandamus that should require the Commissioner to apply equally heroic reproof to, amongst others, the "Wilder," "Granite," "Cutler," and the Alling and Corry Buildings, a course which would require the essential rebuilding of the fronts of some and important parts of others of these costly structures. Finding, at length, that this audacious believer in fair-play and a "square deal" really meant to have the law enforced with even-hand justice, if at all, the Common Council, some days later, passed a special ordinance permitting Mr. Headley to rebuild "The Oxford's" steps as they stood at first, but have not offered to have the rebuilding done at the city's cost. This is one way of dealing with intentional, or accidental, "encroachments"; but, on the whole, we think the Boston method has in it more of the essence of the square deal: it does not disregard the rights of the public or obscure the majesty of the law.

## THE EARTHQUAKE AT SAN FRANCISCO.

IT is very difficult, if not impossible, to describe with any degree of lucidity—even if one have an approximate idea of it—the extent and character of the motion caused by earthquake, so as to liken the motion to something with which those who have not experienced such convulsion are familiar. But it is necessary to have some idea of it before proceeding to consider the effect such motion has on buildings. First of all, from my own experience of the great shock that shook San Francisco from turret to foundation-stone, I should say it was not an up-and-down motion, except in a very slight degree. You know the way that a spring-wagon hammers the ground as you drive very rapidly over a rough granite causeway, while at the same time the wagon oscillates rapidly from side to side, as is the case, say, in a runaway; well, you may have observed that, compared with the oscillation, the upward and downward motion is infinitesimal—a series of concussions, only. So would I describe San Francisco's earthquake. Then again some people talk of a twisting motion. I cannot say I observed it: jolting over a rough road in a runaway wagon or omnibus—a series of concussions from below, with violent oscillation, is the nearest I can come to the motion. With all due respect to the seismograph, I do not think it gives the idea.

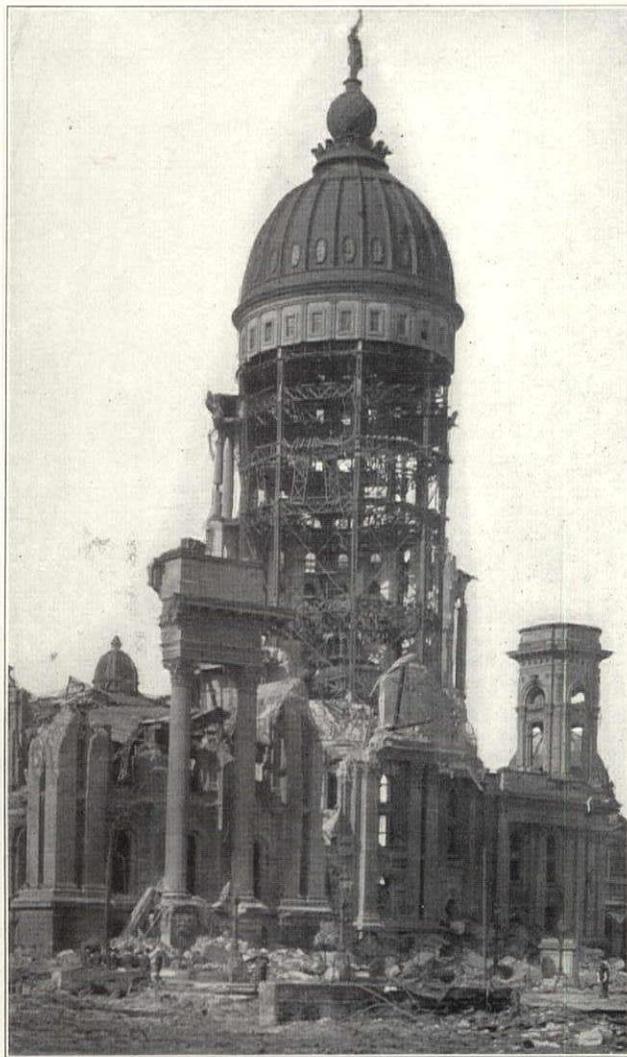
It was 5:15 on the morning of April the 18th that I awoke to find something alarming in operation, and it was but a second more or less before I became conscious that an earthquake was on hand. My wife endeavored to scramble out of bed, but I held her tight, knowing that, as we were in a two-story frame building, supported on both sides by other two-story frame buildings, and with no chimney-stacks high enough to break through the roof, we were in as safe a place as possible. I held tight, my wife ceasing to resist, and as we then clung together, we literally swayed back and forth for at least a dozen or fifteen seconds. We had sufficient time to engage in quite a conversation. It also ran through my mind that if the movement continued much longer or increased at all nothing in the way of brick buildings, such as we construct in San Francisco, could stand it. The motion died away as rapidly as it had come, and I got up and looked out, to find all the chimney-stacks up and down the street broken off short, in most cases at their point of contact with the roof, or wherever stability and stiffness prevented their swaying. While, from what I saw up and down the street, I could readily conjecture that few chimney-stacks were left standing, I had at this point no conception of the general wreck that the shock had wrought upon thousands of buildings throughout the city.

Having breakfasted and being still uncertain as to whether I would fill-in my usual day at the office, I determined to take advantage of the early hours and make a technical examination of the destruction wrought. I proceeded, accompanied by my wife, to the street. All the chimney-stacks, as I had surmised, almost without exception, were down; in a few cases where the stack was high and had been tied back with an iron rod the stack still stood, although in all cases the upper part was twisted so that it sat (generally at an angle)  $4\frac{1}{2}$  inches or more off its base on the lower part of the chimney. Tall smoke-stacks of power-stations were broken short at an angle of about  $45^\circ$  at

about 2-3 of their height from the top. The movement, so far as I could observe, had been from north to south, and parapets and walls of upper stories ranging east and west succumbed more readily to the oscillation than those ranging north and south. I noticed one six or eight story brick apartment-house where most of the bricks of the segment arches of the windows had crushed under the unusual pressure; in another 4-story brick building of similar class (B) a truss or girder just under the cornice level had butted a hole several feet in diameter right through the wall. A very great deal of the terra-cotta work, whether in large cornices or smaller belt-courses, had also succumbed to pressure and had split off in all directions at their joints. I saw no cases of cornices being shorn off from the buildings, indicating an upward and downward jar. All indicated crushing by lateral pressure. Many of the brick and stone piers at the sides of store fronts were split from the girder level to the ground.

At the City-hall the damage by earthquake reached the high-water mark. The City-hall is generally recognized to be a badly built building, but the design and amount of material used ought to have made up for poorness of materials and workmanship. The City-hall is a Classic building, three stories and basement in height, designed in a big way, with pavilions and interspaces decorated with heavy projecting pilasters running through three stories in height and correspondingly thick walls, and a comparatively small amount of penetrations, so that, material and workmanship being equal, it should have stood as well as such buildings as the Mint and Custom-house. Leaving out of the question the damage done by the collapse of the tower, a good deal of the upper part of this building became a total wreck by action of the "tumbler." The iron trusswork of a good deal of the roof is like so much scrap-iron and the walls in many parts, even considerably below the cornice level, are in a complete state of collapse. The dome, as shown in the picture I send you, is no part of the original design, which in the first instance provided for a much lower structure. The rotunda for many years stood roofless and incomplete, but about ten years ago another masonry rotunda was erected, the steel frame shown here. It is, I understand, about 250 feet in height and was ornamented in two stories by colonnades of columns projecting considerably from, but tied back to, the steel frame. The columns as well as the horizontal girders are latticed. The effect of the earthquake was to throw off, practically speaking, the whole of the masonry attached or adjacent to the metal frame. It can be readily seen that the hold this masonry had of the steelwork was quite insufficient and to be adjacent to and not incorporated in this flexible structure proved its undoing.

At the foot of Van Ness Avenue, for several blocks, the ground sank bodily all the way from twelve inches to zero, and the ground moved down the incline (about 6 per cent. gradient), leaving rents across the asphalt from 6 ins. to 15 ins. in width. No masonry could stand this sort of thing, so that in this section only frame buildings withstood the shock without being wrecked, although be it said that nothing here collapsed. All stood, although in a more or less wrecked condition. The greatest damage was done to gables and towers of churches, of which there were a number along this street. Steel-truss roofs were, I imagine, much more severe on their supporting walls than wood



THE CENTRAL TOWER OF THE CITY-HALL, SAN FRANCISCO, CAL.

trusses. Structurally, all these churches where collapse occurred were extremely poorly designed from a constructional point of view, as measured by the best types of Gothic cathedrals. In Grace Church and the old Jewish Synagogue, both types, not particularly substantial but fair, of Gothic work well buttressed, I could find no cracks whatsoever, and as Grace Church stands on a hillside and has a tower about 150 feet high, something might have been expected to give way. Structurally, although completely gutted by fire, these two buildings stand intact.

Since the fire I have spent several days scrutinizing the buildings from an earthquake point-of-view. Let us start with the *Call* (Spreckels) Building. This is probably the most interesting as it is a type of building that Americans most demand, and is the *ne plus ultra* of the present. Well, the *Call* Building stood it well. As a plea for lower buildings we who desire them will always have the *Call* Building thrown in our teeth. What is the *Call* Building? It is a building about 60 feet square, rising to a height of 18 stories, that includes two stories in the dome roof; it is over 200 feet in height above the sidewalk. The foundation consists of a concrete and steel raft, 4'-6" in thickness, extending over the whole area and projecting some distance under the sidewalk. Two or three layers, I could not discover which, of 15-inch I-beams, and plenty of them, were used in the grillage, and these were thoroughly incorporated in the cement concrete. The earthquake has shown that in order to be "earthquake-proof" a foundation should be capable not only of sustaining a quiescent load, but should be sufficiently strong to lift the whole building bodily and uniformly as the ground suddenly rises beneath it. This is probably the worst condition that has to be met, the other is that of wobbling. You know one may stand upon a brick, say, on soft ground, and the brick retain its position, but if you want to make the brick sink you sway about upon it and, sure enough, down it goes. So with foundations (suitable enough when all is at rest) subjected to earthquakes. I noticed one building eleven stories in height, steel-frame, fireproof and so forth, where the foundations proved to be not only insufficient but badly proportioned to the loads, the result being that under the jostling of the quake some of the columns carrying the whole upper floors had sunk as much as 12 inches, while others kept their original position. The floors did not collapse, but are on all kinds of levels. I noticed the brick flank wall of this building, with no openings and about 150 feet deep by 100 feet high, to be without a crack.

But to return to the *Call* Building. From the foundation upwards sprang the customary steel frame, but this I understand (which is not so customary) was well braced both vertically and horizontally, and this no doubt explains why its walls remain almost completely intact. I could discover only a few slight cracks in the stonework of the lower story, indicating that the steel frame had neither vibrated nor swayed to any considerable extent under the unusual strains brought to bear upon it. Everything considered, it has quite held its own against its rivals in earthquake-proofness.

To continue our examination of steel-frame buildings. The *Monadnock* and *New Chronicle* Buildings are both of this type. These buildings were nearing completion, being just about ready for the woodwork. The only damage I could discover was that caused by either the oscillating of the steel-frame compressing the curtain-walls or the vibrating of the verticals kicking out the brickwork surrounding them. At all events we find in the *New Chronicle* Building, a 15-story building, the brickwork surrounding the steel columns of the tenth, eleventh and twelfth stories so badly shaken that it resembles loosely piled bricks without mortar. In the *Monadnock* a similar condition obtains, only in this case the wrecking of the brickwork appears to be distributed over a greater number of stories—from the second to the eighth. The same weakness is to be observed in the *Fairmount Hotel*, an eight-story steel-frame building with very heavy curtain-walls, brick and terra-cotta, with granite first story. This building is on a hillside, but its height in no case exceeds its base, so that it ought to have stood and did stand the shock well, save that at one side, on the second story and about 50 feet above the ground, many of the piers are badly cracked (3 and 4 inches wide in some instances, and diagonally across them). These several instances appear to suggest the same conditions having come into operation, as in the case of the tall smoke-stacks, viz., swaying of the structure bringing compressional strains somewhere about their centers and consequent rupture.

How the connections of these steel structures behaved under the ordeal I have not been able to discover, but I have observed no cases of failure, nor have the floors in any cases been shaken

out by the jar, whether of terra-cotta, brick or concrete. Of course the fire has obliterated so much of, in fact nearly all, the damage done by the earthquake, that a great deal of what happened will never be known. Generally speaking, it may be said that the best types of steel-frame curtain-wall buildings stood well. Where they failed, and that only slightly, was through lack of vertical stiffness, and in one or two instances through insufficient and badly proportioned foundations. In the future, to insure safety all skyscraper buildings should have ample foundation and, if not covering the whole site, as in the case of the *Call* Building, the foundations should be carefully proportioned to their loads, columns well anchored to the foundation and to each other, with better bracing, both vertically and horizontally. I imagine reinforced concrete for floors and partitions would be a better material than hollow terra-cotta. I have always felt nervous about these flat arches, though curiously enough I have failed to find any instance where the earthquake shook them out. I see a good deal of the under side of these terra-cotta floors split off, but possibly the most of this has been done by the fire; this is a question.

The *Crocker Building*, about ten stories high, the walls of which rest on the ground, with its interior construction of steel and terra-cotta, stood better, I think, than any. It had no steel frame to vibrate, had heavy walls and was generally admitted to be not only the most expensive but the best built high building in the



A REMNANT OF THE CITY-HALL, SAN FRANCISCO.

city. The earthquake has proved it. I could see no cracks anywhere. The *James Flood Building* also stood well, though a good deal of the stone veneer got shaken and cracked. This is a 12-story steel-frame structure covering a large area.

As regards the wood-frame buildings, they stood splendidly, even the jerry-built. The only collapses I could discover were in the case of old buildings or where the foundations gave way beneath them, and there were exceedingly few serious instances of this. Between these two types of buildings, the steel-frame and the wood-frame, we have all kinds of conglomerates, and the most of them excessively bad. The average "Class B" building in San Francisco consists of an outer shell following the lot line, filled-in with a whole lumber-yard of wooden floors and partitions, supported on cast or steel columns and beams. It is not surprising that the outer shells of such buildings should fare badly in an earthquake. I noticed one apartment-house, about eight stories in height, where the flank wall had two large cracks right from the ground to the sky-line. Many portions of front and upper stories fell out into the street. These buildings, in my estimation, lacked homogeneity. There are far too few, cross walls. For this brick and wood building I like much better the practice as followed by London architects. In all such buildings as hotels, apartment-houses and so forth, the floors for the most part are carried on brick walls over the whole area covered. The *Palace Hotel* was constructed on such lines and withstood well the

earthquake. Though completely gutted by the fire, I could find in the portion I examined no ruptures. This building was divided into areas, about 40 x 40 feet, or less, by brick walls. The Mint and Custom-house, both low buildings, the one of stone and the other of brick, but both substantial—walls about three feet thick—came through the ordeal without a crack; the latter, too, stands upon "made ground," and has, I presume, a pile foundation, as in all this section. It is interesting to speculate on the effect of earthquake on these buildings on pile foundations. On Howard Street there stands a six-story building (I think it is six) on pile foundation. I could find no crack in it, although the ground all round it has sunk from 1 to 2½ feet, leaving the pavement high and dry. I think it possible that this pile foundation, possibly 50 feet deep, embedded in the mud, has acted as a buffer between the building and the solid ground away down, I cannot say how far beneath it. Anyhow, the ground all around this building has been compressed while the pile foundation and its superincumbent load have kept, so far as one can see, their original level, and the building has sustained no damage. Two blocks distant is the ferry-building, with its central tower of steel frame covered with brick and stone. This got a good shaking up; a considerable portion of the lower part of the tower had its veneer either thrown off or shattered and many of the stone piers supporting the two-story offices were badly cracked. To go into the thousand and one instances of bad construction that the earthquake brought to light would be impossible. Such, for instance, as a double arch reaching to a column at a salient angle: result, total collapse of superincumbent walls: tall and wide gables with no supporting buttresses, collapse. All such bad construction gave way at this crucial test. The great fire that followed has drawn a curtain over much of this faulty construction. At the same time one cannot but feel that a great deal of the damage caused by the earthquake would have been averted had these buildings been erected with a reasonable degree of substantiality. In order that there may be no misunderstanding as to the amount of damage done by the earthquake, let me say that while it sent terror to the hearts of even the most courageous, the damage so caused, as compared to the fire that followed, was as 1 to 1,000. I shall send you some comments on the fire later. The *Call* Building has not been destroyed, although it has been completely gutted and very much damaged by fire.

W. G. MITCHELL.

#### THE ARCHITECT AND THE WOOD-CARVER.<sup>1</sup>

GIBBONS'S opportunity and inspiration was doubtless St. Paul's Cathedral; and if we analyze the work of Italian, German, and Spanish wood-carving we find through history that the Church has been the inspiration of the great masters. When I say the Church I mean religious enthusiasm. Perhaps no greater evidence is possible of the effect of this enthusiasm than the work produced by the Asiatics, whose work was full of soul, although, maybe, of a baser kind. Professor Middleton, speaking of this carving, says: "In many cases the freshness of invention and freedom of hand shown in the carved ornament of savage races give a more really artistic value to their work than is usually found in the modern, labored, and mechanical carving of highly civilized people." He concludes: "The commercial spirit of the age and the general desire to produce the utmost display with the smallest cost and labor have reduced the art of wood-carving to a very low state." Here, then, we have a second reason; but, first, how are we to inspire this enthusiasm, and will the expression of such enthusiasm elevate the public taste so that we shall not have such a character for the next fifty years as we have had in the past? These are difficult questions. To inspire enthusiasm one must have "contagious enthusiasm" oneself; had we a wood-carver—or shall I say an architect?—with this enthusiasm for his work that a man like "General" Booth has, we should find a marked improvement in all branches of architectural art.

This leads me to a point which I wish to bring specially to your notice—viz., that it is the architect who makes the carver.

What do I mean by the architect making the carver? In the first instance, the architect *must know* what he wants; I do not mean in detail, but in weight, proportion, and type of work. There are cases where the architect does not even know the latter, but fortunately this is rare. He must not only know, but he must be able to inspire his carver with his requirements; he must work with him as a fellow-artist, leading him on to produce that which is in the mind of the architect.

<sup>1</sup> Extract from a paper by Mr. A. W. Martyn, read before the Royal Institute of British Architects.

Referring again to Gibbons: here is an example of an artist in wood who, when left to himself, simply becomes a clever expert with his tools; his work lacks architectural harmony, and is wood-carving pure and simple, without direction. As evidence, take the altar-piece at St. James's Church, Piccadilly; as an example of technical skill it is probably unrivaled, but somehow it always appears to me to have been carried out without an architect—there is no control, it is simply a mass of fruit and flowers, wonderfully strung together. If, on the other hand, you look at his work in St. Paul's Cathedral, you will find a considerable quantity of it is not nearly so well carved or so dexterous, but it has control; it has architectural harmony and is part of the architecture, and, what is more, part of the architect. Even in St. Paul's one finds most uneven value in the work. Have you noticed the two large stone carved panels on the west front? The one on the north does not bear comparison with the one on the south. Here, again, in one instance the carver has lacked the influence of the architect. I can quite believe that some of you wish you could find a Grinling Gibbons to do your carving; but good carving, harmonious carving, can only be secured by the continued vigilance of the directing mind.

It is evident from these remarks that I am of opinion the architect must have a considerable knowledge of wood-carving. Yes and no; technically (that is, in the handling of tools) little knowledge is required; but intimacy with good work is essential; further, I believe that for a carver to get the best results he must have a fair knowledge of architecture—*i. e.*, the carver should know as much of architecture as the architect should of carving. It must, however, be intuitive to a large extent, and a sympathy existing between the artists which makes them work in harmony. Contagious enthusiasm is a rare gift, and therefore cannot be within the power of us all; but intimacy with one's subject and sympathy between the artists can be secured by every architect, and will to some extent remedy the deficiency in the lack of this enthusiasm.

#### A NATIONAL ADVISORY BOARD ON CIVIC ART.

IN the House of Representatives, on March 31, 1906, Mr. Wiley, of New Jersey, introduced the following bill [H. R. 17630], which was referred to the Committee on the Library and ordered to be printed:

A BILL PROVIDING FOR THE ORGANIZATION OF A NATIONAL ADVISORY BOARD ON CIVIC ART.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That immediately on the passage of this Act there shall be organized a national advisory board on civic art consisting of five members.

The members of said board shall be nominated and, by and with the advice and consent of the Senate, appointed to office by the President of the United States.

The members of said board, when so required by resolution of either the State or the House of Representatives or by any committee of either House, or by the President, or by any Cabinet officer, or by the Commissioners of the District of Columbia, or whenever deemed advisable in the judgment of said board, shall consider and report their opinion concerning the artistic merit of plans proposed by legislative or administrative act for public structures, monuments, and fountains, for the placing of mural paintings in public structures, or for the opening, modification, or embellishment of any public space belonging to the United States.

And any officer of the Government who initiates or has the execution of Government work is hereby directed to request the board to consider and report their opinion concerning the artistic merit of plans for public structures, and for the opening, modification, or embellishment of any public space within the District of Columbia proposed by legislative or administrative act.

Said board shall meet in the city of Washington at least twice in each calendar year, and shall submit a report annually to the President detailing the action of the board during the year and making suggestions and recommendations as shall seem proper.

Clauses will follow in reference to compensation of the board, and appropriations for office and traveling expenses.

#### SPANISH ARCHITECTURE IN MEXICO.

EN un pais sin abadias y castillos ruinosos es imposible vivir," once remarked a Spanish artist, who in the course of his journeyings had occasion to spend some time in the uninteresting atmosphere of the big cities which are now scattered over what were not so long ago the unpeopled prai-

ries of the wild West. Mexico, however, is possessed of a wealth of old and historic buildings which almost rival those of some of the northern countries of effete Europe, and had our artist ventured south of the Rio Grande, he would have found cities as stately and imposing in their architecture as those of Castilla and Navarra in Old Spain. No other country presents such a variety of architectural styles to the artist or lover of the antique as Old Spain, where Romans, Moors and the exuberant Renaissance of her Golden Age have left magnificent and enduring structures which seem to embody the spirit of past ages.

After the discovery of the New World, Spain set to work with a vim to conquer and colonize the vast domain which Providence appeared to have bestowed upon her as a reward for her endurance in the centuries of struggle with the valiant hosts of Islam. Mexico, or New Spain, as it was called by the adventurous conquerors, was Spain's favorite colony and in consequence much more attention was given to her development and exploitation than to the rest of the New Indies. People living in this age may often find fault with the methods pursued by the former mistress of the world in her gigantic task of reducing a vast continent into submission to her dominion and the spiritual control of the Catholic Church, but it should be remembered that this was accomplished over three hundred years ago, when Europe was just emerging from the barbarism and superstition of the Dark Ages. Latin America constitutes a living monument to Spain's past grandeur and power. Only ancient Rome can be compared to her in the influence she has had on the evolution, thought and language of divers peoples.

Spain was at the zenith of her power at the time of the development of her most valued colony and, forgetful of the uncertainty of human affairs, built and made arrangements as though her occupation of the old Aztec empire was going to be perpetual. Cathedrals, churches, monasteries and mansions were all built to stand the test of ages, the convulsions of the earth's womb, all kinds of weather, and the ravages of possible enemies. We must, therefore, be thankful to the proverbial pride of the *Hidalgos* for the wealth of the artistic, beautiful and stately which the fair land presents for our contemplation and admiration.

Before proceeding with a description of some of the most notable examples of Spanish architecture in this city and a few other parts of the country, it will not be amiss to enter into a brief consideration of the influences which engendered the peculiar styles of Spanish architecture seen in this country. The Roman occupation of the Spanish peninsula had a strong influence on the habits of the people and they have ever since clung to the arrangement and general design in which their conquerors taught them to build. Nearly all Spanish masonry, although in some cases slightly modified by the character of the materials employed, is a faithful copy of that introduced by their Roman masters, as is the distribution of the apartments of their dwellings around a central courtyard. The central well or fountain observed in many buildings in the interior of the republic is both a Roman and Moorish idea, in fact more Moorish than Roman, being one of the accessories of the ablutions prescribed by the Koran. Most of the buildings erected here by the Spanish are in the style known as Spanish Renaissance, and its offshoots, Churriguesque and Plateresque. After the expulsion of the Moors from Spain her people avoided everything pertaining to the intricate and elaborate architectural styles evolved by the fertile brains of their brilliant oppressors; indeed, many beautiful creations, which almost rivaled the Alhambra in their magnificence, were ruthlessly destroyed as having been inspired by his satanic majesty—such was their hatred of the anathematized unbelievers. This explains the comparative absence of Moorish motifs in most of the Spanish structures here, but it is hard for any nation to escape the influence of a few centuries' occupation of their country by an alien race, and Spain, the ban placed on everything Moorish by the victorious Spaniards, their influence seems to have persisted in some degree. There are some old courtyards here surrounded by columns all carved in the most intricate design, the floor, fountain and walls covered with bright-hued tiles which almost make one feel that he is living in the days when the caliphs were still supreme at Cordoba—a slight effort of the imagination peoples them with sheiks, rolling on their cushioned divans, and whiling away the sultry hours after the midday meal by indolently observing the graceful contortions of the well-trained muscles of an Oriental dancer. In these times of frenzied finance and daring promoters the delightful leisure and indolence of former days is rapidly disappearing. It is to be hoped that the few quiet spots still left in this earthly paradise of Allah's will be long preserved from the inroads of the strenuous life.

Most colonizing nations have availed themselves of religion's powerful aid in subduing the inhabitants of the territories they coveted. Spain was not too proud to follow the example the Moors had set her in this respect, and one of her first cares was to erect imposing cathedrals and churches to substitute the rude temples of the fallen gods of the Aztec and other races they found here. The largest cathedral in America is in this city; its design is rather severe, the only highly decorative features being the altar de Los Reyes behind the high-altar under the dome, and the quaint choir which occupies almost a third of the long central nave. Many have advocated the removal of what they call an obstruction to what would otherwise be a fine vista; the position of the choir is, however, characteristically Spanish and may be seen at Seville and other places in Southern Spain. The interior is divided into three naves by fluted columns of the Doric order. The stateliness of the edifice is somewhat marred by the wooden floor, which if replaced by stone or mosaic would make the general effect more homogeneous, but there are a number of canons attached to the cathedral whose support must absorb a goodly proportion of the alms given by the faithful, thus leaving very scanty funds for improvements. The two towers which flank the façade are the highest in the country and contain some very finely toned bells, which although not arranged to ring in chimes peal in solemn and stately notes on religious and secular festive occasions.

The Sagrario, the principal parish church of the Metropolis, adjoins the cathedral, and its south and east fronts offer a very fine example of the vagarious Churriguesque, so intricate is the design that it requires considerable patience to follow the general scheme of its details. Not many blocks from the latter is La Santisima Church, another striking and beautiful edifice in the same style.

Santa Teresa, on the north side of the National Palace, has a very classical and daring dome over its pretty chapel; the elaborately painted plaster-work which covers its front is distinctly Oriental in character, and there are but very few such examples still extant here, many of the houses which were decorated in that style having become weather-worn, and their owners being unwilling to go to the expense of having it replaced have had them plastered over and painted or whitewashed. The Hotel del Bazar building is one of the old and spacious buildings that have suffered from that economical process.

La Profesa Church, with its two leaning towers and picturesque little garden, is one of the sentinels left by a bygone age in the city's most fashionable shopping street. It is a most beautiful sight to see the pale moon rising and casting a melancholy light on its towers in the clear winter nights, at an hour when the streets are deserted and seem to be given over to the ghosts of such of the "*conquistadors*" and their descendants whose too-parsimonious contributions to the Church and her prelates are the cause of their being condemned to still haunt the scene of their former activities and intrigues.

Santo Domingo, however, offers the best opportunities to those who are interested in ascertaining the mysteries of the future life, for this church belonged to the Dominican friars, to whose charge was committed the exercise of the Holy Inquisition, that terrorizer of heretics and conspirators. The whole neighborhood is honeycombed with underground passages and cells, in which hundreds of victims were entombed never to reappear. This church is a most massive structure—almost emblematic, in fact, of the awe-inspiring and relentless inquisitorial dignitaries.

Very few monastic buildings remain in existence, land being too valuable in a growing city to have allowed their preservation after the passage of the Reform Laws. Most of them have been adapted for use as warehouses, barracks or tenements, but are easily recognizable by their immense cloistered courtyards. Their design is as a rule very simple, the exteriors presenting nothing in the way of an effort at decoration but the heavy moldings around the irregularly placed and deep-set windows and doors. The columns of the courtyards are usually in the Doric style, the proportions of which vary according to the more or less perfect knowledge of the master builders who designed them. The stonework is not always carved in a true and workmanlike manner; in fact it is hard to discern a perfectly straight line in these masses of masonry which have been shaken by the subsidence of their foundations and successive earthquakes, but these irregularities constitute a charm which gives every line a soft effect and removes all that harshness of outline which is so jarring to an artistic temperament. On a bright sunny day the contrasts of light and shadow in courtyard and cloister produce a most striking effect.

Two of the most attractive old buildings in the city are the

"Colegio de La Paz" and the Preparatory School. The former institution was founded by several wealthy Biscayan residents for the education of their children; it still continues its good work under the auspices of the government, there always being from five to six hundred pupils on its register. The building, which occupies an entire block, is built of a red volcanic rock called "tezontle," with stone dressing. Tezontle is a very porous material and combines with the mortar so as to form a solid mass which almost defies crowbar and chisel. The Preparatory is built in the same way, but the exterior is rather more pretentious.

A review of Spanish architecture in Mexico would be incomplete without a brief consideration of some of the substantial old residences of the magnates of colonial days. Most of the successful Spanish colonists, whether they made their fortunes as adventurers or buccaners, managed to obtain a marquisate from the king by gifts of gold or ships, thus burying their past careers under the mantle of eminent respectability, and going about to build mansions befitting their dignity. These fine old residences are so solemn and stately that they were probably more effective in gaining the subservience and respect due to their owners than their newly-hatched titles. These old seigniorial abodes are all crowned with battlemented parapets, an architectural feature reserved in those days for the blue-blooded (even though the change of color were but recent).

The two most prominent features of these mansions are their portals and central windows, the latter generally crowned by an escutcheon or a figure of the patron saint of the family. The principal window has always played an important part in Spanish social life. On religious and secular festive occasions it is always bedecked with gay hangings and flowers, making a fit bower for the attractive beauty of the fascinating señoritas of the house, though the "tout ensemble" is at times marred by the intrusion of obese and overzealous chaperons.

The Jockey Club occupies one of the finest of these noble buildings, built by a dashing cavalier who was determined to outdo anything then extant in the capital in magnificence and originality. The quaint tiles of harmoniously blended colors were brought from China together with the bronze for the balconies and door. The committee of the Club is to be commended for its good taste in having the new part of the building in Cinco de Mayo street built in the same picturesque style. Another very attractive building in San Francisco street is the Hotel Iturbide, the former palatial residence of the Marquises de Moncada. Its façade is highly ornamented though somewhat disfigured by successive coats of paint: the patio with its slender columns and graceful arches is one of the capital's wonders, for it is really astonishing that it has not suffered in the least from the occasional heavings of Popo's bosom. Nowadays the tourists who overrun the city every winter fill the old house, glad to be able to secure accommodation at an exorbitant figure in what were the quarters of the marquis's numerous retainers. Truly martial in appearance is the old house opposite the Hotel Humboldt, the gargoyles of which are fashioned in form of cannon. The cornerstone is a big monolith taken from the ruins of some destroyed Aztec shrine. The National Bank occupies what was once the town house of the Countess de San Mateo Valparasio and surely her departed spirit cannot offer any objections on the score of its having been put to ignominious uses.

It is to be regretted that many of the old buildings here are being rapidly demolished to make room for modern structures in hybrid styles, embodying so-called up-to-date improvements, such as steel frames, flimsy walls, cheap galvanized-iron cornices, and mansard roofs which look so out of place under these sunny skies. Progress in its mad rush has no respect for the old, solid and well proportioned monuments which characterized a past age and have been the mute witnesses of great events. Just now two of the relics, Nos. 5 and 10 in Calle Cadona, are fast disappearing under the unrelenting efforts of crowbar and pick. No. 5 is considered one of the oldest buildings in the city, which opinion seems to be substantiated by its antique and conventlike front. A niche with the patron saint of its first occupant may still be seen over the principal window. No. 10 was probably the residence of some noble from Zaragoza, as the image of the Virgin del Pilar, the patroness of that heroic and indomitable capital of the stubborn Arragonese, is carved on its ancient front. Perhaps in the course of time some agitation will be set on foot with the object of preserving the grandiose relics of vice-regal days which made Humboldt call this "The City of Palaces."

In some sections of this prosperous republic progress has been made benignant and things are much the same as they were in the good old days. This has been especially the case in such levitical centers as Guadalajara, Queretaro and Morelia.

Morelia is about the finest of these old cities. It almost reminds one of the Castilian cities of Toledo and Valladolid, all the buildings are so spacious and solid. Even the atmosphere of sleepiness and repose is a counterpart of the old Spanish cities which seem to have relapsed into a long and well-deserved slumber after having accomplished the stupendous tasks of expelling the Moors from sun-kissed Andalusia and of winning an entire continent to civilization.—*T. C. Hayden, in the Mexican Herald.*

## COMMUNICATION

### FLEXIBLE VS. RIGID STEEL-FRAME BUILDINGS.

May 9, 1906.

TO THE EDITORS OF THE AMERICAN ARCHITECT:

*Dear Sirs:*—The great catastrophe at San Francisco and elsewhere throughout California has very naturally prompted the question whether or not it is possible in the future to prevent such great loss of life and property. We read during the past few days many answers to this inquiry.

Before detailed and scientific information regarding the facts of the earthquake is received, it is somewhat premature to express final opinions; but enough evidence of a general nature has come to hand to warrant the conclusion that, while it may not be within the bounds of human effort to entirely prevent, it is quite possible to minimize the loss of life and property, should such another visitation occur, if proper precautions are taken in the rebuilding of San Francisco. We therefore take the liberty of expressing our views on the subject, believing that a thorough and free discussion among engineers will be of benefit to the community at large.

It is an engineering possibility to design a structure, such as a ship, for instance, that will withstand almost any kind of strain, and adapt itself to all manner of conditions. It is also an engineering possibility to design a steel-frame building so that it will stand a great deal of shock and inequality of settlement in the foundations, due to a distortion of the earth supporting it. The proper adaptation of such structures to the needs of those occupying them is a modifying condition, which, together with the architectural requirements, has to be considered in this problem. Broadly speaking, it is a question of applying sound engineering principles to the problem in hand.

Buildings for business and office purposes in an earthquake country should not be high, in the New York sense; it might be well to limit the height to 100 feet. There should be ample lot area, and the buildings should be cubical in shape, if possible, so that in the shape itself there would be an element of stability.

These buildings should be entirely of steel-skeleton construction, in which the walls are supported at every floor. Columns should be as far apart as possible, and the connections and joints of columns, beams and girders should be so designed that while there would be enough stiffness to withstand wind-pressure (an easy matter to take care of in buildings of the height and shape recommended above), there would be sufficient flexibility to allow the steel frame to adjust itself to unequal settlement of foundations, within reasonable limits, without permanently injuring the steel skeleton.

Some have advocated the use of a steel frame as rigid as possible. This we believe to be a mistake, because such a frame could be very seriously injured; in fact, beyond the possibility of repair if the inequality of the settlement in the foundations were sufficiently great.

Foundations should be carried down, if possible, to solid rock or hard-pan, and spread over steel grillage, and all these foundations should be tied together with steel girders.

Floor construction should consist entirely of steel beams and consisting of tie-rods spaced about six inches apart and securely not be spaced over six feet apart.

Floors should be of reinforced cinder-concrete, the reinforcing consisting of tie-rods spaced about six inches apart and securely fastened to the beams, and a wire mesh should also be used in the floor-slab, as an additional security to hold the concrete in position in case of fracture.

The walls should be as thin as possible consistent with climatic conditions and the requirements of fire-protection, and might better be made hollow, with an air-space. The best material for this purpose we believe to be reinforced concrete, with a framework of structural steel around all openings, and made practically in the same way as the floor construction described above, the important thing being that there should be plenty of steel rein-

forcement, and that it should be securely fastened to the steel framework of the building. If brick or cement blocks are to be used, the walls should not be more than twelve inches thick, and should be well anchored to steel uprights spaced not more than six feet apart, these uprights being attached to the steel frame of the building. It is needless to add that this work should be laid up only in Portland-cement mortar, and that the workmanship should be of the highest order. Floors and walls built as described above might, in case of an earthquake, crack or warp, but it is difficult to imagine them collapsing.

Cornices and projections should not be allowed of masonry. If they are necessary from an architectural standpoint they should have a steel skeleton thoroughly well attached to the steel frame of the building, forming a support for the reinforced-cement or copper covering.

The water and gas pipes and electric wires should have special ducts, and the practice of carrying these next the columns, and surrounded by their fire-proof covering, cannot be too strongly condemned. There should be expansion-joints in the water and gas pipes, to avoid breaking in case of settlement of building.

To fully protect a steel-frame building against fire there is probably nothing better than concrete. All the columns, beams and girders in such a structure should be thoroughly encased in Portland-cement concrete.

In the design of the new Lackawanna Terminal now being erected at Hoboken, N. J. (Mr. Kenneth M. Murchison, architect), the conditions to be considered were somewhat similar to those which might be expected in an earthquake, but in a less degree. Both unequal settlement of the foundations and shock had to be provided for, the building resting altogether on friction piles 80 to 90 feet long. It was so designed that unequal settlement would not injure the steel frame, and the walls were made of reinforced concrete as described above, for the same reason, and to withstand the shock due to a blow from a heavy ferry-boat.

The use of monolithic reinforced-concrete construction in place of the steel skeleton for the rebuilding of San Francisco, or for use in any earthquake district, does not appeal to us on account of its lack of flexibility. In the event of unequal settlement, numerous cracks would undoubtedly develop where columns and girders connect, and the repairing of such a building would be an exceedingly expensive and difficult matter.

Reinforced-concrete construction has its uses, but in the present evolutionary stage of its development there is a strong tendency to employ it under improper conditions. Any condition which would crack a monolithic reinforced-concrete building or cause the steel reinforcing rods to separate from the concrete should condemn its use for that particular case. For this reason it is not recommended for railroad bridges, nor does it appeal to one's judgment to use it for the frames of high buildings in localities subject to earthquakes.

Steel encased in cement is the best material known with which to construct the frames of high buildings; but to meet the complicated conditions such as the ideal buildings for San Francisco would require, the designs and details must be carefully worked out.

Yours truly,

WEISKOPF & STERN.

## ILLUSTRATIONS

ST. JOHN'S CHURCH, JACKSONVILLE, FLA. MESSRS. SNELLING & POTTER, ARCHITECTS, NEW YORK, N. Y.

TOWER OF THE SAME.

SOUTH ELEVATION OF THE SAME.

WEST ELEVATION AND SECTION OF THE SAME.

THE HOTEL BLENHEIM, ATLANTIC CITY, N. J. MESSRS. PRICE & M'LANAHAN, ARCHITECTS, PHILADELPHIA, PA.

Some account of the character and construction of this building may be found in our issue for April 1, 1906.

SIDE ELEVATION OF THE SAME.

ROTUNDA OF THE SAME.

UNITED STATES POST-OFFICE AND COURT-HOUSE, PIERRE, S. D. MR. JAMES KNOX TAYLOR, SUPERVISING ARCHITECT, WASHINGTON, D. C.

Additional Illustrations in the International Edition.

S. ZENO MAGGIORE, VERONA, ITALY.

DOORWAY IN THE VESTIBULE OF THE ABBEY AT GROTTAFERRATA, ITALY.

The Greek monastery, in which this doorway was founded by St. Nilus in the time of Otho III—that is, about 1002. The vestibule is the only remnant of the original church.

XI. CENTURY CHURCH AT MORIENVAL, IN THE FOREST OF COMPIÈGNE, FRANCE.

MAIN MARKET-HOUSE, COLOGNE, PRUSSIA. HERR B. SCHILLING, ARCHITECT.

This and the following plate are reproduced from *Zeitschrift für Bauwesen*.

PLAN AND ELEVATIONS OF THE SAME.

COURTYARD OF THE MANOIR D'ANGOT, VARENGEVILLE, SEINE INFÉRIEURE, FRANCE.

Other illustrations of this group of buildings may be found in our last issue.

RUINS OF THE CONVENT OF STA. ENGRACIA, SARAGOSSA, SPAIN.

THIRD PRIZE DESIGN FOR THE GARRISON CHURCH AT ULM, WÜRTEMBERG, PROF. FRIEDRICH VON THIERSCH, ARCHITECT.

This plate is copied from *Architektonische Rundschau*.

## NOTES AND CLIPPINGS

THE PROPOSED EPISCOPAL CATHEDRAL FOR BOSTON.—The Massachusetts Diocese of the Episcopal Church determined at its recent annual convention to accept the bequest of some \$800,000 which the late Miss Sophia Walker, of Waltham, desired should be used in the building of a cathedral somewhere in the Boston metropolitan district. Steps will probably be taken at once to procure further needed contributions to the building fund.

THE STATUE OF PRESIDENT HARRISON AT INDIANAPOLIS.—Mr. Charles H. Niehaus, the sculptor, states that his model for the statue of ex-President Benjamin Harrison, which was originally intended to be erected in front of the new Indianapolis Federal Building, will be finished this summer and be put in place this fall. Opposition to the proposed site has led to the selection of University Park, back of the Federal Building, with the entire approval, it is said, of Mrs. Benjamin Harrison. Mr. Niehaus says that, while a new site has been chosen in University Park, no change will be made in the monument base.

POWDER-ROOMS.—In writing of "Methley," the principal country seat of the Earls of Mexborough, near Leeds, built in 1590 by Sir John Savile, who was a baron of the Court of Exchequer under the reign of Queen Elizabeth, and the founder of the Mexborough branch of the Saviles, the Marquis de Fontenoy says: "Mention should be made, too, of the queer old 'powder rooms.' These were a species of cupboard, a little larger than telephone booths, into which men and women retired in order to be subjected to the powdering process. Very few houses have retained them. Indeed, they are so scarce nowadays that even where they do exist their former use has been forgotten."

FIRE-TESTS OF CONCRETE FLOORS.—Two reports issued by the British Fire Prevention Committee give the results of tests conducted upon two floors consisting of broad flanged steel beams and light steel joists with a filling of concrete, the aggregate being gravel in one case and furnace-clinker and coke-breeze in the other. Examination of the reports shows that the results were very different, as the clinker-and-breeze concrete afforded far better protection than the gravel concrete, and, so far as concerns resistance to fire, it appears to be clear that the former aggregates are distinctly superior. It should not be inferred, however, that cinder concrete is generally more suitable than gravel or stone concrete, for the question of strength and the protection of metal from corrosion have also to be taken into account. Clinker and coke are light but relatively weak, and, owing to their capacity for the absorption of moisture, often cause voids, which accounts for the quantities of steel that have been rusted when encased in concrete mixed with these materials as aggregate. Sometimes, also, they contain oxide of iron, which facilitates corrosion. The remedies for these disadvantages are to be found in the use of sufficient water and cement to guard against voids and to cover the aggregate. With proper attention to these points clinker and coke concrete may be used with entirely satisfactory results in floors of construction akin to those forming the subject of the present reports. It would be very unwise, however, to draw the hasty conclusion that, for different forms of design and for other purposes, cinder concrete should be substituted for concrete made with gravel and other stone.—*The Builder*.

# The American Architect and Building News

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WE are very far from being convinced that the effect of the Baltimore and San Francisco fires has been to demonstrate that, in our towns and cities as they stand to-day, the modern steel-frame building—and all that it implies—is desirable from the standpoint of the investor. Admitting, for the sake of argument, that a modern steel-frame building can, at some future time, be built so as to be practically as well as theoretically fireproof, we believe it is still to be proved that it is really worth any individual investor's while to build such a structure. Some months after the Baltimore fire, experts reached the belief that a depreciation equal to from fifty to seventy per cent. of the total cost had been suffered by the "modern steel-frame buildings" which remained standing structurally, though gutted, and over which the thoughtless raised such jubulations. As, in certain cases, it was later found necessary to take down and entirely rebuild the exterior masonry walls, walls which were at first assumed to be uninjured and safe, the percentage of salvaged value as indicated above is probably no greater than was finally found by the unfortunate owners to be realizable. We fancy that very much the same result will be disclosed in the case of the steel-frame wrecks left standing in San Francisco. Now, the really significant fact is that, because of their belief that architects and builders could erect fireproof and indestructible buildings, real-estate owners have been led into investing a much larger amount of capital in steel-frame skyscrapers than they would have dared to risk in buildings known to be combustible, sometimes finding themselves justified in burying their entire capital in these gigantic modern buildings and in many cases straining their credit to procure the means of adding those top-most stories, upon the rental of which the profit and loss of the undertaking so largely depends. Now, seventy per cent. of loss, when the thirty per cent. salvaged actually represents merely borrowed capital, is much closer to actual financial ruin than would follow in the case where an owner had invested a smaller amount of his

capital in a building known to be combustible. Imperfect and deceptive as the modern building has been shown to be, it is none the less a desirable thing for a community to have for its own protection, and until our cities can substantially be rebuilt on modern lines, it should be the duty of the community to aid in the process of rehabilitation by reducing the taxation on all honest attempts at incombustible building.

THE day after the Baltimore fire, it was reported in some of the daily papers that a watchman in one of the safety-deposit vaults had lived through the night in practical ignorance that the building above his head had been gutted by fire. Whether the tale was true or false, we do not know. Possibly the similar story that comes from San Francisco is merely a gloss on the Baltimore tale; but it is given circumstantially in the San Francisco *Chronicle*, to the effect that one man, out of a gang of butchers who found themselves obliged to flee for their lives, chose to seek safety by shutting himself inside the cold-storage room of the establishment. As some at least of his companions escaped, they naturally had an interest in learning the fate of their warm-blooded but chicken-hearted comrade, and eight days after his self-incarceration began succeeded in getting the door open. The unfortunate man was found in the last stages of exhaustion and is said to have died two hours later at a hospital. Our reason for citing these, possibly imaginary, occurrences is that they afford a chance to remind our readers that fatal or nearly fatal accidents to persons unintentionally locked into refrigerating-chambers are not at all uncommon, and hence it should be the duty of every architect who has to install such rooms, whether in mercantile premises, in club-houses or hotels, to provide the doors with locks that can be operated from both sides, or at least arrange some system of electric signaling which shall give the victim of misprision a fair chance for his life.

THE sensation of being "locked in" is no more agreeable to a grown-up person than it was when first a stern parent introduced him or her to the family dark closet. Yet this sensation may come to any of us in its most terrible form—when there are bars in front and fire behind. One need not be a felon, a maniac, or even a seeker of an evening's enjoyment in a theatre, to have his life put at risk through being locked in. It is a risk to which more and more of the well-to-do are nightly subjected through and because of the growing custom of heavily grating the window and door openings of the lower story or stories with ornamental iron grilles of unreasonable strength. Heads of families, or their butlers, have a not uncommon habit of locking the door and then, in order that the burglar's nippers may not get a clutch on it, hanging the key in some hiding-place not always known to all the inmates and certainly never known to their temporary guests. The impulse to seek safety through outlets in the lowest story is reasonable

and natural, and architects should not, for the sake of mere decorative effect, arrange these lower stories so that they may easily become death-traps in case of a fire. If ornamental window grilles must be used, it is time that some genius discovered a way of building them so as to keep burglars from getting in while they allow the inmates to get out in case of need. We rarely pass the heavily grated windows of the lecture-halls of Columbia University, built on the steep incline of Amsterdam Avenue, without picturing the fate that might overtake the occupants when thrown into panic by, say, a sudden explosion accompanied by smoke and fire. It would be easy, in rushing down the stairs, to lose count of the stories and find oneself in the basement, with a fire behind and above and those terrible grated windows in front.

CONSIDERING the really large number of designs that had to be carefully considered, the jury charged with making the award in the competition for the Peace Palace at The Hague seems to have reached a decision with unexpected and unexampled promptitude. The celerity with which the name of the winner was announced recalls another famous competition where, as nautical history has it, the Queen, anxious to know what came next to the *America*, was answered: "Your Majesty, there is no second." In the present case, however, the jury was good enough to name the second-place man, M. Marcel, of Paris, who received nine thousand florins, while the third prize, seven thousand florins, went to Herr Wendt of Charlottenberg. As to the first prize, twelve thousand florins, it is, if we rightly remember the terms of the competition, merely a payment on account of the commission due for carrying out his design that M. E. M. Cordonnier, of Lille, is now able to touch. If the cable reports are to be trusted, the only American architects who partially recouped the cost of their efforts are Messrs. Howard Greenly and H. S. Olin, of New York, associated, who received a prize of three thousand florins.

THE term "garden city" has in these days been "worked overtime"—to adopt a cant phrase—particularly in England, where a number of schemes for creating model suburban towns as a single operation are now being carried on. The fact that one of the first, perhaps the very first, and the only real Garden City is the one that was founded, and so named, on Hempstead Plains, Long Island, by A. T. Stewart some forty years ago, is brought to mind by the announcement of a competition, the terms of which may be found in our advertising columns, which should attract the attention of our younger subscribers. The limit of cost of the houses which form the subject of the competition is high enough to make the problem attractive, while the assurance that Mr. W. R. Mead is a member of the committee charged with carrying on the competition is guaranty that all the arrangements are such as they should be. For each of the two classes of dwellings desired, first and second prizes of one thousand and five hundred dollars respectively will be paid, and ten supplementary prizes of one

hundred dollars each will also be paid to those found deserving, and, in the case that the Garden City Company sees fit to build after any of these minor designs, the author, on furnishing the further needed drawings and specifications, will be paid, including his prize money, a commission of three per cent. of the contract cost.

WE are reminded of one pleasant National characteristic, that of "claiming everything in sight," by noting that the newspapers speak of the late Charles A. Lopez as "a young American sculptor," whereas he was born at Matamoros, Mexico, and, however much he may have owed to the education in art he received in this city, he probably inherited his genius from his Spanish ancestors. After studying under Mr. J. Q. A. Ward, under Falguière and at the National Academy Schools, Mr. Lopez first attracted general recognition by modeling he did for the Pan-American buildings and grounds. At the time of his death, last week, he had but just finished his model for the memorial to President McKinley that is to be erected in Philadelphia.

IF Dr. Rafafelle Sorgnac, a lecturer at the Sorbonne, is not right, a proper regard for the decencies of life—and death—leads us to think that he ought to be, in his rather startling theory that the recrudescence of consumption in modern times is due to the profanation to which the tombs of dead Pharaohs and other Egyptians have been subjected. Dr. Sorgnac believes he has proved that under favorable conditions the germs of tuberculosis maintain their vitality for thousands of years, and he shows how an epidemic of consumption breaks out amongst those working in the excavations, how a similar epidemic in France attended the first great importation of mummies into that country, and how the keepers of the mummy-cases in museums are peculiarly subject to this disease; and finally the learned lecturer declares that though "dead bodies may not secrete the germs they are undoubtedly a favorite lodging place for the tubercular bacilli."

AS in some sense an offset to this very grim theorizing, we have the more cheering announcement of Dr. W. H. Park, of the New York Health Board, who has been investigating the effect of prolonged cold on typhoid bacilli. Earlier experiments with bacilli subjected to very severe cold—300° to 400° below zero—for a short time, a few hours only, revealed the very discomforting fact that most of the organisms came to life again when the temperature suited their ideas of comfort. Dr. Park, however, carried on his investigations along more reasonable lines, subjecting his cultures to a moderate degree of frost—23° Fah.—for a considerable length of time, so mild a degree of cold being common without break in many sections of this country for weeks and even months at a time. After one week of subjection to this mild cold, Dr. Park discovered that nearly fourteen per cent. of his bacilli were alive, and that in seven weeks only nine-tenths of one per cent. were able to resume business, while at the end of five months no trace of life could be found in any of the cultures.

## THE PENNSYLVANIA RAILROAD'S PASSENGER STATION IN NEW YORK.

THE new Pennsylvania Railroad station in New York, for which the plans are now practically perfected, will be unique among all the railway-stations of the world in the number and convenience of its entrances and exits. This condition is due to the fact that each of the four sides of the structure is a front, opening respectively on two wide avenues and two important streets, which latter have been widened by the company to 80 feet each.

The geography of the station is interesting. It is bounded on the east by Seventh and on the west by Eighth Avenue; on the south by Thirty-first and on the north by Thirty-third Street, Thirty-second Street having been closed and included in the station site. In the center of the hotel, theatre and shopping district the advantage of its location is obvious. The frontage on the avenues is 430 feet and on the streets 780 feet, the sides of the structure forming a perfect parallelogram. As the tracks are 40 feet below the surface of the streets the station is divided into three levels. From the street level upward the walls of the structure rise to the height of 60 feet, except in the centre, where the roof of the general waiting-room reaches a height of 150 feet, and the corner of Eighth Avenue and Thirty-third Street, where there is an elevation of four stories for office purposes. The architectural design of the entire exterior is a Doric colonnade, thirty-five feet high, surmounted by a low attic, raising the general elevation to 60 feet. The unusual extent of the building in area and its general type are suggestive of the great baths of ancient Rome. In fact, the Baths of Caracalla, still magnificent in their ruins, were the inspiration of this architectural plan.

Although the building is low by contrast with its skyscraping neighbors, its scope makes it impressive, and the lofty roof of the waiting-room, rising high above the top of the surrounding structure, with its eight large semicircular openings, 72 feet in diameter, adds dignity to the group of buildings and at the same time makes them a conspicuous landmark, when seen in perspective from the streets. In appearance it is a wide departure from the conventional railway-station. One misses the turrets and towers and more than all the lofty arched train-shed, but as the principal function of this station is performed underneath the streets, the outward and visible signs of the ordinary railway-station are naturally absent.

The exterior construction is to be of pink Milford granite, the stone used for the Boston Public Library, the University Club in New York, the Court-house in Pittsburgh and the Chamber of Commerce in Cincinnati. This is a particularly effective structural stone and its soft shades of color are uncommonly pleasing to the eye.

The main entrance is fixed in the centre of the structure on Seventh Avenue, opposite the intercepted end of Thirty-second Street. This is for foot-passengers only, and from the street-entrance to the stairway to the main waiting-room there extends an arcade 225 feet long and 45 feet wide flanked by shops, which will be occupied by merchants whose wares will appeal especially to the requirements of travelers. On either side of the Seventh Avenue entrance there are also a series of stores. At the farther end of the arcade the restaurant, lunch-rooms and café are established, with proper kitchens and service connections. Beyond is the general waiting-room and the "concourse," all easy of access by convenient stairways.

At the corners of Thirty-first and Thirty-third Streets and Seventh Avenue are open pavilions, which furnish carriage-entrances for incoming and outgoing traffic. Under cover carriages descend from the street-level by a slight gradient about 20 feet to the level of the station proper, the Thirty-first Street incline being assigned as an entrance and the Thirty-third Street ascent as an exit. By this arrangement carriage-passengers are delivered at the most convenient entrance to the general waiting-room.

Apart from the main entrance there are other convenient entrances for foot-passengers from the street level to the general waiting-room and concourse from both the streets and the avenues. At a central point in both streets wide bridges leading into the street-floor of the station span the carriage-subway.

On the intermediate plane or level the real business of the passenger preparatory to his journey is transacted.

The general waiting-room, the largest of its kind in the world, 320 feet long, 110 feet wide and 150 feet high, occupies the central section of the plan. Within will be the ticket-offices, parcel-rooms, telegraph and telephone offices and baggage-checking windows, all so disposed that a passenger may proceed from one to the other seriatim, with a minimum amount of exertion and without retracing his steps.

Adjoining the general waiting-room on the west are two

subsidiary waiting-rooms, 58 by 100 feet, respectively for men and women, provided with seats, and opening into retiring-rooms, with lavatories attached.

To the east of the general waiting-room is the main baggage-room, with 450 feet of frontage, for the use of the transfer-wagons, covering the full area occupied by the arcade and restaurants on the plane above. The baggage is delivered and taken away through a special subway, 30 feet wide, extending under and along the entire length of Thirty-first Street and Seventh and Eighth Avenues. From the baggage-room trunks are delivered to the tracks below by motor trucks and elevators.

The cabstands will also occupy this level. There will be maintained an ample service of electric vehicles of varying capacities to meet the requirements of travelers.

Parallel to and connecting with the main waiting-room by a wide thoroughfare and west of the subsidiary waiting-rooms is the "concourse," a covered assembling-place over 100 feet wide, extending the entire width of the station and under the adjoining streets. An idea of the width of this concourse is gained by a comparison of it with the lobby of the Jersey City train-shed, which is narrower by twenty-five feet. This may be termed the vestibule to the tracks, as two sets of stairs descend from it to each of the train-platforms on the track-level. The concourse and adjacent areas, open to the tracks, form a courtyard 340 feet wide by 210 feet broad, roofed by a lofty train-shed of iron and glass, similar in design to the famous train-sheds of the new stations in Frankfurt and Dresden, Germany. In addition to the entrances to the concourse from the waiting-room there are also direct approaches from Thirty-first, Thirty-third Streets and Eighth Avenue.

The gates of the stairs descending from the concourse to the trains will bear signs announcing the name, destination and the time of departure of the train from the particular platform where the stairs land.

Auxiliary to the main concourse and located between it and the tracks is a sub-concourse, 60 feet wide, which will be used for exit only. This passageway is 18 feet above the tracks, but is connected with the track level by two stairways and one elevator from each platform. From it ample staircases and inclines lead directly to Thirty-first, Thirty-third and Thirty-fourth Streets, to Eighth Avenue and to future Rapid-Transit stations under Seventh or Eighth Avenues. Direct connection may also be made with the proposed subway-stations on Herald Square without ascending to the street level.

The northern side of the station extending along Thirty-third Street will be assigned to the suburban service of the Long Island Railroad, into which trains will run from all points on Long Island by way of the East River tunnels. Ample entrances and exits are provided on Seventh and Eighth Avenues and Thirty-third Street, so that this traffic can be handled in connection with the adjacent subways and the surface lines on the surrounding streets, independently of the rest of the station.

The third level, which is at a depth below the surface of the street corresponding to the height of a four-story building, is the track level. When the two tracks emerge from the tubes under the Hudson and reach the entrance to the station-yards at Tenth Avenue they begin to multiply, until at Ninth Avenue, and extending into the station, the total number has grown to twenty-one. There is also a reduction in the number of tracks leading out of the station to the east, to a total of four for the main line, two passing under Thirty-second and two under Thirty-third Street, and thence under the East River to the Long Island City Yards. Within the station area, which covers twenty-five acres of ground space, there are sixteen miles of tracks. This trackage will afford ample facilities for the easy and prompt movement of many hundred trains per day by this efficient means of electric power. Through-trains from the western side of the Hudson, after discharging passengers, will proceed at once to Long Island City, where the train-yards and terminals will be located, thus leaving the station-tracks clear of any idle equipment, and, likewise, the westbound through-trains made-up at the Long Island City terminal will pass through the station, stopping only to take up their quota of passengers. The suburban service of the Long Island Railroad will be operated on the "shuttle" plan, by which the trains are kept in continuous motion in and out of the station.

The exposure of the building on all four of its sides to main arteries of street traffic gives the plan a flexibility which is rarely obtainable in a building of such enormous proportions situated in the heart of a great city, and also insures the making of easy connections by underground subways with the future extensions of the city's Rapid-Transit system under Seventh and Eighth Avenues and the cross streets.

The designs for the station were made by Messrs. McKim, Mead & White, architects, of New York, and will be executed under their direction.

## CHURCH SANITATION.

IF one could form a right conclusion from the small number of cases in which sanitary and ventilating engineers are professionally consulted regarding church buildings, one would naturally infer that sanitation is hardly required, and certainly very little thought of, in the planning and erecting of houses of worship. On the other hand, when we take into consideration the fact, well established by recent examples, that a modern large church edifice requires, not only drainage and sewerage, water-supply and gas-piping, the same as any other building, but that it contains quite often an elaborate array of plumbing fixtures, in toilet-rooms, kitchens, serving pantries, gymnasia with shower-baths and lockers, and for some denominations immersion pools, etc., it would seem that a short article devoted to church hygiene might prove of general interest to the readers of *The American Architect*.

It is, perhaps, a trite saying that "cleanliness is next to godliness," but nevertheless the same is quite applicable to those buildings in which the gospel is preached and in which large audiences take part in religious services. Doubtless, in the majority of church buildings the purely utilitarian features of construction and equipment are given very little thought and attention. When they are completed much negligence or indifference in management and a serious disregard to sanitary maintenance exist.

It is a well-known fact that clergymen are frequently susceptible to headaches; that they find themselves exhausted at the end of the church service; that they are completely worn out when the summer vacation begins. The reason for the commonly prevailing feeling of lassitude is not far to seek; it is necessarily the outcome of the often intolerable condition of the air breathed during the evening services in a crowded church. The effects of the steady increase of impurities of the air are in many cases distinctly perceptible in the audience during the last part of the minister's sermon, and only in those churches where healthful conditions exist and where a perfect system of ventilation is installed will few, if any, drowsy or sleepy people in the pews be found.

In many church buildings ventilation is entirely ignored, and the only means provided for effecting some change of air are the windows in the clerestory, and these, of course, can only be utilized in summer time. No less an authority than Dr. John S. Billings states in his classical work on "*Ventilation*" that "the churches are like theaters as a rule at least in one respect, namely, that they have insufficient and unsatisfactory arrangements for ventilation."

The auditoriums are either insufficiently heated in very cold weather, or during milder weather they become overheated when a large audience is present. Complaints of unpleasant draughts are very frequent. Special arrangements for the uniform distribution of a sufficient amount of pure warmed air throughout the auditorium are only to be found in some special instances where either the architect paid particular attention to this subject, or where a special heating and ventilating engineer was entrusted with the problem.

In an excellent little treatise on "*Ventilation and Warming*," published in London in the year 1894, the late author, Ernest H. Jacob, makes a plea for the employment of engineering specialists in the different branches in the following words:

"Through the rapid increase of knowledge on sanitary subjects, the architectural profession has burdens laid on it heavier than it can bear and it is only by co-operation of architectural and sanitary experts that we can hope to erect buildings on a level, not only with the artistic taste, but also with the sanitary knowledge of the day. . . . It is not long since an architect of Antwerp actually refused to carry out the erection of a town hospital, because the Hospital Committee would not appoint an engineer to consider with him the plans with regard to heating and ventilation, before the foundations were laid."

Church hygiene comprises the practical application of the general principles of sanitation to church buildings. The subject is an extensive one, and only the more important matters can be mentioned here. The building of churches is, as a rule, placed in the hands of committees, composed of laymen who are without previous experience in such work, and often even without a general knowledge of any kind of building enterprise. It is, therefore, all the more important that the committee should place reliance upon the professional advice given them by their architect. A competent and well-informed architect will surely impress them with the importance of sanitation, and tell them that the often heard excuse that "a church is occupied only a few hours a week, hence its sanitation may be neglected," cannot be consid-

ered a valid one. It should also be his duty to point out that, rather than put a considerable amount of money into expensive stained glass, sculptures, paintings, bronzes and other works of art, furniture and ecclesiastical fittings, it would be wise to spend first of all some money for efficient ventilation.

Churches built with only one story offer the advantage of greater ease of access and of less danger in case of fire and panic. Some churches are built with a basement story entirely above ground, but the majority of churches have in addition to the main floor a basement or cellar, located partially below the grade level. This cellar or basement is required for the installation of the heating apparatus, for fuel storage and for the location of the gas or the electric meters. The Sunday-school is also in some churches located in the basement, but such a location can only be tolerated from a sanitary point of view when the soil is perfectly dry and the basement made damp-proof.

In a church building the principal room or hall is the auditorium or the place where the congregation meets for worship and for the observance of religious services and ceremonies. In connection with the main auditorium we find entrances, vestibules, stairs and a gallery. The latter is provided to gain additional seating capacity for special occasions of larger attendance, though in some denominations, and notably in the Jewish buildings of this class, a separation of the men and women is made and the women are assigned to the gallery. Where the plan of the church provides for a Sunday-school adjoining the auditorium, the gallery is sometimes omitted, and in this case increased seating capacity is gained by opening the doors between the two.

In the largest churches a number of other rooms are required, notably the study for the pastor with an adjoining toilet-room, a choir-room, a robing-room, a special meeting-room for the trustees, a lecture-room or chapel, and a ladies' parlor. The social features of a church society require much consideration, and in addition to the rooms mentioned we find sometimes a reading-room, a drillroom, and in a recreation building bowling-alleys with toilet-room and lavatory, also a gymnasium with baths and lockers.

Few churches are built thoroughly fireproof, hence we always find in the annually published tables of buildings destroyed by fire quite a number of churches. "Surely there is something wrong in the materials used in church building," says a writer in the *New York Times*, after the destruction of St. Thomas's Church in New York City in 1905, "if they can flare up so quickly and go up in smoke. Is it not possible to substitute non-combustible materials for the galleries, pews and inner walls?"

At church festivals there is apt to be considerable overcrowding, hence there is special danger from panic and from fire at such times. The blocking of the exit doors in case of panic would be particularly serious and, therefore, much attention should be given to the planning of the entrances and exits. They should be commodious and sufficient, in width and number, to empty a church quickly. Large churches should have more than one entrance, and there should always be a special entrance for the Sunday school. The main exit doors should be hung so as to open outward to avoid a jam in case of a panic.<sup>1</sup> The inner vestibule doors may be hung on double-acting spring hinges. The vestibules should be spacious and capable of holding a large crowd.

Where there is a gallery the stairs leading up to it should be wide, without winders, and with a convenient proportion between risers and treads. Where there is an attic over the church auditorium it should always be made accessible by stairs, as it will necessarily contain the distributing lines for the gas cluster lights and the electric wire conduits.

To enable the quick emptying of a church after services it is further important that the aisles should be of sufficient width: they should never be less than from four to five feet wide, depending upon the size of the church. The arrangement of tapering aisles, which has been suggested, has much to recommend it. It is usual to have a central aisle and in addition to the same sometimes side aisles. The center aisles, which are necessary in the case of certain religious ceremonies, have both advantages and disadvantages, but whether center aisles or two main side aisles are used, the chief requirement is always that they be reached quickly from the seats and that they be made sufficiently wide to enable persons to get out of doors quickly.

Portions of the main floor and also the aisles, stairs and passages are covered with heavy carpets. These and the hair or felt cushions of the pews, with their coverings of plush or other ma-

<sup>1</sup>See Wm. Paul Gerhard, "Theater Fires and Panics; Their Causes and Prevention."

terial, accumulate in course of time a large amount of dust. The carpets as well as the seats should be cleaned, swept and dusted every week, and this should be done in a judicious manner, in such a way that the dust will not be scattered throughout the air, but be properly removed. The floors require cleaning and scrubbing, for much dirt and dust is carried in by the shoes of persons and by their overshoes in case of muddy streets. At regular periods the floors should be washed by means of some disinfecting solution; this is of particular importance after church festival days. The same remarks apply, of course, also to the Sunday-school rooms, which require perhaps even greater care owing to the large number of young children assembled therein.

The artificial lighting of churches is accomplished by means of gas lights, electric incandescent lights and sometimes by candles. Both candles and gas burners cause a very rapid deterioration of the air, whereas the electric light offers many advantages in churches as in theaters and other places of assembly. The reflector ceiling lights, being usually in inaccessible positions, should preferably be electric lights; where gas-fixtures must be used, the jets should be lighted by means of electric gas lighting controlled from some central point in the gallery.

Heating and ventilation are two problems of vital importance in the case of churches, and as a rule it is well to consider them together. Until recently this subject has been considerably neglected, and in one architectural publication on the building of churches I find no mention of ventilation whatever. In another book on church architecture the misleading sentence occurs—"the problem of ventilation is a comparatively simple one for churches!" As a matter of fact the subject of ventilating and warming large halls of assembly is quite a difficult one.

Regarding the heating of churches, it should be borne in mind that the persons who attend the churches are usually dressed for walking and hence a lower temperature seems permissible in some cases than is required in theaters and concert halls, where many of the people sit for hours in full evening dress. In some churches, where services are held on Sunday only, it is still the practice not to warm the church during the week, but the majority of churches have also week-day services and there are many reasons why it seems desirable that such a building should be constantly warmed during the winter season. In the first place cold down draughts are much more keenly felt in churches which are heated for Sunday service only. Then, again, the plumbing would be very apt to freeze and cause trouble, damage and expense. Finally, the organ of the church requires a continuous heating because it would otherwise immediately get out of tune. "It is not generally known," says a writer, "how much the organ in a church is affected by temperature. Ten degrees of temperature above that at which an organ is tuned will serve to introduce the most horrible discord in an instrument which has been perfectly tuned."

The heating of churches is accomplished by means of warm air furnaces, by steam, or by hot water radiation. Smaller country chapels are sometimes heated by stoves, but this method is not to be recommended, except when ventilating stoves are used and properly fitted up.

If it were not for the requirements of ventilation it would not be very difficult to warm a church building properly, but good ventilation signifies that large volumes of fresh air must be warmed to a suitable temperature before being admitted into the auditorium, and this is where both the difficulty and the expense begin. In the case of larger church buildings, where one hot-air furnace would prove to be insufficient, it is generally found to be more economical to arrange for a system of direct and indirect steam radiation, or for a "hot-blast" system. Hot-water heating can be used only in those buildings which are kept warm during the entire winter season, otherwise the hot-water apparatus would soon freeze.

In all buildings where many persons congregate the problem of ventilation should receive the greatest attention, but it is unfortunately true that but few churches are satisfactorily ventilated, while a good many of them are either stuffy or draughty. Perfect ventilation would require the provision of at least thirty cubic feet of fresh air per minute per person, but, owing to the fact that a church is occupied for a comparatively short period of time, it may seem permissible to make a somewhat lower allowance. The minimum allowance should be 600 cubic feet per person per hour. This fresh air supply should be taken preferably not from near the ground or from basement areas, but from a higher point, and in the case of churches the tower or steeple is quite often made to serve as an inlet for fresh air. The air, after being suitably warmed, should be then distributed throughout the

auditorium, and to accomplish this it is necessary that it should be admitted at a great number of points. Floor registers are always objectionable and a good arrangement is to locate the air inlets at the sides of the pews.

Besides introducing pure air, it is necessary to remove the air which has been spoiled by respiration and by the lighting with gas, and this removal of the foul air can be accomplished by different methods. During cold weather it does not seem feasible to open the windows during the service to let the foul air out, and it becomes necessary to provide other means. Some ventilation may be accomplished by means of vent shafts or vent-flues, but unless these are artificially heated they will seldom work well. Where boilers are used, it is generally feasible to locate the smoke-stack in the center of a large brick chimney built for aspiration, and in this way to produce a constant upward draught. Other methods consist in placing steam pipe coils in the flues above the vent registers, or else to use gas-jets.

A much superior system consists in artificial ventilation by mechanical means, and here, the same as in the case of theaters, two methods may be distinguished, namely, the exhaust, or "vacuum," and the "plenum" method. In the latter system the pure warmed air is forced into the auditorium under a slight excess of pressure. This has some considerable advantages, because in case of leaky windows the leakage is outward, and thus unpleasant draughts, such as are common in any exhaust method, are avoided. In addition to operating a system of mechanical ventilation it seems desirable, some hours before and after each service, to flush the church with pure out-door air by opening all the available windows. Ventilation and proper airing are of particular importance in those churches where more than one service is held in a day, especially so in our great cities, where all kinds and classes of people—the clean as well as the unwashed—congregate.

Particular attention should be given to the basement or the cellar of a church, which places are often found to be dark, damp, and musty, and are at times made the receptacle of discarded furniture or other waste material and rubbish. Where the Sunday-school or any lecture or meeting-room is necessarily placed in the basement, the greatest precautions should be taken to secure a dry and light basement. The floor should in all cases be concreted, or, better, waterproofed with asphalt. Where toilet-rooms are provided, these are generally placed in the basement, and this is another reason why the basement requires particular and constant attention. Where it is partly underground, the windows are, as a rule, provided with areas for the better lighting of the rooms. These areas should be kept thoroughly clean and those which occur on the street front of buildings should be regularly swept and flushed with a hose, because much street dirt, sweepings and litter are apt to accumulate in such sunken areas. It is never advisable to open the cold-air boxes or supply inlets for the heating apparatus in basement areas, but if they must necessarily be so located, it is advisable not to have the area cesspools, no matter how well trapped they may be, connected with the sewer.

In connection with the Sunday-school rooms there may be one or more cloak-rooms for the outer garments, overshoes and wet umbrellas. Some precautions should be exercised to avoid dampness and disagreeable odors arising from such places.

The sewerage and plumbing of a church building should be of the best kind, constructed with first-class materials and arranged in accordance with the well-known and well-established rules of modern house drainage. Two dangers exist with plumbing in churches, both of which, however, may be guarded against by judicious management. One danger is that some of the fixtures may not be used much and hence that the water-seal in the traps may evaporate; the other danger consists in the possible freezing up of the plumbing pipes and traps. An efficient and intelligent church janitor should have no difficulty in dealing with these problems.

On account of the social functions connected with church work it is often required to have a well-equipped kitchen and a serving-room adjoining the ladies' parlor. These require one or more sinks with hot and cold water, a gas or coal cooking range and possibly a hot-water boiler or gas water-heater.

In Baptist churches a baptistery is always provided in connection with one or more dressing-rooms. This is a special tank, from 6 to 8 feet long, 4 to 5 feet wide, and 3 to 4 feet deep, intended for the immersion of persons. It may be constructed of wood and lined with copper, or with galvanized sheet iron, and it requires waste and overflow pipes and hot and cold supply pipes, also a hot-water heater adapted to these special requirements.

In the case of the wealthy Baptist congregations the baptistery generally consists of a marble pool.

In the arrangement of the toilet-rooms, the well-known requirements for other public buildings should be followed, and the chief of these are: simplicity in arrangement, avoidance of noise, perfect ventilation and durability of materials.

In synagogues a larger amount of plumbing fixtures is usually provided than in churches, for the reason that some of the services of the Hebrew religion require the constant attendance in the place of worship during an entire day. This makes necessary the provision of separate toilet-rooms for men and for women, for boys and for girls, in addition to drinking-fountains. It may here be pointed out that in some of the older synagogues of some European cities special purifying baths for women are provided, which are required by the religious rites of the orthodox Jews.

It is believed that enough has been said to demonstrate that the health of congregations demands proper attention to the subject of sanitation, and that indifference to church hygiene on the part of those who are at the head of such institutions must be considered inexcusable.

WM. PAUL GERHARD, C.E.

#### A COMPARISON OF ENGLISH AND AMERICAN BUILDING LAWS—II.

**I**N Boston walls reinforced by an iron or steel framework are allowed, in the case of external walls, to be of less thickness than that specified for ordinary brick walls, provided that such walls meet the requirements of the Act as to strength. Party-walls in first and second class buildings must be of brick, and must be carried up to the height of 30 inches above the roof, but in the case of buildings not over 45 feet high 12 inches above the roof is considered sufficient. Where openings or recesses occur in an external wall their extent is limited only by the provision that the piers must be of sufficient strength to comply with the section fixing the maximum load allowable on various materials; the panel walls, however, may not be less than 12 inches thick in buildings under 70 feet high, or less than 16 inches thick in buildings 70 feet and more in height. The question of recesses and openings in external walls seems to be very well dealt with in this manner.

Some requirements, such as those concerning recesses and openings in party-walls and the construction of fireplaces and chimneys, are not dissimilar to those of the Model By-laws; but the external brickwork of chimneys must be 8 inches thick, unless the flues are finished with terra-cotta linings, and in the case of party chimney-stacks the provision of these linings is compulsory. The junction of walls at any angle in the first and second class buildings is required to be assisted by wrought-iron ties at 10 foot vertical intervals. Presumably the brickwork is also bonded, and although the iron ties must provide additional strength I am not aware that this method is customary in any class of buildings in this country.

The construction of floors, both "new and renewed," must be carried out in accordance with very detailed provisions—a contrast to the regulations of the original Model By-laws, where the question of strength is not even mentioned. In Boston the floors of every building are required to be so constructed that they will carry safely the weight to which the proposed use of the buildings will subject them. The least capacity per square foot, exclusive of materials, is given, as: floors of dwelling-houses 50 pounds, office buildings 100 pounds, public buildings 150 pounds, warehouses 250 pounds. As will be seen, these data are considerably less than those in use for the construction of ordinary buildings in this country, and thus the regulation as to strength just referred to can hardly effect the erection of buildings of sound construction, while still keeping the jerry-building fraternity within reasonable bounds. It is also stated that every building built or altered after the commencement of the Act must have posted in every room used for mechanical or mercantile purposes the building commissioner's certificate of the weight-bearing capacity of the floor, which capacity must not be exceeded.

The strength of "new and renewed" roofs has also to be in accordance with the specified municipal requirements, and the construction of elevator shafts is not allowable unless "some substantial material not inflammable" is used, and existing shafts (except those 28 inches square, or less, and those in ordinary dwelling-houses) must be rendered non-inflammable on the inside.

The question of means of escape in case of fire, both from new and existing buildings, is dealt with in a much more drastic fashion than in the Massachusetts building laws, previously referred to. "Every building hereafter built" and every building occupied by two or more families, or as a tenement, boarding- or lodging-house, or as a factory or workshop, is required to have, with reference to its height, construction, surroundings, character of occupation and number of occupants, sufficient means of egress in case of fire "satisfactory to the building commissioner." In all new buildings two stories or more in height, and in all existing buildings, other than ordinary dwelling-houses and small mercantile premises, there must be provided "two independent and sufficient ways of egress." Any person responsible for the condition of a building is entitled to a certificate to the effect that the building is provided with safe means of egress.

The regulations dealing with the construction and means of escape from theaters are, both in Boston and New York, of a very detailed character; but as, again, this branch of my subject is quite sufficient for a separate article, and as it is hardly of general interest, there will be no attempt to go farther than to state the existence of not very dissimilar regulations to those in force in London. With regard to New York, however, I may mention the interesting requirement that a diagram plan of each tier, gallery or floor, showing the exits, must be printed on the programme of the performance.

It will have been noticed that in several instances in Boston existing buildings are dealt with. These, as in England, are, of course, often under leases, and a clause has been inserted in the Boston building laws to enable a lessor who may have had to spend a considerable sum on his premises to collect an extra rent from the lessee. It is stated that "in the case of any alteration not in the nature of ordinary repairs being required under the terms of this Act upon a building wholly or partly under a lease containing no provision for such a case, the owner shall pay the expense and may collect of the lessee an additional rent for the portion so leased equal to 8 per cent. per annum on that proportion of the sum paid which the leased portion bears to the whole building."

From this summary of the Boston building laws it will be seen that the requirements are in great contrast to those of an English provincial town based upon the Model By-laws. The contrast is in this case much more marked than when, as will now be attempted, a comparison is made between the New York Building Code and the London Building Acts.

As in several respects the New York Building Code is very similar to the Boston building laws, it will not be necessary to mention in detail requirements which can be much more easily dealt with by reference to the Boston Code. We again meet with defined limits, styled fire limits, within which only small specified frame buildings are allowed to be erected. The building code is administered by three commissioners of buildings, there being one commissioner for the boroughs of Manhattan and the Bronx, one for the borough of Brooklyn, and one for the boroughs of Queens and Richmond.

There is the right of appeal from a commissioner's decision in any case where the amount involved in such decision exceeds 1,000 dollars. In the boroughs of Manhattan and the Bronx such appeals must be taken to a Board of Examiners consisting of nine members representing the official, industrial and building interests. In the boroughs of Brooklyn, Queens and Richmond appeals must be taken to the Board of Buildings, of which body the three commissioners of buildings are the only members. In both cases the decision is stated to be final. It is to be feared that the Board of Buildings, consisting as it does entirely of officials, can hardly be expected to take an entirely impartial attitude; the constitution of the Board of Examiners, however, does not meet with this objection and is not very dissimilar to that of the tribunal of appeal brought into existence by the London Building Act, 1894.

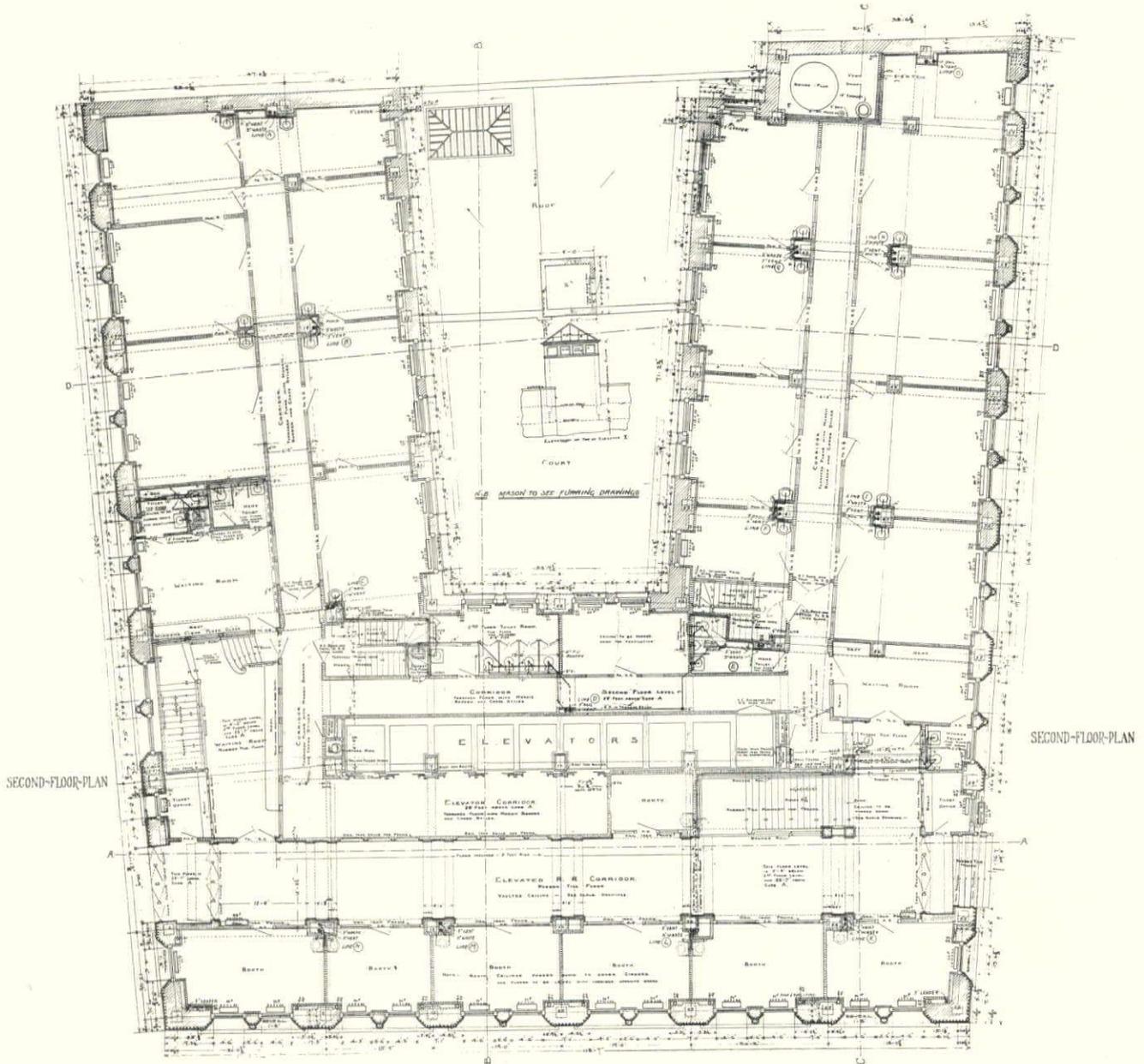
In contrast to London, where in ordinary cases plans need not be submitted, although they are required in all our provincial towns, plans in New York have to be deposited in all cases of the erection of new buildings or the structural alteration of existing ones. Some structural details are also required, and no work is allowed to be commenced until the plans are approved.

As in Boston, buildings of a certain size and class are required to be erected of fire-resisting materials. All new buildings over 75 feet high and those over 35 feet high which are to be used as hotels, lodging-houses, schools, theaters or similar buildings are to be thus constructed. It is to be noticed that wood floors if pugged are considered to be of fireproof construction.

<sup>1</sup> Continued from page 163, No. 1585.

Non-fireproof buildings fire stories in height, erected or altered for use as tenement or apartment houses to be occupied by one or more families on any floor above the first, must have the first floor above the lowest story constructed fireproof. When any such building exceeding five stories in height has a store on the first story, the entire second-story floor shall also be constructed fireproof, and if the building exceed six stories, or 75 feet in height, both the first and second story floors must be constructed fireproof. A non-fireproof building of this class may in no case exceed seven stories, or 85 feet, but if constructed of fireproof materials it may be 150 feet, or not more than twelve stories, in a street exceeding 79 feet wide, but not more than 125 feet, or ten stories, in a street less than that width. No building exceeding 100 feet in height may be less than 40 feet in width.

fireproof buildings, in accordance with their situation on the frontage or at the corner of a street, may extend to from 8,000 to 12,500 square feet. When it is realized that the buildings may in ordinary cases considerably exceed 100 feet in height it is seen that, to our mind, an enormous cubic capacity is allowable. These figures only refer to non-fireproof buildings, there being no limit in New York as to the area of fireproof buildings. The allowable area of buildings in Boston has been previously referred to, and while this subject is under consideration it may be of interest to note that there is no provision whatever in the Model By-laws to regulate the cubic capacity of buildings. It does not appear unreasonable to suppose that an outbreak of fire has much less chance of becoming dangerous if the extent of the building in which it occurs is limited.



SECOND-FLOOR PLAN: UNITED STATES EXPRESS COMPANY'S BUILDING, NEW YORK, N. Y.

The height of buildings erected under the New York Building Code is measured from the curb level to the top of the roof beams in the case of flat roofs, and to the average of the height of the gable in the case of high-pitched roofs, whereas under the London Building Act, 1894, it is measured to the top of the parapet or to the base of the gable. The height of buildings in New York is almost proverbial, but few people can be found to state that an increase in the present limit of height for London buildings would in any way be for the good of the community.

The regulations limiting the cubic contents of buildings will, I think, appear to us not to err on the side of safety. Warehouse buildings in London are not allowed to exceed 250,000 cubic feet, except by the consent of the Council in certain cases, where an extent of 450,000 cubic feet may be allowed. In New York non-

It may be remembered that the Baltimore fire of less than two years ago originated in a building of a cubic capacity of about 1,000,000 cubic feet—four times that allowed by the London Building Act, 1894. The fire thus obtained such an extensive hold that it was impossible to prevent the adjoining buildings becoming involved, with the well-known disastrous results. In this matter of the limitation of excessive cubical extent, I think it will be agreed that our methods in London are much preferable to those current in the United States.

When we consider the laxity prevalent in the limitation of cubical extent, the strict regulations in New York for the prevention of the spread of fire through windows and door-openings are in striking contrast. An attempt to obtain powers of a similar nature in London was made recently in that part of the amend-

ment to the Building Act which was not proceeded with. A justification for such an attempt may be considered to be found in the fact that several comparatively recent fires on a considerable scale, notably the one of a few years ago in Cripple-gate, would have been confined to a much smaller area if similar regulations to those in New York had been in force. In that city every building more than two stories above the curb level, except dwelling-houses, schools and churches, must have iron blinds or shutters to every exterior window or opening above the first story if there is another building within 30 feet of such openings, and the shutters or blinds must be closed at night. The shutters may be constructed of pine if made of two thicknesses and covered with tin, or other suitable protection of openings may be provided if sanctioned by the authorities; and fireproof buildings are allowed to have inside shutters.

The stated distance of 30 feet does not seem to be too much, for in the Barbican fire of a few years ago the flames leaped the street, which was more than 40 feet wide, and attacked the houses on the opposite side.

It is when the subject of general construction in detail is touched upon that we find the most considerable difference between the New York Building Code and the London Building Acts. In London the regulations dealing with the construction of ordinary buildings, other than those fixing the minimum thickness of walls, are very largely confined to the prevention of the spread of fire—the construction of hearths and flues, the heights to which party and external walls must be carried above the roof, and other such like requirements. In New York, however, not only are these matters dealt with in a very similar manner, but also the details of the construction of foundations, walls, floors and roofs have to be carried out to comply with the tabulated safe capacities of the particular materials used. The bearing powers of soils are given, and also the proportion of the live load, varying in accordance with the class of building, which has to be added to the dead load to enable the total weight resting on the foundations to be obtained.

The code also contains several pages of specification and formulas for constructional iron and steel work, and as a whole it may be stated that on the subject of regulations dealing with construction it is hardly possible to compare the building legislation of London with that of New York. Our methods probably do not tend to such scientific construction, but individuality is given more scope; and although it may be desirable that there be more control exercised over the operations of jerry-builders, yet the authorities in New York appear to have gone to the other extreme.

Some of the few requirements which are able to be contrasted with those in London are possibly of interest. It is stated that walls may be of less thickness than specified, if the same amount of material is used in piers and buttresses; that hollow walls may be constructed of the same quantity of material as if they are built solid, both of these being, of course, different from the requirements of the London Building Act. In one case the rather curious term of "fore and aft" wall is used; if this had occurred in our London Building Act it would rather naturally have been put to the credit of the predominant naval element existing in the fire brigade.

In one noticeable instance it is seen that the American regulations are less stringent than our own, buildings being allowed to be erected outside the building limits of a class that would not be sanctioned even in the outskirts of an English provincial town. We can hardly venture to state in the face of present day criticism that in this respect our requirements are as reasonable as those current in American towns.

In many other instances, such as the compulsory fireproofing of certain buildings, the provisions of means of escape, and the detailed regulations for safe construction, the American requirements are of much more far-reaching character than our own. It must be admitted, however, that in some cases, as, for instance, those regarding the erection of steel-skeleton buildings and those regulating the proportion of piers and recesses in brick walls, the requirements appear to be founded more in accordance with scientific construction, and are consequently of a less hard-and-fast character. If there is one point in particular more noticeable than another in the contrast between the building legislation of the two countries, it is the great prominence given in the American regulations to the provision of theoretically safe construction.

It is of interest to note that in the case of the American building legislation quoted in this paper there is not the long list of buildings and companies exempted, which, especially in the London Building Acts, is such a common feature of similar legisla-

tion in this country. The only buildings specially stated to be exempted are those which are the property of the United States.

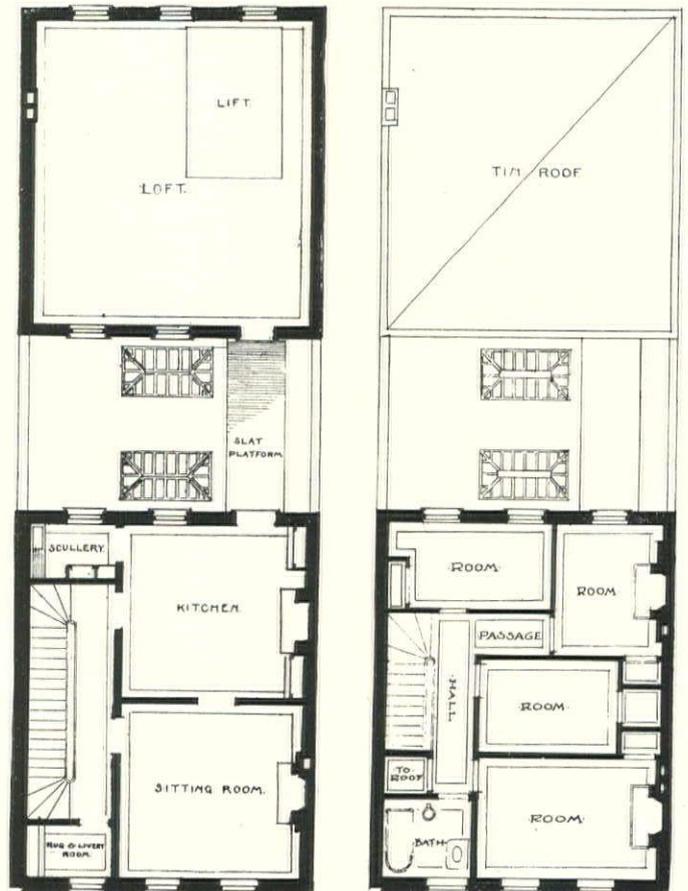
## ILLUSTRATIONS

THE UNITED STATES EXPRESS CO.'S BUILDING, TRINITY PLACE, RECTOR AND GREENWICH STREETS, NEW YORK, N. Y. MESSRS. CLINTON & RUSSELL, ARCHITECTS, NEW YORK, N. Y.

DETAILS OF THE SAME.

THE MECHANICS' NATIONAL BANK, BALTIMORE, MD. MESSRS. TAYLOR & KNOWLES, ARCHITECTS, BALTIMORE, MD.

GARAGE OF ANDREW CARNEGIE, ESQ., EAST 91ST STREET, NEW YORK, N. Y.



SECOND-FLOOR PLAN

THIRD FLOOR PLAN

PLANS OF GARAGE FOR ANDREW CARNEGIE, ESQ.

MESSRS. WHITFIELD & KING, ARCHITECTS, NEW YORK, N. Y.

PENNSYLVANIA RAILROAD STATION, NEW YORK, N. Y. MESSRS. MCKIM, MEAD & WHITE, ARCHITECTS, NEW YORK, N. Y.

For description see article elsewhere in this issue.

PLANS OF THE SAME.

CONCOURSE AND TRACK LEVEL OF THE SAME.

RESTAURANT AND WOMEN'S WAITING-ROOM OF THE SAME.

GENERAL WAITING-ROOM AND ENTRANCE ARCADE OF THE SAME.

SEVENTH AVENUE ELEVATION; NORTH-AND-SOUTH SECTION; AND EXIT CONCOURSE OF THE SAME.

CONCOURSE AND TRACKS;—BIRDSEYE VIEW OF THE SAME.

THE CONCOURSE OF THE SAME.

SECTIONS THROUGH THE SAME.

### Additional Illustrations in the International Edition.

ENTRANCE TO THE MECHANICS' NATIONAL BANK, BALTIMORE, MD. MESSRS. TAYLOR & KNOWLES, ARCHITECTS.

FIFTY-NINTH STREET ENTRANCE: DE WITT CLINTON HIGH SCHOOL, NEW YORK, N. Y. MR. C. B. J. SNYDER, ARCHITECT, NEW YORK, N. Y.

# The American Architect and Building News

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WE would like to ask each architect who has been induced to bring suit against a former client because of the duplication, without further payment to him, of a design prepared for a single building, to give us in brief, with proper citation of the court's decision, all facts that may seem to have a bearing on it and similar cases.

IT is vastly fortunate, for all that makes for intellectual enjoyment, that in Europe and Asia primeval and untutored man was not brought into immediate contact with the man of to-day, as he is in large parts of Africa, in Australia, and in the greater portion of the Americas. In the latter countries, the transition from a stage of barbarism to one of the highest and most complicated civilization has been accomplished in a very whirlwind of progress, which has left as physical, historical and intellectual landmarks little that can be compared with the vast and interrelated records left by the slower development of Asiatic and European civilization. We of to-day understand that, though the archæological history of Mexico, Central America and Peru is as deserving of profound study as that of Assyria and Egypt, in this Western Hemisphere there is nothing that stands for the romantic history of the Middle Ages, and but very little that images the doings of the Renaissance, while the records of modern man—such records as go to constitute a country's "historic monuments"—have been made in such crude and ephemeral fashion as to be hardly worthy of respect, even when they have subsisted. The tract of country that now represents the United States is particularly barren of such material, but nevertheless there are a few "monuments," and because they are so few they should all the more sedulously be protected.

FOR years the various scientific bureaus of the Government, the archæological and ethnological societies and interested persons individually have been trying

to get Congress to take some action that should preserve for the future the various Indian mounds and tumuli, the pueblo and cliff dwellings, and the relics of the Spanish occupation—for in these four classes fall most of our antiquities. Last month, Senator Patterson introduced a new bill which, if enacted, will enable the President by proclamation to declare such prehistoric and historic landmarks to be "national monuments," and will enable the punishment by fine of five hundred dollars, or imprisonment for ninety days, or both, of any person who injures, destroys, or removes any structure so denominated. It provides, however, that permits may be issued by certain executive departments for the careful examination and excavation of such monuments, and the gathering therefrom of collections "for the benefit of reputable museums, universities, colleges," etc., with the understanding that "the material gathered shall be for permanent preservation in public museums." It is high time that the selfishness of the relic-hunter and the wanton vandalism of the average "tripper" should be brought under control.

IT has been the fortune of the greater number of the American architectural schools to be established, and for a long series of years to be maintained, merely as departments—quite dependent ones, too—in scientific schools, where the real interest of the faculty was absolutely absorbed in developing the formalism of the exact sciences, particularly engineering in its several branches. It shows, on the whole, a rather surprising openmindedness on the part of founders having such strong engineering predilections that they did not always place at the head of the new department an engineer, but in so many cases were willing to appoint to the new chair men who were practising architecture as an art. Little by little, one school of architecture after another has won its partial, sometimes even its nearly entire, emancipation from the deadening control of engineering formalism, and the heads of these luckier schools have at length been able to arrange that the necessary instruction in the mechanics of building shall be given from the outset from the architectural standpoint. It has none the less always, and properly, been demanded that the architectural students should attend certain lecture-courses in engineering and should study certain works on mechanics and mathematics, quite as if they were to be engineers, not architects. This is because, simply, architecture is a science no less than an art. It follows, none the less, that a student of delicate perceptions and real artistic temperament, because of this training, acquires, if not actually an engineering turn of mind, at least an understanding of the way in which the engineering mind habitually looks at the methods and materials of construction.

BUT while this change has been wrought in the student of artistic temperament by this sort of education by exosmosis, has there come to the engineering student, through association with his architectural companions, any reciprocal amelioration? If it has not, ought it not to have come to him, and should it not be made to

come? Possibly it may be the custom in some scientific schools, though we do not at all believe that it is, to require the students in civil and mechanical engineering to attend lectures on architectural form and expression, and to acquire a certain manual dexterity in the freehand drawing and modeling of such forms, and possibly it may be drilled into some of them that it may be good art and not bad construction to use more than the strictest minimum of material. Now that the use of steel throws so much building work into the hands of engineers, it is peculiarly desirable that engineers should have more knowledge than they used to have of the aim and purpose, the why and the wherefore, of the forms of architectural expression. Lacking this, and seeing only that architects nowadays require their assistance more and more, engineers are tempted to believe, and lead their clients to believe, that they can do not only their own work but that of the architects as well, and the effect of a general yielding to that belief would be most unfortunate.

ONE very curious indication that engineers, whether through the influences of their school training or because of their more intimate association with architects in their everyday work, have acquired a better understanding and appreciation of architecture than they used to have, may be found in the new building of the Engineers' Club on West Fortieth street, New York, which is being graced with the most elaborately architectural façade that can be found in the entire city—the very kind of façade that the rigidly formal and economically-minded engineer might be expected to banish from his own home. Proselytes usually go to extremes, and so this building, extremely praiseworthy in spite of its elaborateness, may really be a proof that members of the engineering profession are changing their viewpoint so far as architectural methods are concerned.

OLD Ladies' Homes are very commonly assumed to be the scene of perpetual dissensions between their gossiping inmates, and, unless artists are willing to eschew their jealous bickerings, we fancy that the sojourners in "homes" for decayed artists would be likely to occasion even more scandals. But that would be but one more of their misfortunes, and is no reason why it, with the others, should not be alleviated. We rather make it a point not to record instances of suicide amongst the artistic fraternity, for usually it is but the last incident in an unsuccessful career—and why lay stress on that? But the daily papers make such records too frequently for it to escape attention that there are many destitute and despairing artists of one kind or another who deserve a better fate than a blind puppy's. Although for several years there has been much vague talk as to the desirability of making some provision for aged, sick, and destitute artists, it is only recently that anything like a serious endeavor to meet the situation has been made, and now it looks as if practical efforts to establish too many "homes" were being made at the same time. The Artists' Aid Society and a similar body, the Artists' Fund Society, have for some time been able to give occasional assistance to the needy, and now the National Sculpture Society has

undertaken to raise a fund of two hundred and fifty thousand dollars that it may provide a home for decayed sculptors. Finally, what may easily develop into the most important undertaking of all is that of the Fine Arts Federation of New York, which has just appointed, as a "committee on plan and scope," Messrs. Charles A. Rich, architect, Augustus Lukeman, sculptor, and Henry B. Snell, painter, to devise a scheme for providing a retreat, on Staten Island probably, for the "aged and indigent, but deserving, members" of their several professions. As the idea seems to include the providing of studios and ateliers where those who are able may still practise their calling and do something to win an income for the "home," normal industry may do a good deal to preserve the peace, and if, further, a "cottage scheme" rather than an institutional one be adopted, it will probably minimize internal discord at the same time that it promotes external harmony.

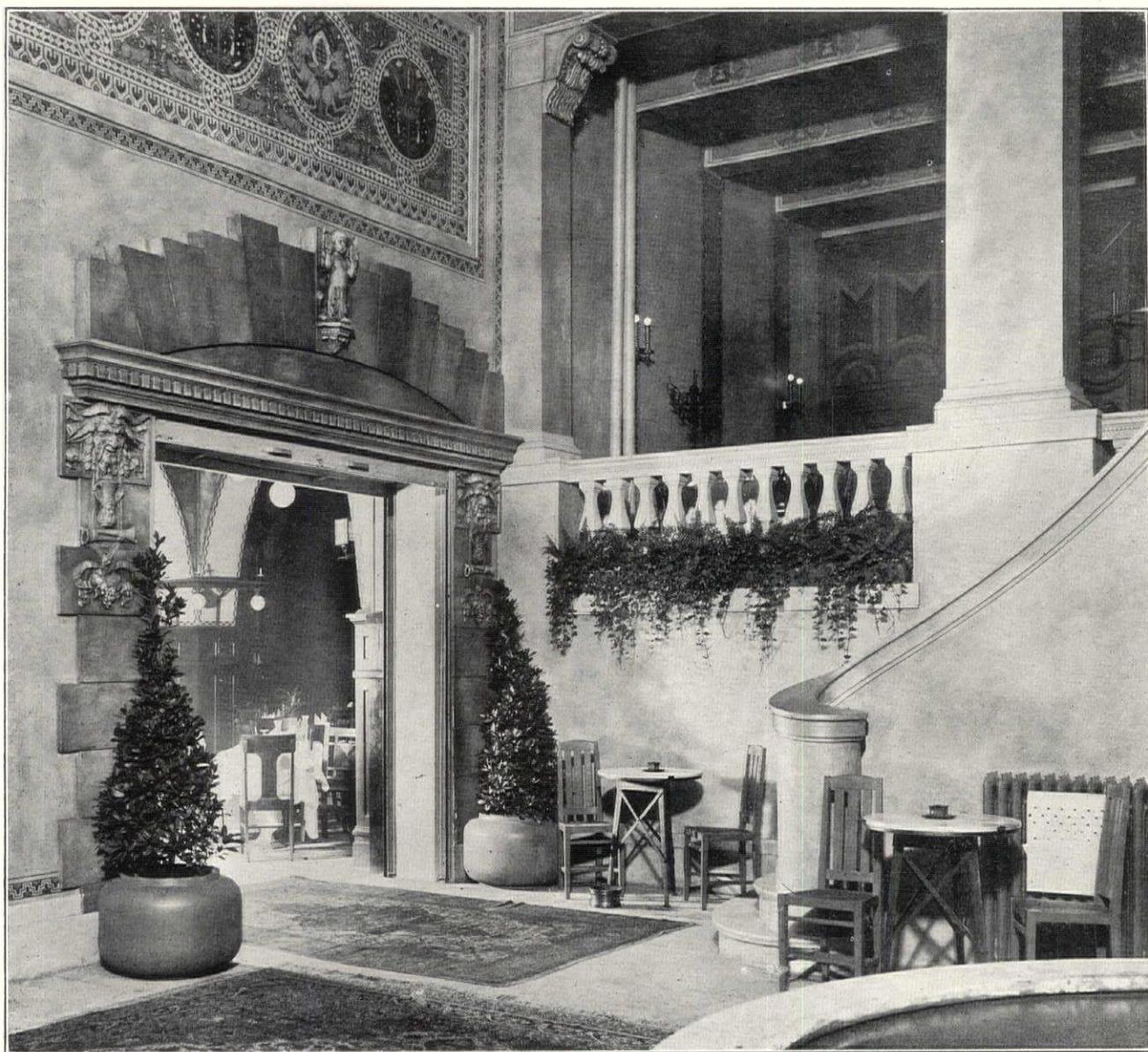
APROPOS of Miss Nora Stanton Blatch's admission to membership in the American Society of Civil Engineers, the *New York World* publishes data, possibly culled from the latest census returns, relating to the 431,174 women occupied, as the newspaper alleges, in professional pursuits in this country, more than ninety per cent. finding occupation as teachers, musicians and artists. Of the remaining ten per cent., no less than 1,072 are said to be occupied as "architects, designers and draughtsmen," while in the year 1880 there are said to have been only 72 "architects and designers." Although, as most of us know, the women who are actually practising as architects constitute but the meagrest handful, the figures, assuming that they are based on actual returns, are extremely interesting and show that, with reasonable speed and, doubtless, with essential success, some women are finding that they can earn a living in less irksome ways than have to be followed still by more than ninety per cent. of female breadwinners in professional walks. Perhaps Miss Blatch's success may encourage some of the few female practitioners to apply for membership in the American Institute of Architects, which, at the moment, we believe, carries no women on its rolls, Mrs. Bethune having withdrawn some years since. At the present moment, the Misses Charles, of London, are the only architects who are "recognized," as it were, these sisters having for six and eight years been Associates of the Royal Institute of British Architects.

IT is hard for the layman to keep track of "labor decisions" or to place a true value on those he finds recorded in the daily press, but a new decision of the New York Court of Appeals appears to be of importance to citizens of that State. It appears that there is a section [171A] of the Penal Code that forbids an employer constraining by agreement any of his employes from joining a trade-union. The Court of Appeals now rules that this section is unconstitutional, since the State Constitution provides that the Legislature may not "restrain an employer from entering into a free contract, provided the contract does not interfere with public health and safety."

## THE CHICAGO BAR.

WITH all the excitement which has recently existed over the matter of high license for saloons, here in Chicago, our thoughts have naturally turned in their direction, and it is astonishing to see, in the down-town districts, in what goodly guise these "emissaries of Satan" clothe themselves. In fact, among the few picturesque bits of noisy, smoky metropolitan Chicago we find the special fronts, often a small portion of a large modern façade, of this class of places. They and the restaurants proper offer some of the most, if not the very most, attractive architectural things to be seen on the down-town streets. Though there are many examples of the old glitter and tinsel variety in the way of stained and beveled glass and gaudy

capitals which "carry" very well from the street level. The terra-cotta trims of the windows on the second and third stories are most pleasing in design and full of the feeling of the New Art. The front of the ground floor has five divisions, the material, when glass is not the exposed surface, being chiefly granite. The two side features, while apparently somewhat symmetrical as to spacing and division, are in reality quite different: the one to the east belongs to the billiard-hall department, while the western one consists of the entrance to the Nepeenauk bar, around which clusters some very charming and quaint designing. In fact what richness of decoration there is in the exterior has been concentrated very largely on the bar entrance, which is a most delightful and artistic bit, with very delicate details. Altogether, though quite a departure from the style of architecture hitherto



STAIRCASE-HALL IN THE "HOF BRÄU," CHICAGO, ILL.

electric lights still existing, there must be nearly a dozen places most charmingly treated either in interior finishings or exterior setting.

One of these "resorts" is in the Nepeenauk Building, but is not so marked a feature in itself as it is a part of the whole façade, which is an unusual creation. The building, which was designed by Mr. Richard Schmidt, has recently been finished. The material used is nothing unusual, being paving brick and terra-cotta, but the design is somewhat of a departure for a six- or eight-storied office building. It is strongly flavored with the "L'Art Nouveau" spirit; in fact, is a "L'Art Nouveau" composition, one might better say.

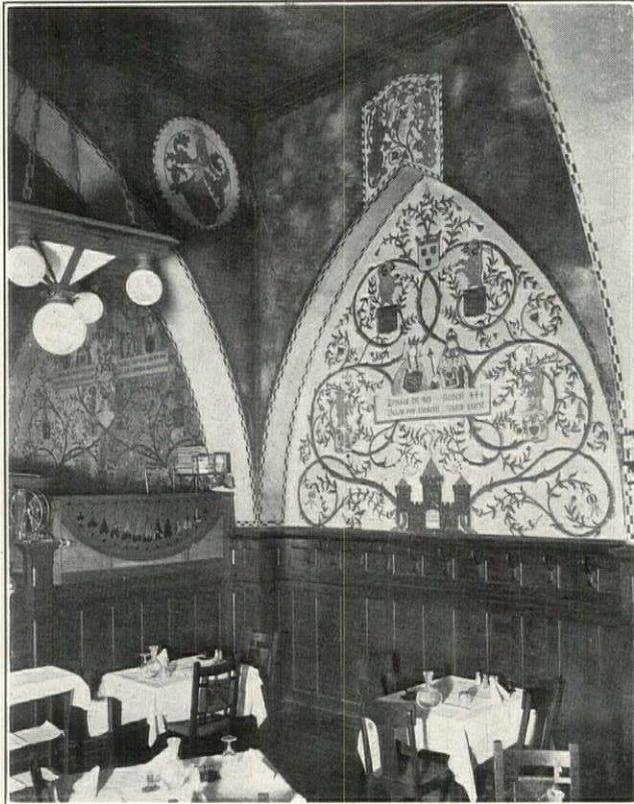
Three pilasters divide the building into four bays, the pilasters being crowned, just below the cornice, with excellently designed

used for commercial subjects, it is a very pleasing one and the result is good. The peculiar character seems rather to necessitate small windows, which never are popular in an office-building. Certainly these offices have not been taken rapidly, and there has been severe criticism of the plan, which is said to have been made to suit the convenience and requirements of the first floor.

A very pleasing example of artistic down-town architecture is to be found in the front of the "Hof Bräu," a saloon and restaurant on Monroe Street. Taken altogether, in spite of its original limitation, for it is a remodeled building, this is one of the most successful bits of design in the city. It also was the work of Mr. Richard Schmidt.

The building in which the Hof Bräu is located was one of those most hopeless of old structures dating from the post-fire

days, high of ceiling, narrow in all openings, both doors and windows, and built of a commonplace red brick, with the usual gray stone trimmings of atrocious design. The front in the lower story has been entirely removed and a semi-Gothic design has been executed in rough grayish plaster, with terra-cotta moldings, all toned together by the ever busy smoke of Chicago. A



WALL-DECORATION IN THE "HOF BRÄU."

large central portion with the door to the bar proper is flanked on either side by two small entrances, one for ladies using the restaurant and the other leading to the second story billiard "parlors." Above the central portion the electric sign of the Hof Bräu is apparently held in place by heavy chains, which rest on a squatting lion with a little gilt shield between his paws,



THE "HOF BRÄU."

bearing the illuminated initials of the place. Over the side entrances hang two lanterns of quaint design in iron and glass. The details of the openings and treatment of mouldings are well carried out in this type of German Gothic, and yet tinged with the strong and pleasing individuality of the architect.

Evidently the interior was one of those places which "try men's

souls," high and hideous, deep and dark, and the transforming of this place into a charming interior has been a clever piece of work. The portions nearest the street are not so elaborate. Next to the bar is the men's special restaurant. The ceiling of this consists of a series of arches, the whole covered with a yellowish plaster, while the woodwork is dark oak. Half-way back the floor is raised the height of a step or two, and a little arbor or pergola of dark wood covered with hanging vines, shuts off in a great measure the space allotted to "family use." Here the treatment is very successful and distinctly Gothic. The ceiling is vaulted, much reducing the effect of height, the vaulting beginning where the wainscoting ends, about six feet from the floor. A curious and naïve effect is obtained, quite worthy of the old Gothic builders, in the irregularity of the arches and vaulting, necessitated apparently by the columns and windows of the former building. The arches over the windows do not correspond to the vaulting of the ceiling and, furthermore, the dividing of the ceiling into two entirely unequal parts adds to the quaintness of the character of the place. Some kind of a dark-red linoleum on the floor simulates tiles. The dark woodwork on the walls meets, as said before, the yellow plaster of the vaulting, and this plastering is decorated in quaint old German designs in bright colors. In the back room, where the decoration is more elaborate, above the wainscoting a combination of mottos encircles the room in a never-ending round of Teutonic wisdom concerning good drinking and eating. Above this, mild, little, docile fauns stand against a background of lattice-work, while conventionalized orange-trees, bearing fruit and red parroquets, rise behind them into the vaulting. Two stained-glass windows at the back, with pointed frames and borders of grape-leaves, make a pleasing feature at the southern end of the room. Other portions of the establishment, especially the one at the east side, are almost equally interesting, but not at all on a similar scheme of design, being based almost entirely on L'Art Nouveau.

The German restaurants seem to be the ones which bear off the palm for the greatest number of artistic settings.

The old Bismarck, without exterior architectural pretensions, formerly, when we had nothing better, seemed to have some charms in its interior finishing. However, of the two old ones, the Bismarck and Edelweis, the Edelweis is far superior in its artistic setting, though, like its companion, it makes no pretensions to any architectural features on the exterior. In the interior of the Edelweis there is more artistic treatment in decorative mottos, old German electroliers and a general Teutonic spirit of no pronounced period.

Still another German restaurant and saloon stands out as a good piece of work—this is the Vogelsang establishment. In the interior the treatment, as a whole, is nothing striking, with the exception of a few portions, but the place has recently had a new front erected, which is very clever. It is entirely L'Art Nouveau, from the German point of view, and is very attractive. The lower stories of these perfectly commonplace and unattractive old buildings have been "consumed."

Along under the line beneath the old second-story windows, a band-course has been introduced, which forms a cornice apparently to the new portion of the building, but which in reality hides electric lights, which bathe the front in a modest glare, so its charms shall not be lost on the passer-by either by day or night. The front, which is of gray plaster, consists of a central portion, divided into window spaces and doorways, with flanking features of "nouveau" proportions, whose upper portions assume almost the character of an architrave, bearing German coats-of-arms of moulded plaster on their smooth surfaces, devoid of mouldings. The extremes of the façade are composed of features, which are accentuated by semi-circular stained-glass windows, the whole extremely symmetrical in effect, but curiously unsymmetrical in detail, the doors of one opening almost invariably corresponding to windows in the other. Especially noticeable is the quaint doorway, with pilasters with vine-wreathed capitals, which corresponds to the row of high narrow windows on the other side.

The whole color scheme is gray and white. The stained glass is an opaque white, a row of white dentils is introduced in the central part and the little high, narrow windows are further furnished with small white curtains. The whole composition is striking and charming.

As said above, we seem to run to German restaurants here, but when we remember that Chicago is the fifth German city in the world, New York being the fourth, it is not to be wondered at.

Very different in character from the work already mentioned is that found in the restaurant known as Rector's, in the basement of the new Rector Building.

This is a most perfectly carried out example of Louis XV. style. The entrance to the restaurant stairway is through a well-designed glass and bronze doorway of simple lines, the only



VOGELSSANG'S.

ornamentation being some bronze garlands on the glass, flanked on either side by some small gilded griffins, also on the glass, which have been the emblem of the establishment for years. Passing through the doorway, the stairway immediately attracts one's attention by the ornate details of the style, which is so faithfully carried out in the restaurant proper. The whole thing,



THE DEITIES AT VOGELSSANG'S.

the work of some Eastern firm of decorators, is very cleverly handled. The color scheme is white, gray and dull pink. The walls are paneled in gray, with white plaster decoration of the Louis XV. period. The square supporting piers of the building are treated like the walls, and hold on each of their four sides well-designed electroliers, which simulate scones with candles with pink shades. The floor is white mosaic. The woodwork of

the furniture is so treated as to produce a gray tone, the upholstery being of pinkish leather. The fireplaces, of which there are two, the sideboards and chairs are all designed in excellent keeping with the general character of the room. The whole creation is very charming and carried out with an elegance and refinement which are quite unusual with us here.

An amusing feature and one not without its charm is an arbor dining-room, which opens off of the more formal *salle à manger*. Raised above it by two stone steps, we enter a good-sized arbor, apparently covered by the most luxuriant of grape vines, from which hang not only the purple grapes, but the larger white bunches, made luscious by the electric lights in their hearts. This whole wealth of vine is supported by trellises painted green. This same trellis-work covers the walls, where there are not large openings, through which, as you eat, you may look off over a papier-maché or composition landscape painted *au naturel*, which, with hidden electric lights shining down on it, has a very good and sunny effect. We are evidently On the Heights. The floor is made of red tile simulating brick. The tables and chairs are all green bent-wood garden furniture and we have a marble group against a leafy background which gives a good touch to the whole. Even the entrances appear to be arbors or pergolas, so the illusion is not harshly dispelled till you have passed through the glass doors and out between the large brass griffins which guard the Clark Street entrance.

#### THE GREAT FIRE IN SAN FRANCISCO.

SCARCELY had the great shudder on that April morning passed than long straight lines of smoke rose from at least six points, all within a short distance of one another, and in the downtown business center. Two hours later I was surprised to find a fire-engine standing near my residence, and speculated that it might have been detached from the main body to quell incipient outbreaks. Not so; a few minutes later I discovered the real truth—no water: not, in all the mains nor in all the thousand stand-pipes that had been erected to disfigure and protect thousands and thousands of buildings, a single gallon of water! The whole system at the hour of its greatest necessity not worth 10 cents!

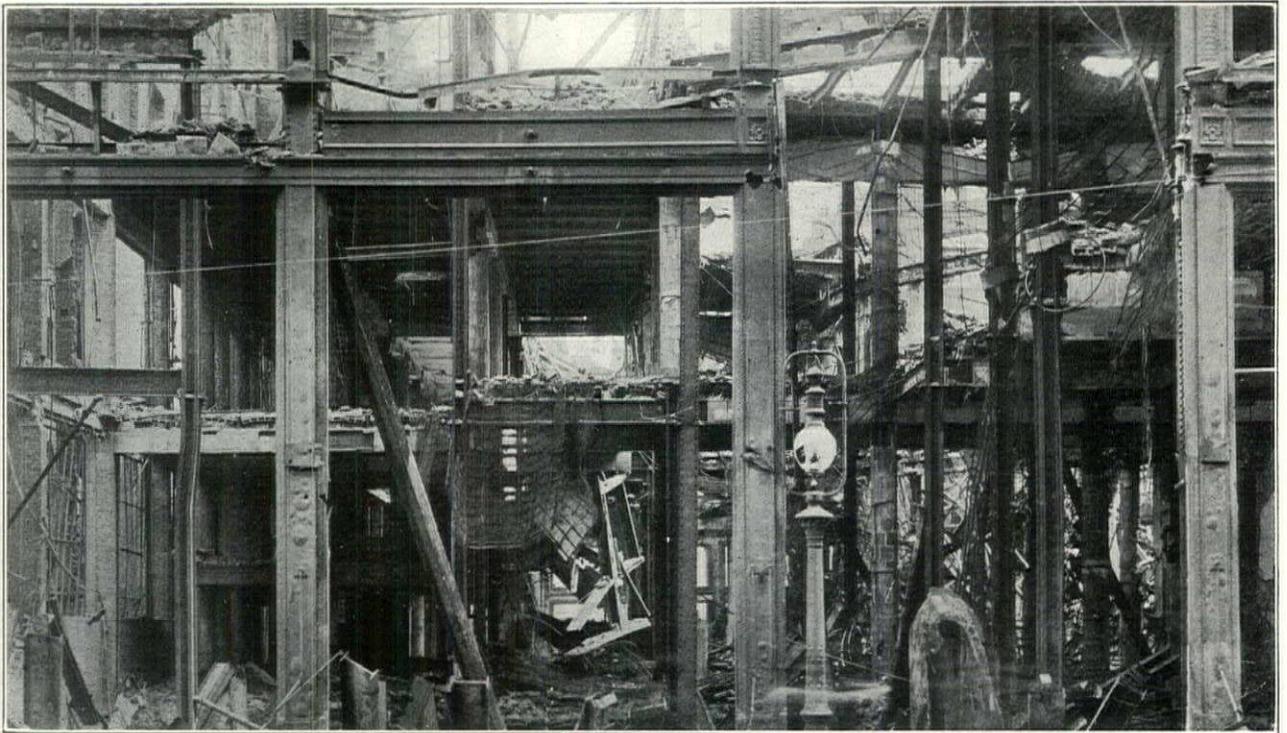
Well, the effect of fire upon buildings has been written many times before, but there are many of us who have never seen a real hot fire. Nor do we as architects realize just how hot a fire may become and how completely it may destroy everything in its path. Most of us architects, as we sit in our office-chairs, can run through in our imaginations the material and structure of a modern city; you know how it includes everything from a needle to an anchor, including the cast-iron stove that is supposed to be indestructible. Well, of all the thousand and one things and their thousand combinations the only things that were left so that they could be recognized after the flames had swept over them were bricks, sash-weights, terra-cotta flue-linings and a very small percentage of the structural steel and cast-iron columns and fireproof safes; nothing else was left, even pottery was reduced to dust, only a few pieces holding together; glass and iron were rendered as friable as loose earth. One would have thought that cast iron and steel cooking stoves would have stood the test. Not so. The only parts of the cooking stove of the house in which I lived that the fire could not and did not consume were the *burners*. The only two things that were not reduced to mere useless rubbish that I could discover were bricks and sash-weights. I am interested in storage warehouses, since I lost all my treasures, of many years' collecting. We often see these houses advertised as fireproof, but, practically speaking, none of them are so in the least. To be fireproof, they should be built of thick brick walls, with a ventilated air-space and a 9-inch internal lining. No steel columns or girders should be used; only brick walls with floors of reinforced concrete resting on same. There should be no windows in the building, not one; and the doors should be two or three deep, one after the other, opening into vestibule behind vestibule, so that should one fail another farther back would remain to guard the contents against heat. The roof should be of concrete and perhaps further protected by brick. Such a building might be considered fireproof.

Of the wooden buildings nothing is to be said. They are *not* fireproof. Of the Class-B, brick with either wood or iron vertical supports and wood floors: these offered a very indifferent resistance to the fire, and largely from the fact that the Class-B buildings generally consist of a brick wall round the lot line and then a lumber-yard of floors and partitions inside. In buildings of this class it would be better to carry most of the

floors on brick walls, as they do in London; or, if we must utilize the space, the steel-work should be properly protected, although I am afraid that with so much inflammable material in the construction of these buildings, the fireproofing of columns and girders would have to be very efficient to resist the heat when the woodwork got well ablaze. Anyhow, the steel-work of these buildings under fire insures their undoing. Columns carrying street fronts buckled and bent in every direction, and the internal steel, as a rule, was not satisfied until it had screwed itself up like so much tangled gas-pipe and thrown itself into the cellar. The first few days after the fire, as I wandered about, I could not recognize any of the sections of structural steel, they looked so strange, and I found myself gazing up at what appeared to be pieces of twisted tin, to discover at length that they were 12-inch or 15-inch steel channels. Box-girders crumpled up like sticks of candy in a hot sun, and some steel columns doubled right over, having become as soft as putty. Cast-iron columns broke short off and nearly all these Class-B buildings utterly collapsed from cellar to roof, and nothing was left of them but the wrecked outside walls.

We build too *cleverly* nowadays for fires—altogether too cleverly. The Palace Hotel, built about 25 years ago, stood better than any of the modern Class-B buildings; it had plenty of cross-walls; in fact, all the floors, I imagine, were carried on

been burned out, but the steel frames, the floors and partitions stand, practically speaking, intact; so also the outside walls. Hollow terra-cotta floors have not stood well, and in several of these buildings 50 per cent., if not more, of this will have to be taken out and replaced. How much of this breaking up of terra-cotta was due to quake and how much to fire I cannot say, but a great deal of it is split all to pieces, so as to be quite useless. Terra-cotta partitions behaved badly also, and so did terra-cotta coverings of steel columns, which in many instances fell off, exposing the columns to the flames. Columns cased in concrete showed to the best advantage and reinforced-concrete floors in every case proved indestructible. Reinforced-concrete floors and concrete round all columns and beams, and plenty of it, is the only thing that can be depended on, and air-spaces if possible. So far as finish is concerned, I think "Keen's" cement might take the place of wood around window-openings and at bases; perhaps also for door architraves, although some consider that with these flimsy partitions we put up nowadays the jar of the door would crack even Keen's cement. For doors we are tied to wood, but for floors I personally have no objection to mosaic, or if that is too cheerless, why not a hard-wood carpet 1-4-inch thick stuck with a mastic to a cement floor, or a border only of wood with cement center? Of course the two principal reasons for the fire getting such a hold were lack of water, and the further fact



PROBLEM: DETERMINE THE SYSTEM OF FIREPROOFING.

brick walls, not on iron or steel columns. The carcass stands intact, both fire and earthquake having failed to destroy it. Well, all I can suggest in regard to these Class-B buildings (non-fireproof) is that in buildings such as hotels, apartment-houses, flats, office-buildings and so forth, a reversion to the older types of construction, viz., all carrying walls to be of brick, would be an improvement on this heterogeneous mingling of wood, iron and masonry. For really permanent structures, iron should be written down as a bad material. Had we had only a few buildings built as were the old Gothic cathedrals, with their truly fireproof crypts, how much valuable stuff in San Francisco might have been saved! But there was scarcely a fireproof cellar in the whole city; just a few safe-deposit vaults, filled with documents and small valuables, nothing else. The fire ate right through everything until it came either to the cement floor of the basement or to mother earth—there it stopped. The whole surface of the street (basalt blocks), block after block, was splintered off so as to resemble a stonemason's yard filled deep in chips.

Well, there are a few buildings left, about 25 I believe. They are of the so-called fireproof class; they are completely gutted, all of them; and still, although three weeks since the fire, gangs of men continue to cart out from all floors tons and tons of debris. Some of the buildings, more particularly the "Call Building," stood well. Everything inflammable from cellar to dome has

that anything good in the way of buildings we had in San Francisco was surrounded by endless highly inflammable buildings: the whole atmosphere in the burning district got so hot that all the inflammable material adjacent volatilized well in advance of the general conflagration. The *Call Building* took fire on all stories simultaneously. Each building in turn, whether fireproof or otherwise, stood as in the midst of a fiery furnace. The flames themselves might not reach these skyscrapers, but what mattered that? The gases evolved reached out till they found ignition, and then the whole thing actually exploded. From the fronts on many buildings eight or more stories in height the stonework was roasted wholesale for nearly the whole height and several inches in depth. The street in front of one of these buildings was actually blocked with the stonework so destroyed: cornices, projections of all kinds and even the flat ashlar facing were completely destroyed. Granite, of course, behaved worst of all, and the Hibernian Bank, with its Corinthian columns and façade all of granite, has been reduced to a condition that one thousand years of weather could not have produced.

The old *Chronicle Building* exhibited an example of how unreliable cast-iron is under fire. An area, at one corner of the building, about 40 feet square was supported on all floors by a central cast-iron column. The building was of the hollow terra-cotta floor type. The eighth floor was heavily loaded with presses.

The central column broke, with the consequence that the whole area was cleaned out from ground to sky, and in the basement all that remained was a tangled mass of beams and cast-iron columns. The Fairmount Hotel, which was only partly finished, and had no furniture or anything of that sort in it, was not only gutted and a great deal of the granite facing destroyed, but many of the steel columns doubled up under the heat and wrecked the superincumbent floors.

Some of the lessons we may learn from this great disaster are: Study well your water-supply and do not allow dividend-earning companies to provide you with anything but the very best that can be devised in the way of a system. I do not know if a system can be thought out that will withstand earthquakes, but I think it possible, although very difficult. Widen your streets at certain intervals to form cut-offs against fire. Van Ness Avenue, 125 feet wide, was worth fifty million dollars to San Francisco the second day of the fire; it saved the city from complete obliteration. In *non-fireproof* buildings more walls and less steel-work, or, if there must be steel-work, then much more ample covering by concrete or other material that cannot fall off, and for steel-frame fireproof buildings reinforced-concrete for floors and partitions and concrete covering (and lots of it) for columns and girders. Use metal only when unavoidable, and when used bury it in concrete or in some such material that will hang on. Some architects have become delirious on the subject of materials and propose excluding all those materials that have made architecture worth the name or cities famous ever since the foundation of the earth was laid. They propose covering their steel-frames with boiler plates, thus establishing and rendering sure a monstrosity that for all time will endure as a witness against them. Better a dweller in tents than in such an incumbrance on the earth.

W. G. MITCHELL.

#### BERLIN, VIENNA, ST. PETERSBURG.<sup>1</sup>

**B**ERLIN was a very unassuming business city till after the Franco-Prussian War, for it was with the milliards extracted as war indemnity from France that the Imperial government set about adorning its capital. The Palace and the old Brandenburger Thor, at the entrance to the park, gave the cue to the city improvements commission; and the great boulevard known as Unter den Linden connects the palace with the park. A glance at this quarter of the city shows how active the authorities have been during the last thirty years; for the "Prussian Diet," the "Reichstags gebäude" or Imperial Parliament-house, the Museum and Picture-galleries and the Cathedral, are all modern; as are also the University buildings and technical schools, which, under so paternal a government as that of the Hohenzollerns, may well be classed as official. These buildings need not detain us long. They are all externally well built and ably planned. They all lack to my mind the highest qualities of architecture. It is remarkable that the Teutonic temperament, with all its intense sentimentality, extreme earnestness and enormous vigor, fails so conspicuously in the arts. The essential coarseness of fiber in the German character permeates German art. The natural graces of the national character, the kindliness, the sympathy and the culture seem strangely enough to fail to find expression in their art, and particularly in their official art, which is somehow always imbued with the bombastic swagger of the jingling spur and the mailed fist.

It may, of course, be personal idiosyncrasy on my part which prevents my appreciating German art. At least, let me say that I do appreciate German kindness and German culture. The in-temperate swagger of German heraldic decoration has pervaded the Denkmäler or monuments, with which a keen-sighted government has adorned the city and advertised the virtues of the Imperial house it serves. Opposite the Palace is an equestrian statue of the grand old Emperor William, backed by a colonnade and surrounded by lesser groups. The whole conception is in the grandiose spirit introduced into architecture and sculpture by Michael Angelo and elaborated under Louis XIV. It is art of the kind which supplies all the needs of the beholder—a great banquet, if you like, and you must taste it all. Nothing is suggested and nothing is veiled in mystery. Then again, in that splendidly kept park, the Thiergarten, where, in order that the green carpet may reach to the very roots of the noble trees, different varieties of grass are carefully grown, we have an all but

grotesque exhibition of imperial pride. Leading from the most blatant of all monuments of victory, which celebrates the Franco-Prussian War, we find a noble avenue lined on one hand with a set of monuments illustrating the long line from which the Emperor springs. Now, many of these ancestors were very ordinary princelings, and some were quite nonentities, while the great Frederick and the old Emperor William were men of international scale. I suppose the fact that the designers wish to express is that all these persons were equally great, and mainly great because they were ancestors of the Kaiser. Anyhow, they all have equal honor done them in a series of designs in various styles, all of a size and all of one scheme. In the focus of a raised semicircle of white marble stands the ancestral prince, while on the dies of the balustrade behind him are found busts of his two chief advisers. The national passion for order is well evinced in this absurd scheme, for if the old Emperor William, Moltke, and Bismarck make a good trio, it does not follow that the local nonentities of Prussian administrators in other periods deserve recognition at all. This is not the way to express history in art—one page to the man: it is neither good history nor good art, and the chief interest to a designer is to note the cold, scholarly ingenuity with which something of the decorative method of many centuries has been applied (I use the word "applied" advisedly) to a Greek semicircular garden-seat that focuses on the back of a Kaiser's ancestor, which appears of absorbing interest to the two henchmen behind.

Vienna is the center of fashion for Eastern Europe, drawing to its mighty heart all the rank and style of not only the Austrian nations, but of English, German, Polish, Russian, and Balkan. This old capital city has been cleverly and nobly remodeled by wise official care. The original town is now enclosed by a car track, instead of a wall, and on each side of this main circular route we find noble spaces and parks with fine groups of public buildings. As this great boulevard wheels gradually around, we are saved the extreme regularity and monotony which characterizes the great Commonwealth Avenue of Boston. Interminable boulevards are, to my way of thinking, akin to nightmares. The sense of helplessness one feels on looking both ways down a street which vanishes to the horizon may be impressive, but it is not comforting, if one has to get to one end of it in a hurry. Axial planning has become too axiomatic with the T-square designers of modern cities, and I think such a system as that of Vienna, with its noble axial groups of buildings set picturesquely about an ever-turning boulevard, should get more attention than it has yet got. Vienna is one of the most impressive capitals in the world. Nowhere has a sense of dignified luxury and pleasurable pomp been better expressed in architecture. The buildings themselves are not very striking—just the ordinary civilized European Classic; but the massing and the disposition are unexcelled. There is a good deal of official statuary in commemoration of the exciting history of comparatively recent times. I shall never forget the hazy winter morning when I first strolled through the city of Vienna. Here the busy narrow streets of the old town contrasted with the wide park circle, with its great masses of building standing up in gray-blue silhouette against the morning pink.

St. Petersburg, or Petersburg, as those who have lived there call it, differs from the other European capitals in this, that it was a city laid out and planned in modern times. In 1702 it was a swamp with a Swedish fort overlooking the river. The city rose at the command of Peter the Great, and the magnificent layout of the plan was developed under Catherine II., whom I regard as the last of the great Royal builders of Europe. Petersburg is a city of brick and plaster. The Classic Palladianism of its public buildings is only skin deep and requires continual patching and painting. The street architecture is tinted in the cheeriest colors, pink, yellow, and pale green being the favorites; but blue and chocolate are often met with. There is thus not much in the way of nobility or dignity in the architecture, and the charm of the place depends chiefly on the magnificent scale both of the buildings and the streets, and the skilful lay-out of the city as a whole. To my mind, the noblest official monument in Petersburg is the quay. On both sides of the river there are about five miles of red granite quays, the parapet consisting of great blocks, which are simply moved out of the way when a barge unloads its cargo. The famous Winter Palace is a plaster building of pronounced Rococo type architecturally unworthy of its fame. It is painted in two shades of pink and has a certain picturesque richness when seen across the river. The most original building is the Admiralty, which is painted white and yellow, with a green roof and a gold spire, and forms three sides of a quadrangle facing the river. The bottom square has, unfortunately, been built up with residences and palaces, but the two great archways abutting on the

<sup>1</sup>Extract from a paper read at the annual meeting of the Ontario Association of Architects by Prof. Percy E. Nobbs, of McGill University, Montreal.

river some four hundred yards apart form splendid stops to so huge a building. The delicate spire (and spires and towers have always been the strongest line of the Russian architects) is placed at the focal point from which the three great streets of the city radiate, and gleams from miles away. There is no finer effect in city arrangement than that of a dome or spire at the end of a great vista of houses or an avenue of trees.

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## COMMUNICATION

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### PAYING FOR THE DUPLICATION OF BUILDINGS.

TO THE EDITORS OF THE AMERICAN ARCHITECT:

Dear Sirs:—Our city is about to erect several new school-houses of an exact duplicate of those we have built during the past ten years, and of which plans and specifications are now on file in this office, and in justice to the several architects who made these plans and in fairness to our city, I would kindly request your opinion regarding the status of payment, if any, for again using the plans by the city for the same purpose, the plans having been contracted and paid for at the rate of 3½ per cent. Also if a legal opinion has been rendered covering the same.

Kindly thanking you in advance for any information relating to the above conditions, I am

Respectfully yours,

J. L. G.,

Superintendent Public Buildings.

May 24, 1906.

[It is always a pleasure to receive such inquiries as this, for we have found them invariably to be the precursors of later notifications that the inquirer had decided to do the square thing by his former architect. In such instances are involved the question of the "ownership of drawings" and the much vaguer one of "artistic copyright." The courts have decided that "ownership" of the drawings vests in the client and not in the architect, but they make such awards in order that the client may be able to know how his flues and drains run and be able to keep his building in repair. The courts do not go so far as to say a client may use such drawings in any way that pleases him, though now and then they have said that that particular phase of the matter was not at the moment before them, and hence there was no obligation upon them to express an opinion on the point. A court of equity would probably decide that, in these cases, the client was rather the custodian than the owner of the drawings, or rather that his ownership had very distinct limitations, for the reason that the contract between the client and his architect did not obligate the architect to employ his time and skill in the creation of an indefinite series of buildings and that, having been paid for a single building only, he obviously was not sufficiently paid when more buildings than one were erected. Probably no architect, knowing in advance that several buildings were to be built from his design, would agree to do the work for the usual commission on a single building, for, obviously, in most cases an article that can be used several times is worth more than one that can be used but once. The original contract of performance between the architect and client covers but the erection of a single building, and it is clearly inequitable to avail of service without making compensation therefor. Usually the inquirer, in such cases as this, decides to reemploy the original architect and pay the usual fee for "supervision"—or something less. But in this case such a course would be unnatural, since the city would be likely to have the work supervised by the head of its own Building Department. We believe that the city would find the "several architects" entirely reasonable men to deal with and would advise the proffer to them of such a "lump sum" as expediency, flavored with gratitude and good-will, may suggest.—EDS. AM. ARCHITECT.]

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## ILLUSTRATIONS

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MINOR CHATEAUX: PLATES 23-30.

THE work of the Middle Renaissance, the transition between the Gothic building veiled in Classic detail and the formal work of the later Renaissance in France, is characterized by *rustication*. The larger part of the small châteaux built during this period show some variety of this form of wall treatment—and often with more individuality than might be expected in so rigid a feature.

There is no precedent for rustication in the Gothic work of France, but in Italy the Pitti and Ricardi palaces in Florence and certain palaces in Rome and Verona show the extent to which

rustication can be carried. It was the latter work which afforded precedent for the French architects, as there is no rock-faced rustication used in French châteaux similar to that of the Pitti and Ricardi palaces. The châteaux are alternately long and short, or form a rigid rusticated vertical band of uniform width, the edges of the stones being square or beveled, seldom rounded. These vertical bands replaced the pilasters of the earlier Francis I. style and the string-courses marking the floors are continued by rusticated stones of the same height.

The Château d'Outrelaise is an excellent illustration of vertical bands of rustication replacing the pilaster-treatment of the earlier styles. The string-courses extend through—intersect—the rusticated bands. The voussoirs of the arches are arranged so that the length of the joint is the same as that of the blocks above and below, thus preserving the unbroken vertical line. The peculiar arches of the entrance are familiar to the students of the later Italian work. Several illustrations of this type of door are found in Rome and Genoa.

The building that is now the "Abbatiale de la Croix Sainte" at Leufroy is decorated with rusticated quoins, the alternate courses of which are of brick. The chimneys, treated so decoratively in the early work of Francis I., as at Chambord and Blois, are now severely plain, considered necessary evils and made inconspicuous.

The Château Giseux is of this period, though it held to the Gothic type of plan with external corner staircases. The details, difficult to distinguish in the illustration, are rusticated.

The Château de Velors, though a Gothic building, is included here to illustrate the expedient the designer of the Renaissance portion resorted to in order to bind minor features together by means of the rustication.

Of the Château de Chavigny is preserved but one pavilion and the entrance lodge and gate. The rusticated treatment is confined to the quoins, the window treatment being of an earlier type, with croisées, transom and mullions.

Balleroy is hardly a "minor château." It bears no trace of any previous construction, as Mansard destroyed completely all that remained, as he started to do at Blois. An immense terrace, surrounded by a deep moat, supports the château, which has a second base formed by the projecting basement. The pavilions are quite detached from the main building, although resting on a common basement. The body of the building is of brick with rustications in stone. The buildings and terraces are monumental in conception and are illustrative of the gigantic scale on which Mansard and Le Notre, to whom the gardens are accredited, worked.

In the Château de Menilles is found the same treatment of brick and stone, but it suffers in comparison with the strength and individuality of Balleroy.

The Château de Villandry and the Château de Champigny, although of an earlier period than the other buildings here illustrated, have gardens and terraces laid out during this epoch.

The unfinished Château de Detilly illustrates the reaction setting in later against the use of rustications. The walls are severely plain, the windows ornamented by a slight moulding only. The segmented head, so characteristic of the Louis, is here used.

HOUSE NO. 15 EAST SIXTY-SEVENTH STREET, NEW YORK, N. Y. MR. ERNEST FLAGG, ARCHITECT, NEW YORK, N. Y.

THE NEPENAUK BUILDING, CHICAGO, ILL. MR. RICHARD E. SCHMIDT, ARCHITECT, CHICAGO, ILL.

For description of this and the following plates, see article "The Chicago Bar," elsewhere in this issue.

MURAL FOUNTAIN IN THE "HOF BRÄU," CHICAGO, ILL. MR. RICHARD E. SCHMIDT, ARCHITECT.

ENTRANCES TO THE "HOF BRÄU" AND THE VOGELSANG RESTAURANT, CHICAGO, ILL. MR. RICHARD E. SCHMIDT, ARCHITECT.

### Additional Illustrations in the International Edition.

MAIN ENTRANCE: AMERICAN SECURITY AND TRUST COMPANY'S BUILDING, WASHINGTON, D. C. MESSRS. YORK & SAWYER, ARCHITECTS, NEW YORK, N. Y.

DETAIL OF THE SAME BUILDING.

Further illustrations of this building may be found in our issue for June 10, 1905.

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IT is disappointing to find the *New York Times* indulging, apropos of the decision of the New York Supreme Court that the building of the Knickerbocker Trust Company on Fifth avenue is a trespasser on public property, in what seems to us unworthy and dangerous sophistries. The defendant company and its advisers may be counted on to produce all the sophisticated arguments that the situation invites, and we would much prefer to find a newspaper of the character of the *Times*, now that an issue has been sharply made, upholding the abstract right of the public to have the law respected and its mandates observed. Even were the building ten times as much a "work of art" as it actually is, we believe its claims for respect and preservation on that score should not for a moment weigh against its being made to conform to the letter of the law. It is not worth while to go through life applying scale and measure to conduct and performance to see if both square with the law, but when a violation of the law is brought clearly to public attention, we believe that the duty of every monitor of the public conscience is to insist on the strict observance of the infringed rule. Obedience to the law, whether parental, social, ecclesiastical, civil or military is the very foundation of civilization.

THE amalgamation of the Society of American Artists with the National Academy of Design has promptly produced one of the anticipated results, in the shape of an offer from Mr. Carnegie—qualified as usual—to contribute a million dollars or more toward the erection of a suitable exhibition building. It appears, too, that during the pendency of the negotiations between the two societies the officials, believing that the Lenox Library and the entire block on which it stands could be obtained for some two million dollars, made rather indefinite plans for the procurement of this site which, though not perhaps ideal as to location, is certainly an excellent one. As

Mr. Carnegie's offer made it probable that some decisive action might soon be had, definite steps were taken a short time ago to ascertain what the actual cost of the site in question really would be. The statement that this property now has a market value of about four million dollars would seem to settle negatively the wisdom of giving it further consideration for the purposes in question.

AS the conditions on Manhattan Island are so peculiarly individual, we may finally find the long-desired galleries occupying the upper floor of a skyscraper building in a commercial district, an outcome that would be a misfortune; for, unlike the *New York Evening Post*, which is somewhat less than happy in its argument that "all else [than a series of properly constructed galleries under a single roof] is surplusage and extravagance," we feel that the National Academy of Design has obligations to the public which cannot be discharged by merely occasional exhibitions. The *Evening Post's* argument is no more sensible, when applied to the influence of the National Academy of Design on the community amid which it has its home, than it would be if urged in the case of religious or theatrical bodies about to establish a home for themselves, and we feel sure the *Evening Post* would think more than once before it should counsel that each parish should house itself in a barren tabernacle and every theatrical effort be turned out in a barn. Our excellent contemporary's new office-building, which we recently had the pleasure of illustrating, is not that severely simple combination of walls and roof which would have been enough to keep from the weather its presses and the bodies of those whose minds furnish the provender therefor. Just as the architectural beauty of a church carries its lesson to the passerby the week throughout, so should what is to be one of the chief temples of art in the city impress a lesson of beauty even on each of those days when the occasional exhibition is not making its interior vocal in all languages.

ATTORNEY-GENERAL MOODY seems to be at some pains to dissipate the idea that the present one is in any sense a "paternal" government, for he closes his explanation of the decision against the "elevator trust" recently handed down by the United States Circuit Court for the Northern District of California by saying that this decree "affords the Government all the relief to which it is entitled under the law." It is fortunate, however, that incidentally the individual consumer, who has suffered quite as acutely as the Government under the unfair manoeuvring of the elevator trust, will derive some benefit from this affirmation of the Court's power under the Sherman "anti-trust act" to put an end to the illegalities complained of, for we assume that the defendants will hardly insist that the Government shall bring other suits in other district courts and, hence, that the relief now obtained is both permanent and general. The terms of the decree are not only sweeping, but satisfactorily clear and precise,

since they grant a perpetual injunction against the thirty-odd manufacturing concerns that make up the Trust from "contracting or agreeing together in any manner either expressly or impliedly, as to the trade and commerce in elevators in the United States."

THE court proceedings showed that the tactics usually followed by trusts had, in all their varieties, been embraced and practised by the managers of this powerful and extremely well organized association. They forced into the pool as many of the desirable concerns as they could and fought and crushed by all means they could discover all those elevator-makers who declined to enter. Underbidding "outsiders" by doing the work at a loss and distributing the losses through the pool was, of course, the usual method, a method which is generally adopted by similar trusts and one which it is hardly possible to hold economically or commercially illegal. Even more effective than this, the managers of this trust found a practice that is peculiar to themselves, one that is singularly unfair, cowardly and dishonest, so grossly so that it is only fair to imagine that a considerable number of the individual men who had made enviable names for themselves while conducting their independent businesses really did not comprehend what the managers of this Trust actually were doing. This method was, in the language of the Attorney-General, this: "To still further destroy competition with respect to the sale of elevators, whenever any independent company secured a contract, fictitious suits were instituted against such company by the Otis Elevator Company for infringement of its patents." These suits are said to have been brought against the independent companies not with the purpose of prosecuting them, but that it might be possible to notify the independent concern's customers that such suits had been brought and that, because of the delay their own building operations would in this way be subjected to, it would be well for them to cancel their contracts and make new ones with the Trust.

THE newspapers which so positively, and so rashly, announced immediately after the San Francisco disaster that the insurance companies had agreed to settle their losses in full and without dispute or delay have done a mischief they will find it very hard to undo. It is their inexcusable and foundationless utterances that are the cause of the very disquieting attitude toward the insurance companies that is seemingly being adopted by the affected public, an attitude which the thoroughly anarchistic utterances of the Insurance Commissioners in several neighboring States have done nothing to mollify. It should be accepted as a matter of course that the underwriting officials will do all in their power to satisfy all claims as to which an adjustment can be reached; but it should be equally a matter of course that their legal responsibilities to their stockholders allow them no excuse for the exercise of sympathetic generosity in those cases where claims are brought against them in despite of the conditions of the contract and the limitations of the statute law. The threats of reprisal against the underwriters that are now being indulged in have some of the qualities of a two-edged blade.

THERE was a good deal about the procurement of a United States charter for the American Academy of Art at Rome last year that recalled Thackeray's amusing sketch showing Louis XIV in his royal robes, Louis XIV's royal robes and Louis XIV without the robes—there was so very much outward pomp, such very dubious inward worth. One feels quite differently about the United States charter of incorporation that has recently been, with some difficulty—it seems the Government is very chary of granting such favors—procured for the Archæological Institute of America. In the first place that Institute is not a new organization, but has for twenty-five years been conducting its valuable operations as a private and unincorporated society, winning for itself by the solid worth of its performances the regard and admiration of those educated men of all nations who interest themselves in archæological matters and can understand and appreciate high scholarship. In the second place, a United States charter will be of greater real use to this particular Institute than it would be likely to be to any other organization, since the Institute is perforce brought into direct contact with foreign governments while negotiating for coveted "concessions" and while conducting operations under them when granted, and it is obvious that negotiations and operations would proceed more smoothly in the case of an organization recognized by the United States Government than if it were understood to have for backing merely the purses of private individuals.

THE New York *Herald* makes an indirect effort to stimulate archæological investigation in this hemisphere by giving a description of efforts which, on the authority of a certain Mr. E. P. Duperly, are now being made to recover a vast treasure which escaped the grasp of the invading Spaniards in the sixteenth century. According to this story, the cacique Tunja, in Colombia, a race then inhabiting what is now Tunja, in Colombia, warned of the approach of Quesada, adopted a rather ingenious method of disposing temporarily of his surplus hoard of gold and emeralds—a really vast amount, if it actually required the employment of the reputed device. In a small lake or pond conveniently at hand he caused to be built a large raft (estimates made, from the records in Mr. Duperly's hands, show that this raft consumed some eighty thousand logs twenty-five feet long and six inches in diameter!) and on this he piled his treasure. Then his people were set at work with baskets bringing dirt to pile upon the raft and its treasure until it was gradually sunk to the bottom of the pond and there rose above it a new island which tropical nature evidently was expected to clothe before the invaders came upon the scene. Once they had departed, the island was to be removed, in baskets, the raft unloaded and the treasure floated up to its rightful owner. But the methods of the Spaniards did not leave the cacique and his people in any shape for the task of recovery, and, though various efforts have been made to locate it, the treasure is believed to be still where it was sunk. Borings recently made show the existence at the reputed site, seventeen feet below the surface, of a layer of decayed wood, also seventeen feet thick, which is assumed to be the legendary raft.

ARCHITECTURAL FASHIONS<sup>1</sup>—III.

## THE ORIENTATION OF CHURCHES.

THE Swiss farmhouse seems, then, to be indeed of quite an old fashion, but architecture can show an older fashion still. The right-minded person of Anglo-Saxon blood loves to go to church on Sundays, and, unless he kneels with his face toward the east, in offering his prayers for the happiness of himself and his friends, he is likely to feel an uncomfortable sense of impropriety, or, at least, of a lack of completeness in his religious surroundings. This sensitiveness to orientation varies in different persons, being highly developed in some ecclesiastics, and totally lacking in others, while, among the laity, it is usually of a subdued, not to say second-hand character; but it is so widespread in Anglo-Saxon religious circles that it is curious to think that it has a purely heathen origin. In fact, the habit of placing the sanctuary of ecclesiastical structures in the east is one of the signs by which may be traced the distribution of a race so ancient and so long forgotten that we do not know whether its members were white, black, brown, or yellow, or whether they were gentle Hyperboreans or ferocious cannibals, the only thing that is certain about them being that they worshipped the sun.

It is by no means improbable that these remote people were black. The most ancient constructions in Great Britain are, undoubtedly, the so-called "megalithic" circles and trilitha which are found at Stonehenge, Avebury, and other places. Similar megalithic monuments, as everyone knows, exist in Brittany, but everyone may not know that constructions of approximately the same kind are found, in some places scattered over a wide area, and in others gathered into clusters at nearly regular intervals, through France and the neighboring regions; in Southern Italy; in the Mediterranean islands, particularly in Sardinia; through Spain, to the Strait of Gibraltar, and in Northern Africa. archaeological explorations in Morocco are attended with certain inconveniences, but enough is known of the megalithic monuments there to lead to the conclusion that these, as well as the similar ones in Europe, were erected by a race which possessed very extensive settlements in the British Islands, in Sardinia, and in Northern and Eastern France, and maintained also a chain of colonies, or trading-stations, of greater or less importance, connecting the larger settlements, and extending to Africa.

That the British Islands were the seat of, perhaps, the most important community of this race in Europe, is indicated by the fact that Stonehenge, situated in the middle of the vast expanse of Salisbury Plain, which may very well have served as a place of assemblage, is the most extensive megalithic monument now known, and represents an immense amount of labor, carried on, apparently, with stone tools of the most primitive description.



FIG. 18. STONEHENGE.

The ruins of Stonehenge (Fig. 18) consist, roughly, of two concentric circles of huge upright stones. The stones of the outer circle are pieces of a rock still found not far away. Those of the inner circle are of a different character, and are vaguely described in the ordinary accounts as having been brought "from a distance." From what distance is not specified, but no deposit of similar stone is known in the British Islands or on the Continent, and the nearest quarry from which such material could be procured is said to be in North Africa.

The common theory, that the monuments of Stonehenge and Avebury were set up by the Druids, may be dismissed, at least for the present. Nothing that we know of the Britons of Cæ-

sar's time indicates that they possessed either the energy or the intelligence requisite for such an undertaking; and that these tattooed savages should have brought from Africa the stones of the inner circle, weighing many tons apiece, is absolutely incredible. That the Britons regarded these monuments as sacred is probably true, and the Druids very possibly resorted to them for their bloody sacrifices; but they would be likely to do so in deference to an ancient tradition of their sanctity, just as the Presbyterian ministers in a certain part of Scotland were compelled, much to their disgust, to hold service in a half-ruined chapel, consecrated by the impression of the foot of St. Magnus, in consequence of the absolute refusal of their parishioners to go to church anywhere else.

The student of archaeology does not need to be reminded that a tradition of sanctity is almost infinitely persistent. Lanciani tells of a spring near Rome which had the reputation of being sacred, and of having healing properties. A few years ago the owners had it cleared out, and found it filled nearly to the top with votive offerings, arranged in regular layers. The upper stratum consisted of the usual silver and gold votive objects employed by the modern Italian peasants to express their gratitude to the saints, together with small coins. Then followed coins and objects of less recent date, until the Roman period was reached. Below the Roman stratum, which was graded from the Empire to the Republic, and thence to the earliest times, was found a layer of trinkets of the Bronze Age; and below this was a stratum of stone ornaments, which, apparently, must have been offered to the guardian spirit of the spring by Pelasgian sufferers, somewhere between five thousand and ten thousand years ago.

In studying, therefore, the megalithic monuments, with the racial movement which they indicate, and the curious traces which this movement has left behind, we need not be alarmed if we are led to a period long anterior to written history, and even a vision of Minos, with his one blazing eye in the middle of his forehead, or of the Minotaur, the devourer of children, must not frighten us.

Although it is possible that the outer circle of Stonehenge may have been built around an inner circle of foreign stones, erected by a different and more ancient race, it seems most likely, in view of the presumption that the builders of the megalithic monuments, although they usually employed local stones for them, maintained an active intercourse with Africa through their chain of settlements, which extended thence to Britain, that the African stones of the inner circle of Stonehenge were set up by the same race that, perhaps later, built the outer circle around them. But if the outer and inner circle were erected by the same people, why should these, apparently in the earlier years of their settlement, have gone to the enormous expense of transporting such stones to Britain, if they were contented, later, with using local stone? If the blocks had been carved with statues of the gods, it is conceivable that a troop of colonists might have carried their national deities with them, or have sent for them when they had obtained a firm foothold; but how could rough lumps of African granite have had divine attributes of such special importance, particularly when blocks of local stone seem to have answered the purpose well enough everywhere else than at Stonehenge?

Perhaps some light may be thrown upon the matter by recent discoveries in Crete. The island of Crete, like other islands in the eastern Mediterranean, and portions of the Grecian mainland, is believed to have been colonized, long before the historical period, by settlers from Africa. These people did not make statues of their gods, but set up, in certain places, plain stones, which served them in some way as a means of communication with the unseen world. In the palace of Minos, whose subjects may have belonged to this African race, or may only have inherited the superstitions of an earlier one, is a painted representation of one of these roughly hewn stones, with what appears to be the spirit, or deity, by whom it was inhabited, standing beside it. The Greek legend of the Talking Oak, out of whose wood the prow of the Argo was made, seems to have been a reminiscence of superstitions of this kind; and the rather materialistic antique notions of nymphs and dryads were, perhaps, a perversion of more serious convictions of an earlier age. One of these haunted stones, of the slightly pyramidal form which they affect in Eastern Europe, is found in the cave on Mount Ida, in Crete, celebrated in antiquity as the birthplace of Jupiter, and its supernatural inhabitant may, for all we know, have been the mighty Zeus himself. Another stone of the same sort stands in the middle of what is now a Mohammedan village in Macedonia, and travelers relate that, on a certain day in every year, the girls and

<sup>1</sup>Continued from page 137, No. 1582.

young men of the village still dance around it, and cover it with flowers, in deference, apparently, to ideas which have remained associated with the stone, through all the changes of race and religion which Macedonia has experienced, since the time when there were, as yet, no gods on Olympus.

There is reason to believe that the settlement of Crete and the Grecian shores was not the only enterprise of ancient African colonization. In the middle of Asia certain very ancient settlements have, from the remotest historical period, borne names which are not attributable to any known language, but which are identical with the names of villages in Macedonia, in Greece, and, it is said, in Italy; and it is seriously asserted that traces are found among the Maya ruins in Yucatan of communication between that country and ancient Egypt; so that it does not seem unreasonable to suppose that a movement of colonization from Africa may have been carried out in Western Europe, on a scale perhaps more important than in the eastern portion of the Mediterranean. Although the two movements are not likely to have been simultaneous, and were probably carried out by different tribes, the tribes may have had somewhat similar superstitions, and if, by bringing with them certain large stones, the colonists of Britain could make sure of being accompanied by the beneficent spirits in whose protection they trusted, this would afford them sufficient motive for their exertion. We know how fondly the Greek colonists of Syracuse cherished the belief that the nymph Arethusa had made a submarine channel, so as to accompany them, with her brook, from Hellas to their new home; and the idea of the connection of natural with supernatural objects was familiar to the ancients. The ingenuity of the friendly Arethusa, while it endeared her to the Syracusans, did not prevent them from building temples to less enterprising gods; and the Africans in Britain, while they kept their old deities in the inner circle, did not hesitate, apparently, to surround them with new ones as occasion might require. It is true that in Britain, as well as in Brittany, the monuments of the colonists were, where the labor and expense could be afforded, made of three stones, in place of the single rude obelisk of the eastern Mediterranean; but this may be a tribal peculiarity, or may indicate different periods for the two migrations, or may, possibly, have some religious significance. The Cross is said to have been a sacred emblem in Egypt three thousand years before the Christian era; and the triliton may possibly have had some such meaning to the worshippers at Stonehenge as the interlaced triangles have to us.

More profitable, however, than speculations of this kind, is the study of the present conditions which may have been influenced by this prehistoric immigration. It is hardly necessary to say that no trace of negro blood remains in the races which have inhabited northwestern Europe in historical times, yet a tradition still lingers in Ireland of an ancient race of "Black Irish," and it is conceivable that the Celtic and other white invaders of Western Europe chose, as white invaders still do, to exterminate the dark-skinned inhabitants of the country, in preference to making alliances with them. However that may be, and whether we place the altars of our churches in the east end in imitation of prehistoric negroes or of white men, the coincidence between the practice of eastward orientation and the traces of African colonization seems too complete to be accidental. It is not certain that the builders of Stonehenge themselves worshipped the sun. One of the stones, standing at a little distance from the rest, casts, at sunrise on the twenty-first of June, the longest day in the year, its shadow on a certain other stone, which may have been an altar; but this is, possibly, an accident, or the stones may have been re-arranged by later worshippers to suit ideas which were, perhaps, only a perversion of those of their predecessors. All we can say positively is that the countries in which the people of the megalithic migration settled retained, long after the people themselves had disappeared, traces of the worship of the sun, and of fire, which are not entirely extinct to this day.

About six hundred and fifty years before the Christian era, the Greeks of the Peloponnesus began to send out colonies, to settle in the sparsely inhabited lands toward the west. Some of the colonists fixed themselves on the mainland of Italy, and others on the island of Sicily; and, as usual with the pious Greeks, one of their first cares was to build temples to the gods under whose protection they had prospered. Many of the Sicilian temples are still standing, and in most, if not all of them, where the situation permits, the building is so placed that, at sunrise on the longest day of the year, the rays of the sun, entering through the open door, would fall upon the altar; and that this arrangement was intentional, and was, in all probability, connected with

some special celebration of that day, is shown by the fact that in at least one instance, where the astronomical skill of the architect was insufficient to give him the exact direction at the first trial, traces still existing show that the altar was placed a little out of its natural position in the middle of the end wall of the sanctuary, so that the sun's rays should strike precisely upon it at the proper time. As, owing to the change in the relative position of the earth and the sun, the latter no longer rises at mid-summer in the same place where it did twenty-five hundred years ago, its rays would not now strike, on the day of its festival, on the altars of the Sicilian temples; but a little calculation shows what would then have been their direction, and proves that this orientation was adapted to the period at which they are known to have been erected. This practice in Sicily is the more curious from the fact that, although there are traces in Greece of a similar superstition, the Temple of Zeus, at Olympia, the Parthenon at Athens, and the ancient Temple of Athena at Athens, having nearly the same orientation as those in Sicily, the axes of most of the Greek temples contemporaneous, or nearly so, with those built by the Sicilian colonists are directed to various points of the compass, and the exceptions may, very probably, owe their orientation to the use, in their foundations, of the substructures of much more ancient buildings. Apparently, therefore, the Grecian colonists in Sicily adopted their system of planning their sacred buildings with reference to the sun in obedience to superstitions which had long been forgotten in their own country, but still existed among the native Sicilians, some of whose religious notions the newcomers very probably adopted. They do not, however, seem to have transmitted these ideas to their successors and descendants, for the practice of eastward orientation of the altar, so universal in Northern Europe, is, and always has been, unknown in the Christian church in Southern Italy. In St. Peter's, at Rome, the central ecclesiastical edifice of the Christian world, the sanctuary is at the west end of the building; and the axes of the other great churches in Rome are directed to all points of the compass, apparently at random; and it is not until we reach Florence and Venice and Milan that we find the axes of the most ancient and important churches directed toward the east.

While, however, the prehistoric tradition in this respect has not been adopted by the church in Southern Europe, it has been maintained in a singular manner among the people, and in almost every region where the megalithic monuments are found, the worship of the sun, very thinly disguised, still persists among the peasants. In the valleys of the Pyrenees, where it might be expected that traditions would be little subject to change, the night before the twenty-first of June is given up to a festival, in which the whole community joins. Early in the evening the villagers repair to some mountain summit, which will command a view of the sunrise, and a huge bonfire is kindled on the rocks. The fire is kept up through the night, amid feasting and dancing, while the young men search through the forest for snakes, which they bring and throw alive into the fire. According to the amiable practice of the Roman church, which has converted so many festivals in honor of the heathen gods into innocent Christian celebrations, these demonstrations are assumed to be held in honor of St. John the Baptist, whose birthday occurs a few days after the summer solstice; but they are absurdly out of character with the commemoration of any Christian saint, while the choice of a spot from which the sunrise can be seen, together with the sacrifice of serpents, which have been connected from time immemorial with the worship of the sun, points plainly to their heathen origin.

In Brittany and in Sardinia, both of them countries of megalithic monuments, the night before the summer solstice is passed by the peasants in the same manner, in feasting and dancing around huge bonfires. The serpent sacrifice is omitted in these more civilized regions, but a pretty custom prevails in Sardinia, where, after the sun has risen, the young men and girls offer their hands to each other across the pile of embers remaining from the fire. If a girl chooses to accept a proffered hand, the owner of it pulls her, as she jumps over the smouldering brands, and, after he has landed her safely by his side, she is bound to be his special friend and defender until the next midsummer festival gives her an opportunity to transfer her good graces.

It is hardly to be expected that ceremonies of this kind would be kept up in more enlightened communities, or would be found in cities which had not even a rudimentary existence before the Roman epoch; but, even in these, in Northwestern Europe, the notion of the sanctity of the rising sun is interwoven with Christian observances, so that the worshipper at Notre Dame in Paris,

at Saint Denis, in nearly all English churches, and in a large part of those in America, in facing the altar looks also toward the sunrise; and it may fairly be questioned whether the altar candles, like the Vestal fire of the Romans, do not also continue rites of enormous antiquity.

T. M. CLARK.

(To be continued.)

#### BUILDING CODE FOR REINFORCED CONCRETE.

**D**URING the past year the National Board of Fire Underwriters has recommended a "Building Code," which includes a standard for concrete construction, a copy of which is appended hereto. In the preparation of this standard the National Board Committee secured the best expert advice and presents this as the best obtainable up to this time, but expects to revise it from time to time as future experience may warrant.

#### SECTION 110.

The term "reinforced concrete" or "concrete-steel" in this section shall be understood to mean an approved concrete mixture reinforced by steel of any shape, so combined that the steel will take up the tensional stresses and assist in the resistance to shear.

Reinforced-concrete construction may be accepted for fireproof buildings, if designed as hereinafter prescribed; provided, that the aggregate for such concrete shall be hard-burned broken bricks, or terra-cotta, clean furnace clinkers, entirely free of combustible matter, clean broken stone or furnace slag, or clean gravel, together with clean siliceous sand, if sand is required to produce a close and dense mixture; and, provided further, that the minimum thickness of concrete surrounding and reinforcing members one-quarter inch or less in diameter shall be one inch; and for members heavier than one-quarter inch the minimum thickness of protecting concrete shall be four diameters, taking that diameter, in the event of bars of other than circular cross-section, which lies in the direction in which the thickness of the concrete is measured; but no protecting concrete need be more than four inches thick for bars of any size; and provided, further, that all columns and girders of reinforced concrete shall have at least one inch of material on all exposed surfaces over and above that required for structural purposes; and all beams and floor-slabs shall have at least three-quarters inch of such surplus material for fire-resisting purposes; but this shall not be construed as increasing the total thickness of protecting concrete as herein specified.

All the requirements herein specified for protection of steel and for fire-resisting purposes shall apply to reinforced-concrete filling between rolled-steel beams, as well as to reinforced-concrete beams and to entire structures in reinforced concrete. Any concrete structure or the floor-filling in same reinforced or otherwise, which may be erected on a permanent centering of sheet metal, of metal lathing and curved bars or a metal centering of any other form, must be strong enough to carry its loads without assistance from the centering, unless the concrete is so applied as to protect the centering as herein specified for metal reinforcement.

Exposed metal centering or exposed metal of any kind will not be considered a factor in the strength of any part of any concrete structure, and a plaster finish applied over the metal shall not be deemed sufficient protection.

All concrete for reinforced-concrete construction whenever used in such buildings must be mixed in a machine which mixes one complete batch at a time, and entirely discharges it before another is introduced. At least twenty-five complete revolutions must be made at such a rate as to turn the concrete over at least once in each revolution for each batch.

Before permission to erect any concrete-steel structure is issued, complete drawings and specifications shall be filed with the Commissioner of Buildings, showing all details of the construction, the size and position of all reinforcing rods, stirrups, etc., and giving the composition of the concrete.

The execution of work shall be performed by workmen under the direct supervision of a competent foreman or superintendent.

The concrete shall be mixed in the proportions of one of cement, two of sand and four of other aggregates as before provided; or the proportions may be such that the resistance of the concrete to crushing shall not be less than 2,000 pounds per square inch after hardening for twenty-eight days, but for reinforced or plain concrete columns the mixture shall not be leaner than one part of cement, two of sand and five of the coarser aggregate in any case. The tests to determine this value must be made under the direction of the Commissioner of Buildings. The concrete used

in concrete-steel construction must be what is usually known as a "wet" mixture.

Only high-grade Portland cements shall be permitted in reinforced-concrete or concrete-steel constructed buildings. Such cements, when tested neat, shall, after one day in air, develop a tensile strength of at least 300 pounds per square inch; and after one day in air and six days in water shall develop a tensile strength of at least 500 pounds per square inch; and after one day in air and twenty-seven days in water shall develop a tensile strength of at least 600 pounds per square inch. Other tests, as to fitness, constancy or volume, etc., made in accordance with the standard method prescribed by the American Society of Civil Engineers, may, from time to time, be prescribed by the Commissioner of Buildings.

The sand to be used must be clean, sharp grit sand, free from loam or dirt, and shall not be finer than the standard sample kept in the Department of Buildings.

The stone used in the concrete shall be a clean, broken stone, of a size that will pass through a three-quarter inch ring, or good gravel may be used in the same proportion as broken stone, or broken hard bricks, or terra-cotta, or furnace slag, or hard clean clinkers may be used.

The steel shall meet the requirements of Section 21 of this Code.<sup>1</sup>

Concrete steel shall be designed in accordance with the following assumptions and requirements:

(1) The adhesion between the concrete and the steel is sufficient to make the two materials act together; the unit value of the adhesion is at least equal to the unit shearing-strength of concrete.

(2) The design shall be based on the assumption of a load four times as great as the total working load (ordinary dead load plus ordinary live loads) producing a stress in the steel equal to the elastic limit, and a stress in the concrete equal to two thousand pounds per square inch.

(3) The modulus of elasticity of concrete at two thousand pounds per square inch is equal to one-eighteenth of the modulus of elasticity of steel.

(4) The steel takes all the tensile stress.

(5) The stress-strain curve of concrete in compression, when the stress in the extreme fiber is two thousand pounds per square inch, may be assumed:

(a) As a straight line.

(b) As a parabola with its axis vertical and its vertex on the neutral axis of the beam, girder or slab, or

(c) As an empirical curve with an area one-quarter greater than if it were a straight line, and with its center of gravity at the same height as that of the parabolic area assumed in (b).

(6) The assumption belonging to the common theory of flexure, where not modified by any of the foregoing, will apply.

In the design of structures involving reinforced-concrete girders and beams, as well as slabs, the girders and beams shall be treated as T-beams, with a portion of the slab acting as flange, in each case. The portion of the slab so acting shall be determined by assuming that in any horizontal-plane section of the flange, the stresses are distributed as the ordinates of a parabola, with its vertex in the stress-strain curve and with its axis in the longitudinal vertical plane through the center of the rib of the T.

The shearing-strength of concrete, corresponding to a compressive-strength of two thousand pounds per square inch, shall be assumed at two hundred pounds per square inch.

All reinforced-concrete T-beams must be reinforced against the shearing stress along the plane of the junction of the rib and the flange. Where reinforced-concrete girders carry reinforced-concrete beams, the portion of the floor-slab acting as flange to the girder must be reinforced with bars near the top, at right angles to the girder, to enable it to transmit local loads directly to the girder and not through the beams, thus avoiding an integration of compressive stresses due to simultaneous action as floor-slab and girder-flange.

Concrete indirect compression shall not be stressed, under the working load, more than three hundred and fifty pounds per square inch. Reinforced compression members shall be designed on the assumption that this stress in the concrete will be simultaneous with one of six thousand pounds per square inch in the steel. Should the use of hooped concrete be proposed, the work-

<sup>1</sup> Section No. 21.—STEEL. All structural steel shall have an ultimate tensile strength of from 54,000 to 64,000 pounds per square inch. Its elastic limit shall be not less than 32,000 pounds per square inch and test specimens, ruptured in tension, must show a minimum elongation of not less than 20 per cent. in eight inches. Rivet steel shall have an ultimate strength of from 50,000 to 58,000 pounds per square inch.

ing stresses will be a subject for special consideration by the Commissioner of Buildings.

In the execution of work in the field, work must be so carried on that the ribs of all girders and beams shall be monolithic with the floor slab.

In all reinforced-concrete structures, special care must be taken with the design of joints to provide against local stresses and secondary stresses due to the continuity of the structure.

In the determination of the bending-moments due to the external forces, beams and girders shall be considered as simply supported at the ends, no allowance being made for continuous construction over supports. Floor-plates, when constructed continuous and when provided with reinforcement at top of plate over the supports, may be treated as continuous beams, the bending-moment for uniformly

distributed loads being taken at not less than  $\frac{WL}{10}$ ;

the bending-moment may be taken at  $\frac{WL}{20}$

in the case of square floor-plates which are reinforced in both directions and supported on all sides.

When the shearing stresses developed in any part of a reinforced-concrete or concrete-steel constructed building under the multiplied loads, the shearing strength as fixed in this section, a sufficient amount of steel shall be introduced in such a position that the deficiency in the resistance to shear is overcome.

When the safe limit of adhesion between the concrete and steel is exceeded, provision must be made for transmitting the strength of the steel to the concrete.

Concrete-steel may be used for columns in which the ratio of length to least side or diameter does not exceed twelve. The reinforcing rods must be tied together at intervals of not more than the least side or diameter of the column.

The contractor must be prepared to make load tests on any portion of a reinforced-concrete or concrete-steel constructed building within a reasonable time after erection as often as may be required by the Commissioner of Buildings. The tests must show that the construction will sustain a load with a factor-of-safety for floors and structural members as required by Section 136 of this Code.

#### THE SURVEY OF SPARTA.

**I**N a letter to the *Times* appealing for aid towards the expenses, Mr. G. A. Macmillan gives the following account of the progress of exploration on the site of Sparta:—

The walls of the city have been traced for four-fifths of their extent and are ascertained to be not Byzantine, but Roman in period. It seems likely that the adjacent *enceinte* was cleared of buildings in Classical times for strategic purposes. The excavators think that the ancient city may have included the area between the low hill which served as an Acropolis and the river Eurotas, in which case our notions of Spartan topography must be revised.

The second point of interest has been the investigation of the theater, hitherto the only identified site of the ancient city, where a life-sized statue of Asklepios with portions of reliefs probably belonging to the proscenium have been found.

But the most important result obtained has been the identification, attested by inscriptions, of the site of the Temple of Artemis Orthia, which we know from Pausanias to have been the scene of the chastisement of the youths of Sparta, where enormous finds of votive offerings have been made. The scene of the discovery is a field on the right bank of the Eurotas, about half a mile to the south of the modern bridge. From time to time, boys playing in the river bed had picked up little figurines of lead. Similar figurines having been found some years ago in the excavations at the shrine of Menelaos on the opposite side of the river, the British excavators suspected the existence of a second sanctuary, and made a trial here on April 7. Within a few hours it was clear that the site contained an immense deposit of votive offerings. During the past fortnight a few skilled workmen, working slowly with knives, have extracted many thousands of these peculiar figurines. At least fifty variant types have been found, representing divine and human figures, musicians, centaurs, sirens, fish and other animal forms, with inanimate objects, including altars, wreaths, vases, helmets and mirrors. If the material and the modest scale of the offerings seem to illustrate the traditional simplicity of Spartan usage, their number proves the importance and popularity of the cult. Nor are offerings of more costly material wanting. The ivory carvings include two statuettes in the round, a lion, four figures of rams, a helmeted head and a number of discs, combs and

pins. In bronze there are statuettes of a horse and a dog, and large fragments of bowls and caldrons richly decorated in repoussé work. Smaller objects of both gold and silver have been found, including a silver pin with fine spiralfirm decoration. Terra-cotta statuettes in great variety have come to light, with large quantities of pottery. Apart from this deposit, upwards of one hundred inscriptions have been found since the work began.

In the temporary absence of the director at Athens, Mr. Guy Dickens, of New College, Oxford, has been in charge of the work, and in the course of these excavations has located the temple and traced two of its sides. For the moment progress has been impeded by a mill stream which runs through the *temenos* and intersects the temple. Before further excavation can be attempted it will be necessary to expropriate the land and divert the stream.

Broadly speaking, the deposit described above consists of objects which may be assigned to the sixth and fifth centuries before our era. The pottery is largely of the "Orientalizing" types, and the presence of scarabs and other imported objects confirms what has already been suspected—the presence of strong Oriental influence in Laconian art of the archaic period. The site is one of exceptional promise, and more than justifies the selection of Sparta as the scene of the labors of the British School, when it is remembered that the results enumerated above come from the mere fraction of the temple precinct that has been opened. Until today archaeological research has done little or nothing to add to our knowledge of the State which vies with Athens herself for the commanding place in Hellenic history, and it rests with us to see that the work thus happily inaugurated is adequately sustained. The Greek authorities under Dr. Cavvadius are extending their usual courteous co-operation by erecting secure quarters for the reception of the finds, and in this and in other matters the Spartan Ephod, M. Soteriades, is an efficient ally. But the depth of earth is unexpectedly great, the rate of wages is higher than has hitherto been the case, the question of expropriation has to be faced, and it will be necessary to secure permanent quarters for the excavators in the neighborhood.

## COMMUNICATION

### "THE GLAMOR OF CROOKED BUILDING."

TO THE EDITORS OF THE AMERICAN ARCHITECT:

*Dear Sirs:*—I have just noticed your reprint of February 3d of *The Builder's* rejoinder to my "Reply" to the article in *The Builder* of September 23d. As *The Builder* continues the controversy, while professing not to do so, I have no recourse excepting to correct its rejoinder as regards the issues of fact and the alleged "misrepresentations" with which I am charged.

My "Reply" to *The Builder*, as published by the Edinburgh Architectural Association, opens thus: "The Hon. Secretary to the Exhibition tells me that the Editor of *The Builder* declines to publish the first installment of the reply which I made in the course of my recent lectures. I wish, therefore, to put my case before your Association . . . in another and more thorough form."

*The Builder* rejoins that this is a misrepresentation and that "it conveys a completely wrong impression." To this I reply that the Hon. Secretary not only told me what is stated above, but he also showed me the letter from the Editor of *The Builder* refusing to publish the MS. lecture report which had been submitted. A copy of this letter lies before me at this moment, and can be furnished for publication, if desired. More than this, the Hon. Secretary originally had written to the Editor of *The Builder* immediately after the appearance of his leading article on "The Glamor of Crooked Building," requesting him to allow me to submit a reply. The answer returned was shown to me. It very bluntly expressed the wish not to consider such a reply, although as yet unwritten.

Under these circumstances the Edinburgh Architectural Association published my "Reply," and this action is treated by the editor as a grievance and the statement of the matter of fact which led to this action is described as a "misrepresentation."

Wherein the grievance might consist, it is difficult to understand, as it would have been my privilege, under any circumstances, to publish a reply through the medium most agreeable to me. The correspondence with *The Builder* was wholly in the hands of the Hon. Secretary of the Edinburgh Architectural Association. This correspondence was submitted to the Exhibition Committee, and their action was taken accordingly. What their attitude was toward this exhibition, and toward the action of

*The Builder* in refusing to examine it, is conveyed by their announcement as printed on the back of the pamphlet cover of the "Reply" in the following terms: "The Edinburgh Architectural Association, in conjunction with the Brooklyn (U. S. A.) Museum of Arts and Sciences, intends to issue within the next few months a volume of plates of large size, produced in the best style, of collotype, which will be practically the Edinburgh Architectural Refinements Exhibition on a reduced scale. Mr. Goodyear will treat the subject exhaustively in the accompanying letter-press. The book will be brought out under the care of Mr. B. T. Batsford, who will later on issue an illustrated prospectus."

The motive of *The Builder* in not mentioning that my pamphlet "Reply" was announced on the title page as being published by the Exhibition Committee of the Edinburgh Architectural Association may be easily imagined.

*The Builder's* rejoinder furthermore says: "We do not think this kind of a document should be allowed to be sent around without a word or two from us in regard to its misrepresentations . . . As to the present 'Reply,' Professor Goodyear's method seems to be to ignore our actual argument and to find fault with us for not having said something else which had no bearing on it."

Now, the curious thing is that this is exactly the trouble with the method of *The Builder's* rejoinder. The method which the editor complains of is the method which he has followed, and the following notable examples of this method are subjoined:

The rejoinder says: "In reference to this point of irregular spacing, Professor Goodyear seems to think that we are crushed by the fact that Penrose found irregular spacings in the Parthenon, and irregular widths of abacus, and believed that they were intentional. Professor Goodyear does not seem quite to understand that we do not take opinions ready-made from other people, however illustrious. We accept Penrose's evidence absolutely for facts, but we do not therefore accept his reasoning; we do our own reasoning, etc., etc."

Now, what is all this pother about? The editor is simply repeating what he said in his original article—that he believes the given Greek variations to be accidental—and incidentally misrepresents what I said in reply; and what I said was this: The given Parthenon variations go up to four inches in widths of four feet (in the metope spacings). Therefore, if these variations are accidental, the margin of builder's error in the Parthenon must be four inches (instead of 1-50 of a foot, as stated by Penrose). Then, after quoting the margin of error as 0.08 at Wells, as 0.09 at Salisbury, as 0.39 at Norwich, as 0.22 at Ely, as 0.34 at Lincoln, and as 0.08 at Durham, I have concluded: "Thus the unlooked-for result of *The Builder's* contention would be to prove that the mediæval builders of England were in many cases more accurate than the Greek builders of the Parthenon."

So far as I am concerned, this result would suit me perfectly. The logic of the argument is irreproachable. Why does not the editor admit that (from his point of view) the English builders were more accurate than the Greek builders, or else say nothing about it? I did not antagonize, and do not now antagonize, his original views as far as the argument with him is concerned.

Here is another specimen of the character of this rejoinder. In my "Reply," I quoted Mr. G. L. Pearson's official report on the Peterborough façade, and Mr. Pearson, be it known, was the man who repaired this façade. Personally, I know nothing about the Peterborough façade, and have said so in my "Reply." *The Builder's* answer is this: "It is possible (if we may dare to make the suggestion) that we know more about Peterborough than Mr. Goodyear." Not a word about Mr. Pearson; his name is carefully avoided. Obviously, the question is not whether the editor knows more about the Peterborough façade than I do. The question is whether he knows more about it than the man who repaired it, and published the official report.

*The Builder's* description of my misrepresentations about the ground-plan of St. Mark's must be rather tedious reading to other people, for they are even tedious to me, and I should really like to be interested, if possible. It would therefore appear to be a deadly error to go very deeply into this subject. I will briefly state what his misrepresentations are in this particular, and let the matter end there.

Briefly, then, the editor of *The Builder* republished from my Catalogue a plan of St. Mark's in very large dimensions. He made this prominent and sole illustration the stalking-horse of his discourse, and he described this plan as being one of my surveys, whereas the Catalogue expressly stated the contrary. He attributed to me views about this plan which I have never enounced.

In reproducing this plan, he also omitted the explanatory title,

as printed in the Catalogue. The impropriety of this proceeding is made apparent by the following statement: A considerable number of plumb measurements were taken in 1901 in the galleries of St. Mark's, both in the upward direction, assisted by a pole, and in the downward direction, and these measurements represented the major amount of the divergence of 33 inches in the nave. But there were certain other measurements taken with a short line and a pole from the pavement, for an extreme height of only 17 1-2 feet (and also for lesser heights), and with divergences as low as 0.15 or 0.20. These measurements were very numerous (nearly 200), and could only be quoted, for the exact points at which they were taken, by being entered on a ground-plan. For that purpose, and for that purpose only, a ground-plan of St. Mark's was employed. There are no surface measurements of any sort on this plan, and only those measurements appear on it which were established by plumb and relating to vertical surfaces. This plan was both by title and by Catalogue specified as being published for the record of plumb measurements. Now, when the plumbs of that plan are divorced from the explanatory text and from the quotations of other plumb measurements which were taken in the galleries, and when the title under the plan is suppressed, which specified the lengths of the plumb lines used, the inevitable result is to make it appear that these plumbs on the given plan represent the divergences for the entire height of the building. In other words, the divergence in the nave is made to appear as low as 0.15 or 0.20, instead of being 2.80 or 2.90, as it actually is. The editor suppressed the length of the plumb line which was used for the measurements, as entered on this plan, and caused it to appear by consequent implication that these measurements on the plan are my measurements for the whole height of the church.

His rejoinder wholly evades the admission or mention of this cardinal offense, and attempts to throw dust in the eyes of the public by much useless debate about a curve in plan of the façade which is not shown on the plan, and which I have never shown by any plan, but only by a photograph.

I have shown in the Edinburgh Catalogue that if the widening in the nave of 33 inches is accidental, the lower circumference of every dome must have had fissures of over eight feet, because the circumference of a circle is three times the diameter. We know that such fissures have never existed, and that the church would have collapsed in that case. In face of this argument, which it otherwise ignores, *The Builder* distorts and mutilates my evidence, republishes a plan containing a portion of the plumbs, as though it represented all of them, and omits the caption under the plan which says exactly what the lengths of the plumb lines happened to be, as used for those particular measurements.

Then it publishes a rejoinder, without any apology for this action, and without mentioning this main point at issue, and in that rejoinder it accuses me of misrepresentations about the ground-plan of St. Mark's.

It may be regarded as proved that the editor reviewed an exhibition which he had not seen, a catalogue which he had not read, and a plan which he neither had examined nor studied, and whose real use and purpose, consequently, he had overlooked.

Before *The Builder* can afford to question my common sense, as it has done in the conclusion of its rejoinder, it must vindicate its own reputation for common fairness, and this leads to a final word about its use of the ground-plan of St. Mark's. On this plan there are some 186 plumb measurements. Many of these specify inclinations as low as 0.05. Many more show inclinations as low as 0.10, 0.15, and 0.20. The greatest inclination specified for the nave on this plan is 0.30. Such inclinations are all manifestly too small to be regarded at first sight as more than accidental, unless we know that they were taken with a very short line, and unless we know how these measurements relate to others on the same surfaces higher up. The editor is certainly aware that the significance of an inclination, as measured with a plumb line, depends on the length of line and on the question whether the lean so indicated stops at the indicated height or whether it continues beyond that height. All these facts have been most carefully described and debated in the Edinburgh Catalogue. If any notice at all were taken of these measurements, common fairness would demand that the limitations of the given class of measurements should be mentioned, and that the existence of others which are more important, should be noted. But *The Builder* has circulated throughout Great Britain a wholly false view and impression of my plumb measurements in St. Mark's. Having done this, the editor concludes (issue of January 20th) that "No one could say that our article entitled 'The Glamor of Crooked Building' was in any point either offensive or ill-natured" !

WM. H. GOODYEAR.

## ILLUSTRATIONS

DETAILS FROM THE PRUDENTIAL BUILDINGS, NEWARK, N. J. MR. GEORGE B. POST, ARCHITECT, NEW YORK, N. Y.

THE PUBLIC LIBRARY, WASHINGTON, D. C. MESSRS. ACKERMAN & ROSS, ARCHITECTS, NEW YORK, N. Y.

ENTRANCE PAVILION OF THE SAME.

HOUSE OF STUART DUNCAN, ESQ., NO. 1 EAST 75TH ST., NEW YORK, N. Y. MR. C. P. H. GILBERT, ARCHITECT, NEW YORK, N. Y.

INTERIORS IN THE SAME HOUSE: TWO PLATES.

THE AMERICAN SECURITY AND TRUST BUILDING, WASHINGTON, D. C. MESSRS. YORK & SAWYER, ARCHITECTS, NEW YORK, N. Y.

HOUSES IN 19TH STREET, WASHINGTON, D. C. MESSRS. WOOD, DONN & DEMING, ARCHITECTS, WASHINGTON, D. C.

## Additional Illustrations in the International Edition.

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## NOTES, AND CLIPPINGS

THE SINS OF BERNINI AND HIS FOLLOWERS.—Bernini was the originator of a new manner, the founder of a numerous school, whose sway extended over the whole of Europe, and continued down to the middle of the last century. The talents of this artist were great, vigorous and prolific, but his taste was as remarkably extravagant. Destitute of the creative power which reveals itself in the production of new combinations, his ill-regulated efforts after originality were unhappily directed to the style of art which in the very midst of the master-works of antiquity he misapprehended and debased in an inconceivable manner, as though he would annihilate all truth and beauty in art and leave it entirely at the mercy of the most unbridled fancy. In truth, extravagance of taste could scarcely be carried farther in sculpture than in the works of Bernini and his school. Bones of exaggerated size, muscles swollen into mountains, in his men; soft, bloated flesh, voluptuous forms, surpassing even Rubens, in his women; ill-formed, scrofulous children; draperies to be compared only to the waves of a stormy sea suddenly turned into stone; distorted features, frantic faces, wildly dishevelled hair and beard, attitudes in violent contrast, the gestures of insanity, impetuous movements without aim or reason, and a treatment of the marble giving it by high polish an almost gelatinous softness, are the chief beauties of that style which in its day enchanted the amateur and connoisseur, and inundated France and Italy during a whole century with its deformities. But it was not sculpture alone that was thus misused: a similar corruption of taste prevailed like an epidemic in all the other departments of art. Marino and his followers in poetry, Lanfranco and Pietro da Cortona in painting, Borromini in architecture, were all guilty of like extravagance; but the enormities of Bernini were the greatest—most repulsive. Strictly speaking, this hateful manner had been transferred to sculpture from painting, and Algardi had already laid the foundation of it, but in his hands it was kept within bounds. Bernini alone had the hardihood to introduce into sculpture the license which Lanfranco and Pietro da Cortona permitted themselves in their ceilings and cupolas.—*The Architect*.

NEW FORMS OF THE ELECTRIC CARBON.—The original form of electric carbon, says Mr. W. F. Reid in the *Westminster Review*, was a solid rod; but of late years cored carbons have come into use. These are tubes of carbon filled with a mixture of graphite, which is squirted into the tube after burning, the whole being then baked a second time. What are known as flame carbons are a comparatively recent invention, and produce a warm, yellow light, very different from the cold, bluish light from pure carbons. They contain usually calcium compounds, such as fluor spar. These volatilize in the intense heat of the arc, which they tinge with the desired color.

ROMAN RUINS ON THE ITALIAN COAST.—Late explorations of the Italian coast near Pompeii have changed the opinion of antiquarians. The submerged Roman ruins along the coast used to

be regarded as foundation walls thrown out for sea baths, but it was made clear that they are the remains of noble mansions, and that they point to the time when the land on which they stood was far above the level of the sea. The shore is, in fact, strewn with the wrack of buried cities. Coast roads have vanished, ancient quarries have been flooded, and the breakwaters of the harbors of classical story covered fathoms deep with water. A great submarine sea-wall, with concrete piers seventeen feet high, still protects the fragments. But neither the fragments nor the great sea-wall have been visible in the light of day for two thousand years.—*New York Tribune*.

WATERPROOFING CONCRETE.—Mr. D. McN. Stauffer, in his "*Modern Tunnel Practice*," says:

"Silicate of soda and alum have been mixed with cement in an attempt to make the mortar watertight. Prof. W. K. Hatt conducted experiments with these mixtures. He found that the effect of the silicate of soda diminished the strength of the mortar more than 50 per cent., and diminished the absorption of ash mortars about 50 per cent. The soap solution alone does not increase the strength, but does decrease the permeability about 50 per cent. The effect of alum and soap was to strengthen the mortar and harden it, with 50 per cent. decrease in absorption. Professor Hatt used a 5 per cent. solution of ground alum and water, and a 7 per cent. solution of soap and water. The alum water was mixed with the mortar in the proportion of one-half the ordinary gauging water; the soap solution was then applied to bring the mortar to the desired plasticity. The soap and alum acting together cause the precipitation of an insoluble compound in the pores of the mortar."

THE VON STEUBEN MONUMENT AT WASHINGTON.—The award in the Von Steuben monument competition for Washington has been made to the sculptor Albert Jaegers, whose model received first honors in the original contest.

NEW MONUMENT FOR SAN FRANCISCO.—Douglas Tilden's bronze group of statuary, commemorating the heroic deeds of the American soldiers in the Philippines, which is to be erected in Golden Gate Park, San Francisco, has been cast at the American bronze foundry in Chicago. The *Chicago Record-Herald* gives an illustration of the composition, of which it says that it is considered "one of the finest war monuments of modern times." The group is composed of four figures, including that of a private soldier in the death agony from a wound in the chest, that of an officer standing at bay with his sword in one hand and a revolver in the other, that of an "allegorical winged horse," and upon the back of this war-steed "the mythological war goddess Bellona, with helmet (*sic*) raised, sword held at charge, and the American flag folded to her heart with her left hand." The group stands eighteen feet high, and is twelve feet from tip to tip at the widest point. It is to be shipped to California in a few weeks, and will be the first work of statuary erected in San Francisco since the earthquake. The commission for the monument was given four years ago by a citizens' committee of San Francisco, to Douglas Tilden of Oakland, Cal., who, says the *Record-Herald*, "is known as the Saint Gaudens of the Pacific coast." The cost of the group is about \$30,000. We can easily believe that the work is "especially notable for the amount of action, or dramatic strength, that the artist has succeeded in getting into the ensemble." Judging from the illustration, it appears that the work might be even regarded as excessive in these regards. However, it would be manifestly unfair to base an opinion of a plastic work of this character on a newspaper picture. Let us hope that the monument may be worthy of its motive.—*Boston Transcript*.

SOME AMERICAN TUNNELS.—Although England began the construction of subaqueous tunnels with Brunel's great work, and the London County Council have imitated the example, the Americans can also point to several fine instances. The St. Clair tunnel, between Lakes Huron and Erie, is at a depth of about 60 feet below the water bed. The East Boston subway has a length of 2,250 feet under an arm of the harbor. The Harlem River tunnel is a remarkable work and was economically carried out by a sub-contractor. The Hudson River tunnel, which is now in progress, will present the novelty of having the two circular tubes each supported by a row of 27-inch screw piles spaced 15 feet apart. This is owing to the formation of the river bed, which is a fine silt.—*The Architect*.

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**A**RCHITECTS everywhere who are inclined to experiment—that really is the word to use just now—with reinforced-concrete construction are confronted with a perplexingly complex situation which is likely to add seriously to the annoyances they have to endure in the way of delays and squabbles between sub-contractors. Up to date, patents have been taken out in this country for a score of different “systems,” while similar protection in their several countries has been secured for three English, fifteen French and thirty-six German systems, which may or may not be available for American use. The fact that it will be desirable for an American practitioner to inform himself as to the peculiarities and merits of three or four score systems of reinforcement before deciding which one to adopt is not necessarily a serious disadvantage, and is not dissimilar to what has to be done in other branches of inquiry. But the obligation of conforming to patent specifications obviously is going to deprive building methods of a very desirable flexibility for one thing, while for another it is likely to subject to the exigences of the patentee many matters of arrangement and cost where it is very desirable that the architect should have a free hand. The most serious difficulty is likely to be revealed in the case of a complicated structure, a large church perhaps, where certain effects in the vaulting, say, are desired by the architect but which he finds cannot be carried out by the patentee with whom the contract has been made. Architects, therefore, who desire to avoid the delay occasioned by injunctions and suits for infringements, in making contracts with the patentees of any reinforced-concrete system will do well to reserve the right of having any portions or details of their buildings carried out after any other system and by any other contractor that the conditions may require.

**W**E fancy that, recently, a considerable number of the members of the House Committee on Appropriations must have solemnly winked at one another, quite as the Roman augurs were wont to do when they were off duty: to maintain an aspect of complete innocency must have been a severe strain on their risibles. The occasion was an inquiry that the Committee had in some way been induced to make into the matter of the cost of the new building for the Department of Agriculture, for which Congress, in 1903, had appropriated a million and a half of dollars on the supposition, as now alleged, that such building as the Department required could possibly be built at so very modest a cost. The Committee has learned that the appropriation will all be spent in the construction of two “wings” of the proposed building and that inevitably, at some future time, another appropriation will be asked to meet the cost of erecting the connecting central portion. As the great majority of public building operations are carried on by a series of partial appropriations, partly because meddling Congressmen delight to cut down the sums named in original bills, and partly because political exigences require that contracts shall be spun out, it is hard to see why the Committee should have obliged the amiable Secretary to appear before it and explain that he had no present intention of asking for more money, as the two new wings gave him all the space he required.

**O**WING to a fire which is believed to have originated through imperfections of the electric wiring, the west wing of the Louisiana State-house at Baton Rouge was destroyed on the night of June 7, a disaster which may bring about the holding of another State-house competition. The present building, conceived in a species of Americanized castellated Gothic which closely recalled, if it did not actually reproduce, the structure destroyed during the Civil War, was designed by Mr. W. A. Freret and built in 1882 at a cost of \$220,000 only. This latest fire caused the destruction of, amongst other things, the great painting, “The Battle of New Orleans,” which was locally held in much esteem.

**O**F all the religious cults that have waxed and waned in this country none has been so inexplicable as that of the Christian Scientists, as they are popularly called, not so much because it is, as we apprehend, largely based on the alleged working of miracles in these later days and the curing of ails without resort to the ordinary materia medica—other passing religious fashions have had bases as substantial or unsubstantial—but because it has manifested its existence with such abundant architectural vehemence. It is only some twenty-five years, we believe, since “Mother Eddy” began to deliver her messages, and yet, scattered through the larger cities, there are already a score or more of church edifices erected to the glory of Christ, Scientist, with all the art their several designs could command and, seemingly, with a total disregard of economy and cost. Pos-

sibly the apogee of the movement was reached when, on Saturday last, there was dedicated in Boston a temple or cathedral devoted to the new faith, built after the design of Mr. Charles Brigham at a cost of over two million dollars and, what is more, dedicated entirely free of debt! It is an extraordinary manifestation; and yet the thirty-four Christian Scientists injured by the overturning of a "sight-seeing automobile" on one of the days of jubilation will probably not trust to the "absent treatment," but will decide—perhaps with some delay—to have their broken bones set by an ordinary surgeon. It is extraordinary; but it is the architect's duty to solve the problem his client brings him, even should it be to build an amphitheatre for the audience at a select suttee.

IF to add materially to the sum of human happiness is to be successful, then Mr. J. B. McElfatrick, who died "in harness"—actually in his New York office—last week, in the seventy-eighth year of his age, was surely one of the most successful of American architects, as he devoted himself to the building of theatres, the home of mirth and happiness. A large part of the one hundred or more theatres designed by Mr. McElfatrick were rather of the concert-hall or variety-theatre type and were built in the smaller cities of the West and South; but after he established himself in New York and his skill in his specialty became better known, he had the chance to handle work of a larger and better type, as witness the "Knickerbocker," "New York," "Criterion," "Broadway," "Empire," "Alhambra," "Hudson," and other theatres in New York City, to say nothing of the nine theatres he built for Brooklyn and the two or three in Harlem. As many of these play-houses are admirable in all that goes to assure the comfort and safety of the audience, the designer achieved fairly the more important of the ends he had in view. If too many were coarsely elaborate and tawdry in the character of their interior decoration, they but shared the vices of theatre interiors everywhere, and it is only fair to say that, relatively, Mr. McElfatrick's work quite kept pace with advances made elsewhere and by other members of the profession.

WE believe that the barbaric splendor of the auditorium which has been aimed at by most theatre architects, but which has very rarely been attained, has been the outgrowth largely of the limitations which affected the methods of illuminating these halls—by light foci of indifferent force, quantity and color, and injudiciously placed. The practically perfect control that lighting engineers now have over the electric light so modifies conditions that there is no longer need for assuming that effects can be secured only by overexaggeration of form and scale. The more even diffusion of light which electric engineers easily accomplish and, particularly, illumination secured by reflection should allow the designer to introduce into his work the same refinement and delicacy that he avails of in designing a domestic interior, and we sincerely hope that in building their new theatre in New York Messrs. Carrère & Hastings will experiment in this direction. We do not believe that the possibilities of colored light have been

exhausted in producing the bewildering and often entrancingly harmonious effects projected upon the ballet; and seems as if a good deal of toning and unifying of effects in the decorative treatment of the auditorium which is now sought through the use of solid colors and gilding could be accomplished by diffused light issuing from colored glass lamps out of sight and producing effects varying from night to night or from entr'acte to entr'acte.

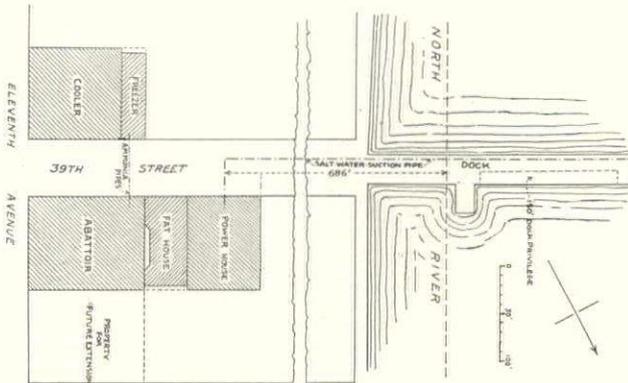
BECAUSE it is assumed to be one of the canons of good architecture that a building should in its design express the nature of its office, the wanderer through this particular city can often derive a good deal of amusement while speculating whether a given façade expresses a library, a club-house, a public bath, a bank or a garage, any one of which may be fairly expected to be found in that particular spot. But "*ars est celare artem*" is another canon of good taste, and it is surely in good taste to avoid thrusting upon the consciousness of the by-passer in a crowded city that he has before him a slaughter-house wherein are perpetrated all kinds of painful scenes which, through ignorance of possibilities, he cannot escape from imagining to be as foul and disgusting as they must be harrowing. The designers of the abattoir in this city, which is described and illustrated elsewhere in this issue, brought into notice through the present revelations concerning the meat industry of the country, certainly succeeded in making their abattoir look like an apartment-store or an office-building and so avoided shocking the sensibilities and then—explained with a label!

THE chase after that ignis fatuus, an "American style" of architecture, is likely to be a rather lengthy one, if certain statistics published by the *New York Sun* are to be relied upon. That newspaper, on examining the papers filed by the twelve thousand "professional men" who reached this country as immigrants last year, has discovered among other things that there were 545 architects in the number—that is, there were injected into American practice about four times as many foreign-trained architects as were graduated during the same time at all the American architectural schools. If we misuse these statistics, as it is the common practice to misuse such figures, we can make it appear that in twenty years, before, that is, this year's arrivals have either died or retired, there will be struggling to create an "American style" more foreign born and educated architects than there are now practitioners of every provenance laboring in this country. If, further, it be kept in mind that, under the lash of the Society of Beaux-Arts Architects, most of the architectural schools are trying to mould their output within the lines established by the Paris school, it will be discovered that the elusive American style may have some trouble in showing itself at the top. From what part of the world these 545 architects set out, the *Sun* does not declare, and we can only deduce surmises from the cognate facts that out of the "1,583 engineers" who arrived last year, 645 were Englishmen, and that of the "819 painters and sculptors" 168 were Italians, 139 Germans, 131 Frenchmen, 141 Englishmen and 17 Scotchmen.

### ABATTOIR OF THE NEW YORK BUTCHERS' DRESSED MEAT COMPANY.

THE New York Butchers' Dressed Meat Company was incorporated on July 18, 1902, under the laws of the State of New York, for the purpose of supplying the City of New York and adjacent cities with home-dressed meat. Of its premises the architects, Messrs. Horgan & Slatery, furnish the following description:

The buildings owned by the New York Butchers' Dressed Meat Company are the new Abattoir, the Fat Rendering Plant, or Fat House, the Power House, the new Cooler and the new Freezer, forming the total plant for killing, refrigerating, storing and selling of beef, small stock and fowls. They also own smaller buildings and sheds on West Fortieth Street. The map herewith attached shows clearly the lay of the property and the relative position of the buildings mentioned.



The Abattoir, situate on the northwest corner of Thirty-ninth Street and Eleventh Avenue, is superior to any like institution on this continent.

1—Because of its high standard of excellence in construction.

2—Because of its fire-resisting properties, and

3—Because every inch of available space has been utilized intelligently and all the details to operate the plant with facility and economy have been successfully carried out.

The building proper occupies an area of 98 feet 9 inches on Eleventh Avenue by 113 feet on Thirty-ninth Street, with the 12 feet remaining on the west of the building for a driveway and a cattle roadway to the roof. It is a five-story mezzanine and basement building, of brick and limestone, and of a general design and color scheme pleasing and effective. Nothing but the best quality of materials was used, and the most skilled labor was employed in its construction.

The building is of the steel-skeleton type of construction, with cinder-concrete floors and partitions, having all the steel frame entirely covered and well protected, making it a thoroughly fireproof building.

The basement contains small-stock coolers and salesrooms, working corridor, pickling-rooms, salt storage, ice-box, toilet-rooms, time-keeper's rooms and small offices. It can be reached directly from the street by four independent stairs, three of which are located on Eleventh Avenue and the other one on Thirty-ninth Street, protected by storm-houses of cast-iron and polished plate wire-glass.

The first story contains beef coolers, working corridor, tank-room, salesrooms and cash office, with loading-platforms on Eleventh Avenue and Thirty-ninth Street protected by awnings of steel, copper and polished plate wire-glass, and another loading-platform in the driveway at the west side of the building.

The second story contains the general and private offices, directors' room, beef-coolers, toilets and working corridor. A dumbwaiter connects the general offices with the salesrooms in both the first story and basement. The third story contains beef-coolers and working corridor, and toilet.

The fourth story contains the fat-picking department, chill-rooms, working corridor, toilet and air-cooler, where the American Linde system of refrigeration is installed. There are in this room three American Linde patent air-coolers, one of 100-ton capacity and two of 60-ton capacity, with an independent fan and electric motor for each, and all the pumps, tanks and ammonia connections. Each cooler is in-

closed in sheet-metal construction, and is directly connected to the air-duct system throughout the coolers. As soon as the electric fans are started the air is driven through the coolers into the vertical air-ducts, wherefrom start horizontal ducts concealed between the false ceilings and floor construction, allowing the cold air to escape into the coolers through openings in the ceiling. Another system of ducts is connected with the fan-room, forming a complete circuit, and through this system the warm air is taken away from the coolers, forced by the fans through the air-coolers into the cold-air ducts and into the coolers. By this system of refrigeration the chill-room will chill beef to 38 degrees, and will keep the temperature of all coolers down to 30 degrees when filled with previously-chilled beef.

The fifth, or main, "killing floor" contains, besides the killing-pens, the Rabbi's dressing-room, Government Inspector's rooms, shower-bath and lavatory. There are 14 killing-beds on this floor, and each is provided with a friction-hoist for slinging the cattle and a double friction-hoist for dropping the animal, and lifting it with the spreaders, ready to be split, washed, and taken to the chill-room on the fourth floor. The floor is of bluestone, thoroughly waterproofed and pitched to the blood-gutter, or to the water-channel, as the case may be; the walls are of enameled brick, the ceiling is high, and the room is well-lighted and ventilated, insuring the absence of the steam and fog usually found in most killing-rooms. All the beef friction-hoists are electrically driven by six 15-horsepower electric motors, and all the appliances are of the most modern and approved design.

Each killing-pen has a capacity of 200 cattle daily, making the total number of cattle that can be killed daily in all pens 2,800, or 16,800 for six week-days.

The fifth, mezzanine, floor, or the small-stock killing floor, contains pens for small-stock, killing-block, and toilets. This floor occupies only about one-half of the area of the building, forming a gallery on the north and west sides of the main killing-floor.

The roof contains cattle-pens protected by the high parapet-walls of the building, and by steel and galvanized-iron sheds, also pent-houses, fan-rooms, tank-room and feed-room. The roof is paved with vitrified brick and is thoroughly drained to the outlets. The pens are provided with watering-troughs for the cattle. The stock is unloaded at the dock, foot of West Thirty-ninth Street, or may be unloaded from the New York Central and Hudson River Railroad siding in the Thirty-ninth Street front of the building, and taken direct to the driveway at the west side of the building, where a series of inclined planes, with "never-slip" flooring and iron cleats, supported by steel framing, will lead the cattle to the pens on the roof. Directly above each inclined plane there is a small foot gangway with railing, whence men with electric prods guide the cattle. In case any one of the animals has been injured in transportation, an electric hoist is provided to lift the animal to the killing-floor.

There are one passenger-elevator, two beef-elevators, one freight-elevator and two sidewalk-lifts in the building.

There are three steel chutes connected with the same number of steel tanks in the tank-room on the first story. Of these chutes, one is for manure, and has openings on the roof and killing-floors; another is for head and feet, and third is for pelts, the last two starting at the killing-floors. There are two other chutes, one from the fifth floor to the fat-picking department, and the other from the killing-floor to the hide-cellar in the basement of the Fat House at the west of the building.

All the coolers and killing-floors are provided with a complete system of trackage and scales, for the proper handling, storing and selling of beef. The floors, walls and ceilings of all coolers are thoroughly insulated with granulated cork, pressed in sheets, and so laid, in double layers, as to break joints, avoiding all possible connection with the outside air. The windows in all cellars have quadruple sashes, and all doors are patent insulated doors. The side walls are plastered with magnesia plaster, moisture-proof, and the floors are of wood, laid on asphalt in herringbone pattern. The floors of all working corridors are finished in cement, with cement sanitary base. All salesrooms have tile walls and terrazzo floors, making them attractive, clean and sanitary.

Two vent-shafts run the whole length of the building on each side of the beef-elevators, with vent-registers at every

story, and connected with a system of galvanized-iron ducts in the ceiling of the fat-picking department on the fourth floor. This system of ventilation keeps the air always fresh, and takes away all disagreeable odors.

The building is thoroughly and efficiently lighted by electricity generated in the power-plant. It has a complete and sanitary plumbing-system and water-supply, and it is provided with stand-pipes, hose, water-buckets and alarm-system, for the effective fighting of fire.

The stairway is inclosed by brick walls, and the stair construction is of iron, with "neverslip" steel platforms and steps, making the whole construction thoroughly fireproof. Exits have been provided from every story to the cattle runway at the west side of the building, which will be used as a huge fire-escape in case of fire.

The building is fireproof throughout, no wood being used, except in floors of coolers, these being laid in small strips 12 inches long, 2 inches wide and 1 1/8 inches thick, bedded in asphalt on top of concrete.

Great attention has been paid to the sanitary features of the Abattoir. All corners are bull-nosed, and all angles, at floors, walls and ceilings, have large coves, so as not to retain dirt.

Special provision has been made at all angles of floors and walls, with wire-lath and steel, for rat-stops, to prevent vermin and rats from entering any of the rooms in the building.

The only rooms plastered are the interiors of the coolers, the plaster being placed on granulated pressed-cork sheets, and all of the material for plastering is made of cement, magnesia, marble-dust and sand, making a waterproof and fireproof cementing material. The remainder of the walls, floors and ceiling surfaces throughout are of enameled brick, enameled tile, or terrazzo; all with coved angles as before described.

The trackage is so arranged that the meat in no case can touch any wall, floor, or other surface, from the time the animal is killed until the meat is placed in the delivery-wagons.

The ventilation of each cooler wherein the beef is stored has been given very careful consideration. The cold air is blown into the room and circulated, taken out through the center of the room and then blown through a sheet of dripping brine. The brine takes up all the impurities from the air and introduces the air into the coolers thoroughly cleansed and purified. The meat is continually giving off gases and heat, and, in the usual type of closed room, using ammonia piping, there is no ventilation possible.

There are in each cooler thermostats to regulate the temperature. Each cooler may have a temperature, if so desired, ranging from 10 below zero to 40 degrees Fahrenheit.

The main killing-floor occupies the entire area of the building, and is 30 feet high, ventilated by six large air-shafts running through to the roof, and by eleven large windows to the outside air.

Bluestone is used for the floor, and enameled brick for the walls, as cement, common brick, or asphalt would not stand the boiling water which is used for cleansing and other purposes. On this floor are located the bath-rooms and toilet-rooms, ample showers for the men employed, toilets, and wash-basins.

All floors throughout the building are thoroughly waterproofed beneath the finished floors. The floor of the killing-room is often flooded to a depth of six inches, without injury to the building, showing the tightness of the floor.

The cattle are stored in pens on the roof, protected from the weather by sheds covered with galvanized-iron. A complete system of water-troughs and hay-racks is provided for the cattle. A complete system of water-supply, for flushing the floors, is included, as well as a sprinkler-system, which can be turned on the entire area of the cattle-pens, to cool overheated cattle before they are taken to the killing-floor. There is also a complete system of high-pressure cold, salt, and hot water, for flushing, washing, fire and other purposes, throughout the entire building.

#### COLOR IN STONEWORK.—I.

JUST about one hundred years ago the architectural and archaeological world was startled by the announcement of the discovery that the ancient Greeks had made use of polychromatic ornamentation in the stonework of their temples and public buildings. The statement was immediately challenged,

and found very few believers. But what were held to be evidences of the practice continued to multiply, and the discussion assumed so much importance that in 1836 the Royal Institute of British Architects appointed a special committee "to examine the Elgin marbles in the British Museum, in order to ascertain whether any evidences remain as to the employment of color in the decoration of the architecture or sculpture." Among the architects on the committee were Westmacott and Eastlake, while, on behalf of the science, Dr. Michael Faraday was associated with them. There was a careful examination of these precious fragments, and scrapings from them were analyzed. In their report, made the following year, the committee declared that it found few evidences of the use of color. The analysis yielded various substances that Dr. Faraday held to be the result of oxidation of the mineral ingredients of the marble, or of stains from atmospheric weathering. It was admitted that glass and colored stones had been used for the eyes of the statues, and that metal tracings had adorned the sculptured horses. Furthermore, the surface of the columns of the Theseum yielded a frit or vitreous substance, colored by copper, that had been applied through the medium of wax.

It is needless to trace farther the progress that the discussion made. Excavations on the sites of important Classical buildings brought to light fragments of triglyphs, fluted columns and statues stained with the brightest pigments of red, blue, and yellow, or rather vermilion, ultramarine, and straw-color. Stern critics had heretofore scorned the idea that the Greeks, with their wonderful feeling for art in its severe form, would stain the pure and spotless product of the Pentelic quarries. It would be as bad as "painting the lily and gilding refined gold." Compelled to alter their point of view in the light of incontrovertible proof, these same critics first admitted that color might have been sparingly employed because "the minutiae of the work in many parts would have been lost to the eye amidst the general brilliancy." When it was shown that considerable surfaces were frequently colored, the carpers finally declared that, under the cloudless skies of Greece, the human eye could not stand the glare of the sun on the dazzling Pentelic marble.

In the light of our fuller knowledge of ancient art and archaeology, we now know that the Greeks gave to color in architecture a part only secondary to the form. Where Nature mixed the pigments, the sculptor and builder took them from her hands and were thankful. Where she withheld her colors, they never hesitated to "paint the lily." In stoneworking and sculpture we have not improved on the lily, but his quarrying methods were crude and tedious. He did transport huge blocks of stone over land and sea for immense distances, but by such primitive means and with so costly an expenditure of time and labor that it is no wonder he sought to use the stone nearest at hand for structural purposes. Mt. Pentelicus was a vast storehouse of magnificent material, and it was easily worked. So it came about that this beautiful cream-white marble was the most widely used by the Athenian builders, who gave it color, as desired, by ochres and metallic oxides, carried into the texture of the stone by wax and oil. For decorative purposes, where the amount of stone required was comparatively limited, the Greeks ranged far afield for colored marbles—to the islands of Scyros and Eubœa, to Thesaly, and even to Asia Minor and Egypt.

With the passing of the master-builders of Greece, the artificial coloring of stone was generally abandoned. There are evidences that details of some of the elaborate carvings on the Gothic cathedrals were often helped out with pigments; but architects had begun to make use of a wide variety of structural stone, limestones and sandstones, and these gave color-effects without the need of stains. There were yellows, buffs, reds and browns, together with magnesian limestones that were sometimes almost white. In a few of the mediæval churches stones of different colors are laid without any apparent system, just as the various ledges or strata in the quarries were reached. Indeed, the masons would sometimes lay side by side blocks of entirely different geological formation. Under the mellowing influence of weathering, the effect in these buildings is undeniably picturesque and pleasing, but it is doubtful if any architect in these days would permit himself such freedom in selection of material.

Considering the very wide variety of stone produced in this country from which choice may be made, color has an astonishingly small part in our architectural schemes. A generation or two ago it was a common criticism that our generation streets, especially in New York, showed block after block of somber brownstone fronts, unrelieved by any contrast. Marble and granite had been employed in public and business structures, but each

kind of stone was used by itself and without the combination that would afford artistic color-effect. Then, in the early '80s, began the Indiana-limestone reign, and the prevailing color of our streets became gray and buff. Now, granite and marble are coming into vogue again, adding occasional tints of white and pink. Whatever there is of color contrast in an individual building is almost invariably furnished by the combination of brick, terra-cotta and faience with stone. The purpose is generally economy in cost, rather than a distinct striving for color-effect. In the erection of churches and public buildings, architects occasionally introduce combinations in stonework that afford a grateful contrast, but even in these cases there is no special appeal to the universal love of color. The late H. H. Richardson was particularly fond of contrast, and he permitted himself some daring innovations. Thus, in the erection of the Albany City-hall, in his familiar Romanesque style, he violated all rules and topped a light with a much darker stone. The body of the building is of Milford pink granite. The tall campanile is of this material as high as the belfry, while the latter, up to the peak of the roof, is of dark Longmeadow brownstone. The effect is not one of top-heaviness, as might be expected.

With the vast increase of wealth in this country our millionaires are taking to the building of country palaces. Here, if anywhere, would be splendid opportunity for rich color-effects; but almost invariably these ornate structures are of white marble or of Indiana-limestone. Set against a background of greenery, they almost blaze in the sunlight, and one longs for the mellowing hand of Time to subdue the glare. Money is lavished with a free hand on the construction of these mansions. The façades are everywhere adorned with mouldings and carvings. No material would be too expensive to be used in these structures, and one wonders why no one has had the happy thought of employing some of our exquisitely colored marbles for the outer walls. With the use of a stone that had color and pattern there would be need for far less carving, and the substitution of a material at \$3.50 or \$4.00 a foot for Indiana-limestone at eighty cents or white marble at \$1.25 a foot would not increase the total cost of the building as much as might be expected. In modern steel construction the encasing stone does not have to be in the huge blocks called for by the older forms of masonry. Marble of sufficient thickness for structural work could be had at a comparatively reasonable cost. One objection urged by the average stone-dealer, handling the common structural material, to the use of marble in outer walls would be that colored marble is not a good weathering stone. It is true that marble will not hold a polish when exposed to the weather, but rubbed to a smooth finish and without the final treatment of putty-powder and acid it will hold its own with any other limestone. Of course it is understood that this does not apply to the few decorative marbles that are full of seams and that have to be filled with wax. Putting these aside, as suited only for their present limited use, there still remain many marbles that are rich and varied in color, and sound and strong enough for any requirements. They might in time lose their full brilliance, but who cares for a stone that always looks as if it had just come from the carver's chisel or the rubbing-bed? The action of the atmosphere on a colored marble would merely soften the tints on the surface, and the effect would be as artistic as the rich patina on an ancient bronze. There is an apple-green marble in California, where the weathered surfaces in the quarry have turned to almost the precise tint of an antique Grecian vase. It is much more beautiful than the freshly fractured marble. The erection of the Pierpont Morgan library in New York of pink Tennessee marble, sand-rubbed, will doubtless give a stimulus to the use of our fine colored stones for structural purposes.

There is no country in the world that has such a wide variety in its stone resources as America. There is scarcely a single stone, marble, granite, limestone or sandstone produced elsewhere that we cannot match, in color at least. We shall continue to go abroad for our decorative material, for we cannot as yet equal the French, Italian, Greek, Spanish, and Belgian marbles in pattern and texture; but every year witnesses the opening of some new American quarry that replaces a famous European marble. For instance, we are now producing in Maryland a Cipollino that many critics think superior to the output of the celebrated quarries of Switzerland and Eubœa. If we are to draw freely from these domestic supplies, a knowledge of where they may be obtained must become more general. The architect depends largely on the local stone-dealer, and the latter handles only the commercial stone in most frequent demand. If the architect will only study out the color-effect he desires, there is

no question that his specifications can be filled, if he will tolerate no substitution. He will be informed by the dealer and the cut-stone contractor that stone of a particular color cannot be had, and if they are told definitely where it is produced, it will be hinted that the stone cannot be cut except at prohibitive cost. Any story will be invented in the hope of changing the proposed blocks to Indiana limestone, which comes in the most convenient blocks to handle, and with which sawyers and planer-men are most familiar. This stone is the easiest to figure, and the cutters want no experiments. They are up to various dodges to get their favorite material. Many a time they have figured on blue Bedford stone called for in specifications, and after being awarded the contract have, by threats of delay because of difficulty in getting supplies from the quarries, thrown the work into the buff stone, which is cheaper and easier to cut. Architects have submitted to this imposition of substitution on various pleas, and it will be the great difficulty to be encountered in an attempt to use a colored stone strange to a given market. It is safe to say, however, that if a stone can be worked locally it will afford no great trouble to the cut-stone contractor in a distant city.

Heretofore no attempt has been made to list the colored stones of the United States. When an architect sought contrast, he must take the stones of which he had personal knowledge. Often the effect was disappointing. On the crest of the Orange Mountains, almost within sight of New York City, is a house erected at a cost of several hundred thousand dollars. It is modeled after a Rhine castle, and for picturesque effect the walls are of the trap rock which forms the cliff it crowns. The prismoidal formation of trap rock prevents its use in large pieces, and some other material was essential for trimming. For contrast, a choice was made of Potsdam sandstone. This is one of the strongest and most dense of all building stones. It is a decided pink in color, and is most beautiful by itself or in proper combination; but its use in this instance made the trap rock more somber and forbidding than it ordinarily is. The pink was out of place, inasmuch as it could not be in mass. It was the one inharmonious touch. What was needed, perhaps, was a green, such as the light serpentine of the Hoboken cliffs (as used on the Stevens estate) or the darker moss-green serpentine that comes from Chester County, Pennsylvania.

FRANCIS T. HOYT.

(To be continued.)

#### OFFICIAL ARCHITECTURE.<sup>1</sup>

WHAT does official architecture as we find it in Europe express, as a direct sentiment? Judged from the ethnographic standpoint—by which I mean the consideration of architecture as the expression of the historic and social influences of the time and place in which it is generated—let us inquire why is the official architecture of Europe so similar in form? Official architecture must express the sentiments of order, dignity, power, and pride; for it is called into being by the exigencies of social organization, the end of which is government; and its aim must always be at once to express the dignity of authority and to foster the sense of loyalty to the community, which is ever the basis of power of the village, the city, the province, or the State. The healthy competition of cities and the struggle for the survival of the fittest among the organized states of the modern world are alike the legitimate source of official architecture. The late Samuel Laing, in the conclusion of his treatise on modern science and modern thought, has pointed out that the good of humanity at large is too vast and incoherent a sentiment to adopt as a mainspring of human effort and action, and counsels the more limited idea of loyalty to the welfare of the community to which one belongs as a surer inspiration of life. It is this sense of loyalty and pride that public architecture should, above all things, express—public self-respect. Professor Baldwin Brown, of Edinburgh, wrote me a day or two ago: "The best of architecture is that it is so democratic; appealing, whether effectively or not, to the public at large." It is the very thing about our art which has caused the wise rulers of a hundred generations to use this art in a political spirit. And this brings me to the second question—Why is the official architecture so similar in form? The spirit of our time is, above all things, this: that government has become a complicated science, and that wherever one goes in civilized lands the same system obtains. The welfare of the people may be regarded by officials as the means of insuring the power of the State; or the broader view, that the power of the State is the

<sup>1</sup> Extract from a paper by Professor Percy E. Nobbs of McGill University, Montreal, read at the annual meeting of the Ontario Association of Architects.

best security for the welfare of the people, may be the ultimate test of policy and administration; but, whichever way the official mind regards its duty, the practice throughout Europe is the same. Whether the government be an autocracy, a limited monarchy, or a republic, the official technique of modern states is all but identical. Now let us inquire whence this science of government has been derived. In two words this question can be answered: Rome—France. A century hence it will be possible to add England; but the principles of parliamentary power are still in their infancy, as far as Europe is concerned, and the model of governance by a bureaucracy is still the European ideal. The Roman ideal of a national mission, and incidentally of the place of art in the political system, is amply explored in Viollet-le-Duc's third lecture, entitled "A Comparison between Greek and Roman Architecture," in the conclusion of which he says, of our time, that it is "a compound of the traditions of Classical antiquity, of the influence of the spirit of Christianity, and of the long struggles of the Middle Ages." When we consider how all our systems of law are saturated with the principles of Roman law, the common law of Scotland and Holland especially, and also how the Renaissance in Italy revived for the modern world the Classic traditions of thought and literature, we see very good reason why modern states should carry on the traditions of Roman art, as an outward manifestation of the principles that underlie their very being. But there is a certain similarity in all this work, which is even more distinctive than the use of Roman orders. I refer to the obvious influence of the Academic school of 17th and 18th century France. In her introduction to that intensely practical and suggestive work, "Art in the Modern State," Lady Dilke says: "To the student of the modern social system (and I would add to the student of art), a minute knowledge of the life of France during the Grand Siècle is indispensable. The France of Richelieu and Colbert gave birth to the modern State, so that if we would know anything accurately about the modern political and social organization we have to look to the system which lies at the root of its growth. Now, a very important part of that system was the recognition by the State of the relations between art and industry, and the centralization of art education and of artistic effort by the Government of France under the enlightened Colbert, which resulted in the Academic Official School of Architecture. Not only did the European states institute government schools of architecture on the French system, but these schools naturally carried on the French Academic traditions, and so it is that French influence on modern governmental methods is reflected in the French influence of modern official art." Lady Dilke further states that the architecture of the Grand Siècle is not only all royal, but all monotonous, and this characteristic has been accepted with the rest. It is, indeed, only during the last few years that we note any attempt on the part of Russian, German, and Scandinavian architects to put something of local tradition into their work, as an expression of nationalist sentiment and a reflection of the Gothic Revival in England last century. Even the red-tape chancelleries of Europe are beginning to tire of the dry formulas of the Academic School. Still, Classic is the essential style for public works, and will probably always be so, and it is a source of immense satisfaction for us to note how the spirit of the freer Classic of England is likely to express the development of the parliamentary system during the coming century. What are the lessons that this great body of official work can teach us which may be of use to us in the scheming out of our own great city problem? First: I would say we have realized the importance of great buildings having great spaces about them, planned out with a sense of scheme. And this can only be contrived at a reasonable cost when the cities are young. Secondly, we see every reason for adhering to Classic tradition for public work; but I would add a rider to this—that Classic does not necessarily mean French Academic, and there is room in a scheme of formal dignity for national tradition. Let our Classic be the English Classic evolved by that great series of artists Jones, Wren, Hawksmoor, Gibbs, Adam, Chambers, and resuscitated with added vigor by Brydon and Norman Shaw, who is still happily with us exercising a beneficent influence on the vast schemes of city improvement in Liverpool and London. Gentlemen, if ever you again honor me with an invitation to your conferences, I hope you will permit me to choose for my theme the Classic revival of the 19th century in England. Many schools of architecture are good and delectable for the cosmopolitan, but those that have a note of national temperament are best for those who have the good fortune to own a nationality; and it is in our public buildings above all that this note should find tuneful expression.

## A PAIR OF NOVEL ELEVATORS.

BOSTON'S rapid transit system, which has acquired a wide reputation for its special features, has just seen put into operation two new things, which are the only ones of their kind. One of these is a 3-story railway station, unlike any other anywhere, bearing the name of Atlantic Chambers, and serving to make direct connection between the deep East Boston tunnel, which runs through the blue clay of Boston Harbor to an island suburb, and the Atlantic avenue elevated line, which skirts the docks of the seaward side of the peninsula on which the old city is built. The other feature, one contained in the former, is a group of four of the only elevators in the world which do not go straight up and down, and which still maintain a perfectly level floor in the passage through a curved tube.

In working out the comprehensive and unified network of lines which has given the metropolitan district of Boston the most remarkable transportation system of modern times, the engineers have had many curious problems to solve. Among these has been the problem of bringing elevators up from platform floors down in a tunnel, which are separated by the two-track roadway over which the cars pass, to a single station above. Had the elevators gone straight up and down, it would have been necessary, of course, to build two station platforms at the street level or else to have created in the street a building of prohibitive size, with a waiting-room all beyond the requirements of the traffic. To meet the requirements a battery of four elevators was devised by Howard A. Carson, engineer of the Boston Transit Commission. This service is now in operation and is working satisfactorily.

The arrangement is much as if on the line of one of the New York elevated routes elevators were run in tubes from buildings on opposite sides of the street into opposite sides of the waiting-room of the elevated station. The tubes start, however, from the subways and pass through the street level to the elevation of the elevated structure, thus giving a three-decked station. The peculiarities of construction are all between the two lower stories. From the second floor the cars run up parallel to each other in the ordinary way. The problem which had to be faced in the curved part of the shaft was somewhat similar to that in the Eiffel Tower, though in reality much more difficult. In the big Paris tower the lifts approach each other gradually towards the top of the tower. But the slant at no one place in the tower is so considerable as in the Atlantic Chambers, and the fact that the floor of the elevator is a little off the horizontal as the car goes up does not seriously incommode the passengers. The angle in Atlantic Chambers is such that it was absolutely necessary to contrive a means by which the elevators going up and down inclined shafts a distance of fifty-six feet, and at the same time traveling six feet in a horizontal direction, should have level floors in their ascent and descent. Where they start at the bottom on the tunnel level they are twenty-four feet apart. When they reach the street floor they are within twelve feet of each other. Although they move in inclined shafts they are kept on an absolute level by the use of curved guides. The passenger hardly realizes that he is traveling in anything but a vertical direction unless he looks through the iron lattice-work of the elevator and notes that the lines of the shaft appear all awry. The cars have a maximum speed of 250 feet a minute, each car having a platform area of about 60 square feet and a capacity of from forty to fifty passengers.

The 3-story station which these big elevators serve is one of the many appropriately ornamental structures with which Boston's streets have been filled since the beginning of the régime of the elevated company. Two of the foremost of American architects collaborated in its design. It is composed almost entirely of reinforced concrete and metal. Hardly any wood has been employed, either in the building itself or in the bridge which connects the station with the elevated structure on Atlantic avenue. The possibility of danger from fire has been considered here as throughout the Boston subway-elevated system, and has been reduced, so the engineers believe, to an absolute minimum.—*New York Tribune*.

## CLOISONNÉ GLASS.

ONE of the most interesting of quite modern glass processes is that known as "cloisonné glass." Its title tells, in a measure, a very clear idea of the method of manufacture or of the purposes to which it is appropriate. It is not a wall-decoration, but a kind of substitute for stained glass, very different in effect and in quality from any of the paper imitations of that substance. Cloisonné glass is genuine glass, as a rapid sketch of how it is made will

show. A sheet of plain glass is put over the drawing to be executed, and on this the outlines of the design are traced in wire (black, silver, or gilt, as the case may be). These wire outlines, which are semicircular in section, are firmly fixed to the background sheet, and into the cells formed by the cloisons are shoved countless little glass beads or pieces of crushed glass, according to the effect desired. The whole surface is covered with these little beads, which are firmly cemented on to the ground, and the entire panel is then covered with a second sheet of glass. The great point of the invention is that, along with a pleasant variety of surface (the beads may be of various sizes, and, of course, in any case, do not give a perfectly plain surface), it is possible and easy to get an almost limitless variety of color, as well as the most delicate and gradual shading, in which one color melts almost imperceptibly into another. To begin with, the beads are made in 800 colors, and (though this does not seem often to be done) a still greater range of effect could be produced by the use of several colors or tints judiciously and tastefully mixed together. Both the process and the effect are most interesting, and the practical utility of the invention is shown by the various uses to which it is put. The glass is used mainly for doors and windows, but it is perhaps seen quite at its best in the panels of lanterns and hall lamps, where the strong light immediately behind the broken surface gives sometimes a quite striking effect of color. On table-tops and trays it is seen to less advantage. All kinds of patterns are attempted, from the simplest designs after the manner of plain glazing to landscapes, flower-pieces, and figure-subjects. In these last the absence of lead lines comes as rather a shock, though the plan which is sometimes adopted of making imitation leads of crushed glass is by no means to be commended. Still, putting prejudice aside, there seems no valid reason why elaborate work should not be attempted in such a process as this, and some of it is certainly successful. The one point which does not satisfy the sense of fitness is the cementing of the beads onto the glass. It would be interesting to see the result of an effort to fuse them on without the aid of any other fixative than a glass flux. It is always rather unsatisfactory to stick things on to a flat surface by means of cement, shellac, or any medium not more or less allied to the parts to be united. We learn that small advertisement pictures made in this cloisonné glass are beginning to be used in some of the motor omnibuses. They will certainly be much pleasanter to look at than the "glacier" paper bills which we were accustomed to in the old horse omnibuses. If the glass stands the jolting it is likely to meet with on the motors, there is little fear of its failing to stand any hard wear that could legitimately be demanded of it.—*Journal of the Society of Arts.*

## COMMUNICATION

### COLLAPSE OF MASONRY TOWER AT THE PARLIAMENT BUILDINGS, OTTAWA, CANADA.

ON April 5th last, the tower on the new wing of the Western Departmental Block, on Parliament Hill, Ottawa, Can., collapsed at 11:45 o'clock, and is, even yet, end of May, a heap of ruins, a source of mortification to the Government, and a serious loss to someone—the contractor, probably. As if by miracle no one was hurt, although four men were working on the tower at the time. The new wing was built from east to west, from one of the older wings of the building to another. Its style of architecture was exactly the same as that of the older part of the building, and the outer surface of the wall, like that of the rest of the building, was of Nepean stone, trimmed with drab sandstone. At the northwestern corner of the wing was a square tower rising to the height of about 100 feet and capped by a copper roof of pyramidal form.

Work on the wing was continued through the winter, and at the time of the collapse was about complete. Suddenly two blocks of stone slipped and fell to the ground. This was a providential warning to the men, and probably saved their lives. While they were in the act of swinging themselves by ropes to an open window in the adjoining old part of the building, two-thirds of the tower and the entire top fell—a mass of cut-stone, crumbled cement, twisted iron beams and crumpled sheets of copper. Mr. George Goodwin, hitherto considered a responsible man, was the contractor. The accident ruined about one-fourth of the new wing.

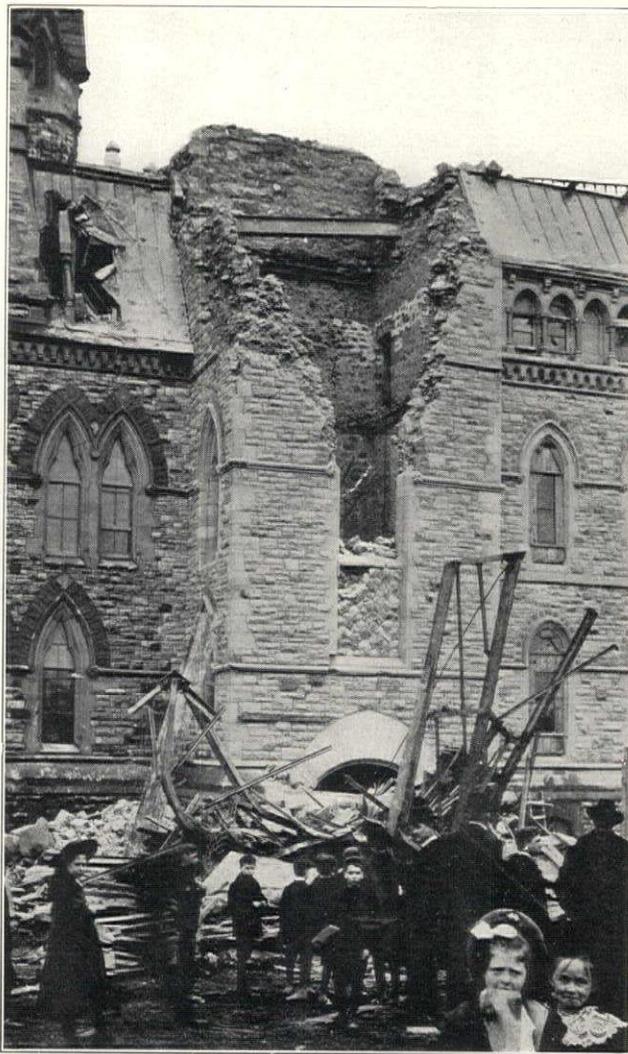
To learn authoritatively where the blame lay, the Canadian Gov-

ernment appointed a commission composed of two well-known Toronto architects, Messrs. Cury and Hutchinson, to investigate and report on the collapse. Their findings are as follows:

"(1) That the walls as built by the contractor were not according to the specifications prepared for this work, and that the bad quality of the work was sufficient cause for the collapse of the tower.

"(2) That the plans and specifications prepared for this work were not as explicit and clear as they might have been; they were, however, reasonably and sufficiently clear to enable a contractor to determine the quality of the work required.

"(3) Your Commissioners consider that the constructional design of the tower at and above the quatrefoils and water-tables and the introduction of steel beams in the manner shown on the drawings was faulty and defective in that the quatrefoil openings weakened the wall at a point where the full strength should have been maintained, and the steel beams brought a concentrated and



FALLEN TOWER: WESTERN DEPARTMENTAL BLOCK, OTTAWA, CAN.

eccentric load upon the wall at its weakest point, the more serious defect of the two being, in our opinion, the construction of the steel beams.

"(4) That there was no proper and efficient supervision of the works by the Department, from the level of the ground upwards.

"(5) That the main building, owing to the use of block stone in the backing, is safe, the work being of substantial character. It may be that the facing is not properly bonded with the block stone backing. This we have no means of satisfactorily determining, as it would not be advisable to take down any of the Nepean-stone facing.

"(6) That it was inadvisable to proceed with the erection of the upper portions of the tower in the months of November and December, especially as the walling at and below the water-table had been built late in the fall, and the lime mortar had not had opportunity to set.

"(7) That the contractor must be held responsible for the collapse of the tower in that he did not carry out his work in a

good and substantial manner in accordance with the plans and specifications, or take any precautions to see that the work was thoroughly well built at all points, when it should be self-evident to any intelligent or practical builder that the construction shown required special care and attention.

"(8) That the Department of Public Works is also responsible in that it did not properly supervise the work and detect and correct faults of construction as the work progressed."

The Commissioners discuss the nature of the work at considerable length. They say, among other things, that if three tons per square foot would be a safe load on walls as built in this tower, then from ten to fifteen tons would be an equally safe load on walls built according to the specifications. They declare, however, that the masonry used in the tower was of such a character that it would have been overloaded with even three tons per square foot, and that had it been of the quality required by the specifications, it could safely have borne a load of at least ten tons per square foot. The Commissioners further believe that the tower could and should have been built in a safe and satisfactory manner, if reasonable intelligence and care had been exercised by the contractor, notwithstanding the defects in the constructional design. The Commissioners are severe upon Mr. L. F. Taylor, the government architect, who was placed in charge of the work and was responsible to the Chief Architect. The defective constructive design does not appear to have come under the notice of the Chief Architect, Mr. Ewart, as he stated that he was not aware that any changes had been made from his instructions to make the tower the same as the two towers on the south elevation of the west block.

J. A. M.

## ILLUSTRATIONS

ABATTOIR OF THE NEW YORK BUTCHERS' DRESSED MEAT CO., 11TH AVE. AND 39TH ST., NEW YORK, N. Y. MESSRS. HORGAN & SLATTERY, ARCHITECTS, NEW YORK, N. Y.

For description see article elsewhere in this issue.

PLANS OF THE SAME BUILDING: THREE PLATES.

SECTIONS OF THE SAME BUILDING.

HOUSE OF ROBERT W. PATTERSON, ESQ., DUPONT CIRCLE, WASHINGTON, D. C. MESSRS. M'KIM, MEAD & WHITE, ARCHITECTS, NEW YORK, N. Y.

SUFFOLK SAVINGS BANK BUILDING, TREMONT ST. AND PEMBERTON SQ., BOSTON, MASS. MR. CASS GILBERT, ARCHITECT, NEW YORK, N. Y.

PLAN AND SECTION OF SAME.

### Additional Illustrations in the International Edition.

ENTRANCE DETAIL: HOUSE OF ROBERT W. PATTERSON, ESQ., WASHINGTON, D. C. MESSRS. M'KIM, MEAD & WHITE, ARCHITECTS.

## NOTES AND CLIPPINGS

PROPOSED RESTORATION OF HEIDELBERG.—The Government of Baden has lately sent a message to the Diet regarding the restoration of Heidelberg Castle, partially destroyed by Marshal Turenne when he laid waste the Palatinate. Energetic protests have been made of recent years against the projects for the restoration of Heidelberg Castle by artists, authors, professors and antiquaries, on the ground that it would be a desecration of the historical and poetical associations of the most ancient of the German castles, which was begun in the thirteenth century. The Baden government, however, has outlined a plan designed to interfere as little as possible with the character of the ruins.—*New York Herald*.

THEATRICAL END OF "GOLGOTHA."—The largest painting in the world, "Golgotha," after having been sold by the painter, Jan Styka, to a European syndicate for \$118,000, is to be cut up into theater curtains. It was seized by the United States Government for customs duties and recently sold for \$650. The purchasers are a lawyer and a Chicago variety-theater manager. Styka worked on the canvas for thirty-two years. It was brought over to be exhibited at the St. Louis World's Fair, but did not arrive in time.—*New York Tribune*.

VALUE OF OUR STEEL PRODUCTS IN 1905.—The steel and rolling mill products turned out in the United States in 1905 were valued

at \$673,965,026, according to a bulletin made public lately by the Director of the Census. Compared with the returns for 1900, when the previous census of steel works and rolling mills was taken, the values of such products have increased 13 per cent. The capital invested has increased more than 76 per cent. In 1900 the sum of \$429,960,043 was invested in the industry, as compared with \$760,182,310 in 1905. The materials used in the industry cost \$300,568,117 in 1900 and \$441,204,432 in 1905.

In 1900 7,442 salaried officials and clerks were employed, receiving in the aggregate \$9,421,868 as compensation, compared with 14,339, receiving \$17,861,305 last year. The number of employees in steel works and rolling mills increased from 183,033 to 207,563 and the aggregate wages paid increased from \$102,238,692 to \$132,491,995.

The output of steel rails in 1905 was 2,294,135 tons, valued at \$60,737,078, while 2,250,000 tons, valued at \$46,533,159, were manufactured in 1900.—*Exchange*.

PROPOSED RESTORATION OF CONGRESS HALL.—The proposal to spend \$25,000 to restore Congress Hall to its original condition is one which ought to be adopted without any question. The objections raised at this time are much the same as when it was proposed to put the main building, known as Independence Hall, in as nearly as possible the same physical condition as it was in 1776. The result has more than justified the originators of the movement. Congress Hall was in part turned over to a patriotic organization which has done much in the way of restoration, but it is not open to the public. There are many events which center about this building, though they seem overtopped by those in the main building. It was here that the first Congress met and it was the meeting-place for ten years. It was here that most of the formative legislation of the Federal government was enacted. This was the scene of Alexander Hamilton's greatest labors, of Jefferson's machinations. Here Washington and Adams were inaugurated and here took place those contests on the floor of House and Senate which accentuated and defined the divergent principles of Federal policy which have lasted with slight changes to this day. Independence Hall is the most important from a national point of view, but to the student of history Congress Hall has perhaps more interest. It was here that Gallatin laid the foundations of his fame, here Fisher Ames made that speech of unparalleled potential eloquence which prevented a war with Great Britain. Here first was attempted to keep up the forms and ceremonies of Parliament and here they broke down under the assaults of the redoubtable Matthew Lyon.—*Philadelphia Enquirer*.

STAINED GLASS, one of the chief art productions for which Munich is famous, suffered in 1904 an account of a decrease in orders. The chief cause of this depression is said to be an Order of the Ministry of Education and Worship (Kultusministerium), by which stained glass of more modern styles is no longer to be admitted in Bavarian churches. New markets have, therefore, to be sought in North Germany, prices having decreased in consequence. The new Order creates a great deal of dissatisfaction, and it is anticipated that the staffs of numerous Bavarian glass-painting establishments (there are thirty-four in Munich alone, employing some English artists) will have to be reduced, or the establishments will have to be moved to foreign countries. Added to this, wages of artists have risen, and the export to Canada and the United States suffers from the surtax and the heavy duty of 45 per cent. of the value, respectively.

ONE CHARACTERISTIC OF CANTERBURY CATHEDRAL.—The striking characteristic of Canterbury Cathedral, which is as evident to-day as when it was recorded by mediæval observers, is the progressive ascension from plane to plane, as we go from west to east. This may have been due to accidents of construction. The building of this, as of all great cathedrals, was checked by fires and progressed more or less slowly according to the energies of its clergy and the supplies of money. But there seems to be very probable evidence of design in making the progress of the pilgrim worshipers a matter of continual ascent by a series of steps from the ground level, where the martyrdom occurred, to the intermediate level of the anti-choir, then up further stairs to the choir aisles, and the great series of side chapels, up a last flight of much worn steps to the Trinity Chapel, where stood the shrine. Probably the whole procession of pilgrims, which we know took a long time in its round, was performed step by step by the worshipers on their knees.—*G. B. D., in New York Evening Post*.

# The American Architect and Building News

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WE confess to being rather uncertain as to what is really meant by an announcement made in the New York *Tribune* last week to the effect that an attempt was to be made to secure three million dollars with which to establish in this city a "school of fine arts, under Government control, on the lines of the famous École des Beaux-Arts in Paris." The movement seems to have nothing to do, on the one hand, with the School of Fine Arts in process of organization by Columbia University, the National Academy of Design and the Metropolitan Museum of Art, and as little does it seem to have connection, on the other, with that "National School of Architecture" that the Society of Beaux-Arts Architects dreams about, while it is avowedly distinct from any scheme that the Fine Arts Federation may have in mind. Apparently there are three, if not four, schemes afoot for establishing in New York art schools of considerable putative importance, all with more or less similar scope, but with assertedly different aims, yet all having an identical purpose—the extracting of the necessary funds for building, equipment and endowment from the pockets of the same small group of multi-millionaires!

AS one considers these several schemes, one is reminded of how, in the last chapter of "*Our Mutual Friend*," Dickens makes Lightwood ask himself, as he hearkens to the condemnatory words of one or another of the *convives* at the Veneering table: "Now, I wonder whether you are the 'Voice of Society'!" The voices are various enough, but which is the one that charms most wisely? To which will the millionaire endowers listen? It would be pleasanter to sit with Lightwood and listen to the voices rather than to join in their clamor; but it may be well to say, once more, that Governmental control and

direction of instruction in art is particularly to be distrusted in such a country as ours. Congress will hardly consent to foot the bills unless it controls, and, if it controls, will not that necessarily imply changes, substitutions and reversions in men and methods every four years or so, and the alteration or obliteration of those very "standards" which Mr. Beckwith and his friends think so desirable? It is rather curious that, at the very moment that the value of "official art" is being so seriously questioned in France, there should be heard in this country so many "voices" clamoring for the establishment of a system of doubtful value.

THAT a Department of Architecture at the University of Michigan was likely to be established has been known for some time, and the name of Mr. Emil Lorch has been used as that of the probable head of the department. The establishment of the department and the appointment of Mr. Lorch is now formally announced, and, with the opening of the fall term, one more center of architectural instruction will be in a state of activity. The fact that the University takes this step at the urging of the Detroit Chapter of the American Institute of Architects is rather an endorsement of our own feeling that, in a country so large as this, there is more wisdom in seeking to develop local schools of art and architecture with their often curious and generally interesting differences of style and purpose than in trying to create a national school with its too-probably deadening and leveling "standards." As Mr. Lorch, besides having been for the last two or three years Assistant-Professor of Architecture at the Drexel Institute, in Philadelphia, pursued his education at the Massachusetts Institute of Technology, Harvard University and the École des Beaux-Arts, he should be well equipped for the work he is to undertake.

THE fealty which college graduates feel is due to their own alma mater is so strong that it may be taken for granted that, when the time came when Mr. C. F. McKim found himself impelled to endow an architectural traveling scholarship, he would unquestionably have placed the fund in the trusteeship of the authorities of the Lawrence Scientific School of Harvard University but for the fact that, at that time, there was no architectural department at Cambridge. Although he had had no connection with Columbia College, still that institution was established in New York, the scene of the bulk of the architect's practice, and it was quite natural that the endowment—sufficient to provide an income for an annual traveling scholarship—should be placed under the control of the School of Mines of Columbia College. Thus, for a dozen years or more, Columbia has benefited by an exoteric benefaction which no one begrudges it. But when a Department of Architecture was established by Harvard University, Mr. McKim, if he did not regret what he had already done for Columbia, certainly felt he could not disregard the claims of his own "nourishing mother," and so, for the last few years, has provided an-

nually a sum sufficient to maintain a traveling scholar during twelve months' study in Europe. Quite recently the permanency of this scholarship has been assured by Mr. McKim, who has now provided an endowment of twenty thousand dollars—a sum equivalent to that given to Columbia. For the purpose—among other things—of avoiding complications in the records of two McKim scholarships, awarded by two different institutions, the scholarship now permanently provided for at Harvard is known—in honor of Mr. McKim's wife—as the Julia Amory Appleton Fellowship in Architecture.

**L**AST summer, in the very sensational suit of *Haydel vs. Gould*, a jury, drawn from the citizens of a small country town on Long Island, awarded as damages one of the largest sums ever assessed in such a case, and yet in amount less than half that sued for by the architect. In spite of the general feeling that probably a substantially just award had been made, there were circumstances about this trial that suggested the possibility that the jury had been influenced by the local prejudice against one of the defendants—a prejudice occasioned by certain temperamental defects of speech and manner—quite as much as by the evidence, and that, hence, it would not be a difficult thing to overturn the verdict. The Appellate Division of the Supreme Court of New York has, however, recently affirmed with unanimity the award of the lower court, and so, unless it is decided to carry the case to the Court of Appeals, Mr. Howard Gould stands condemned to pay to Mr. Abner J. Haydel the sum of twenty-five thousand dollars for the nineteen sets of drawings—more or less—made for and the time unavailingly spent in trying to evolve a "Castle Gould" that would really satisfy his clients.

**I**T seems quite within the limits of possibility that the New York public may, after all, profit by and enjoy—if these be the proper terms to employ—the exhibition of Signor Biondi's much-discussed colossal group, the "Saturnalia," now boxed up in the cellar of the Metropolitan Museum of Art, and many people would be glad to see this tardy piece of fair dealing accorded to an artist who, however mistaken as to what really constitutes a proper theme, certainly had justification for believing that he and his work would be accorded far other treatment than has fallen to their share. Aside from the fact that Art is believed and intended to be liberalizing rather than narrowing in its influences, we believe it is both unfair and injudicious, where the parties to a controversy belong to nations, societies or classes alien to one another and on either part familiar with differing social, business, and legal forms and practices, to insist on a narrow interpretation of a technicality.

**W**HEN, last year, we spoke of the suit brought by Mr. Oscar Bluemner against Mr. Michael J. Garvin, because of the former's claim to authorship in the design for the new court-house to be built in the Borough of the Bronx, New York, the latter gentleman took it rather ill because we referred to the matter as one where the architectural "ghost" had been called in to perform.

As the case has just been decided in Mr. Bluemner's favor, we feel more than ever that our diagnosis was correct. At any rate, the jury seems to be of that opinion, and the court affirms its award of the sum of \$10,201 because of Mr. Bluemner's claim as author of the design and his interest in the partnership which, as claimed, was to be the result of his successful efforts.

**A**N interesting, and apparently a very much needed investigation has been going on in New York as to the causes of the many deaths that are alleged to have taken place in the several tunneling operations now going on under the East and North rivers—particularly in the tunnels which the Pennsylvania Railroad Company is constructing under the East River from Thirty-fourth Street. Here, owing to what looks like miscalculation, because of imperfect preliminary investigation, the tunnel is being dug too near the bottom of the river-bed, through soil so light and porous that, in order to keep out the infiltrating river, unusually high air-pressure has to be maintained in the excavations. This unusual condition should have made the contractors especially careful, not only to provide the best of safeguards for the work and the workers, but to take extra precaution to assure that the needed rules were always and thoroughly observed. Perhaps they did, but the testimony seems to be conflicting at least. The safe process of entering and leaving subterranean workings constructed under ordinary working air-pressure is tedious enough at the best of times, and we cannot wonder that men of the class employed in the tunnels have been unwilling to believe that their safety required any longer stay in the air-locks than they had been accustomed to when the pressure below was less. The result of the neglect of proper precaution has been that a large number of workmen—how large seems not to be known—have been attacked with the "bends" or caisson-disease, and at least eleven deaths are alleged to have resulted.

**I**T has long been known that the best, if not the only, way of successfully combating the bends is to subject the victim to recompression; in other words, to hurry him back into the air-lock, or possibly into the deeper workings. As, however, the victims have been seized sometimes at a distance from the scene of their injury, their unconscious bodies have been, by ambulance surgeons who did not know the victims were tunnel workers, hurried for treatment to the nearest hospitals, where treatment was too often unsuccessful. The present investigations have disclosed the fact that there is not a hospital in the city equipped in such a way that a victim of the bends can be subjected to recompression! How far it may be hereafter the duty of an architect to provide a recompression-chamber in planning a large general hospital, we do not know, but it may be an item that should be kept in mind. The coroner's physician, in giving testimony, said that as the air was actually forced by the high pressure through the skin and deep into the under tissues, he had often been able to diagnose a case of bends by feeling air-bubbles below the skin and being able by gentle stroking to push these bubbles along from place to place.

ITALIAN CITIES<sup>1</sup>—XV.

FERRARA—I.

A SHORT distance from Ravenna we find Ferrara, which used to be, under the Este family, one of the most charming of towns—one where art and learning embellished the lives of the citizens.

It was in 1080 that this noble family wrested the control from the Torelli; but during the first four centuries of its rule this dynasty signalized itself only by its crime and turpitude. The Marquis Obizzoni was so detested for his cruel tyranny that he was strangled by one of his sons. Dante pictured this sanguinary personage in Hell. This family, which later shone so brilliantly, was, at the beginning of its career, a veritable family of the Atrides. At the beginning of the fourteenth century Azzo bequeathed the scepter to his natural son, Falco, and this act of injustice loosed an implacable feud between the designated heir and the prince's legitimate sons, Francesco and Aldovrandino. Fifty years later Obizzo III., at his death, left a dozen bastard sons, whom he legitimized, born to him by Donna Filippa Ariosto, whom the grand poet Ludovic Ariosto, proud that this lady could be found on his family tree, has rendered famous under the name of the "bella Lippa." Then began a series of crimes, each more cruel than the last one. Alberto caused to be beheaded a nephew accused of having conspired against him, and had his wife, who was suspected of having joined in the plot, burned alive. The Marquis Giovanni d'Este and his wife expired in horrible torment under the hands of executioners, who plucked off their flesh with red-hot pincers. Nicholas III, the bastard son of Alberto, put a stop to the dissensions that vexed the city by condemning to death all who were suspected of not looking with a favoring eye upon his reign, and then he had beheaded his second wife, Parisina Malatesta, and his natural son, Ugo, accused of incest one with the other. He even pushed his abhorrence of vice so far as to cause to be beheaded every woman in the city convicted of adultery. But though he preached the virtue, he did not practise it, for he had twenty-two natural children, one of whom, Lionello, succeeded him, according to his wish. Borso d'Este, another of Nicholas's bastards, to whom Lionello erected a statue, succeeded the latter, and, to put an end to competition with the legitimate children, had them all put to death. In his reign Ferrara became the market to which all the pirates of the Adriatic came to sell their slaves.

Borso increased the power of the family; he obtained from the

Emperor the investiture of Reggio and Modena, and in 1471 the Pope, Paul II., erected Ferrara into a duchy. Ercole I., another of Borso's brothers, succeeded him and beheaded one of his nephews, who disputed the succession with him, and at the same time cut off one hand and blinded in one eye three partisans of this nephew's. At this time Ferrara had become one of the most corrupt cities in Italy; depravity and license held sway through every class. One of Ercole's sons was that too-famous Cardinal Hippolyte d'Este, who had the eyes of his brother Julius plucked out for crossing him in one of his amours. The brother of the Cardinal Alfonso I married Lucretia Borgia, daughter of Alexander VI., who was for the third time a widow when she consummated this marriage, and whose presence in Ferrara only added to the depravity of the moral tone of the place. Alfonso I,

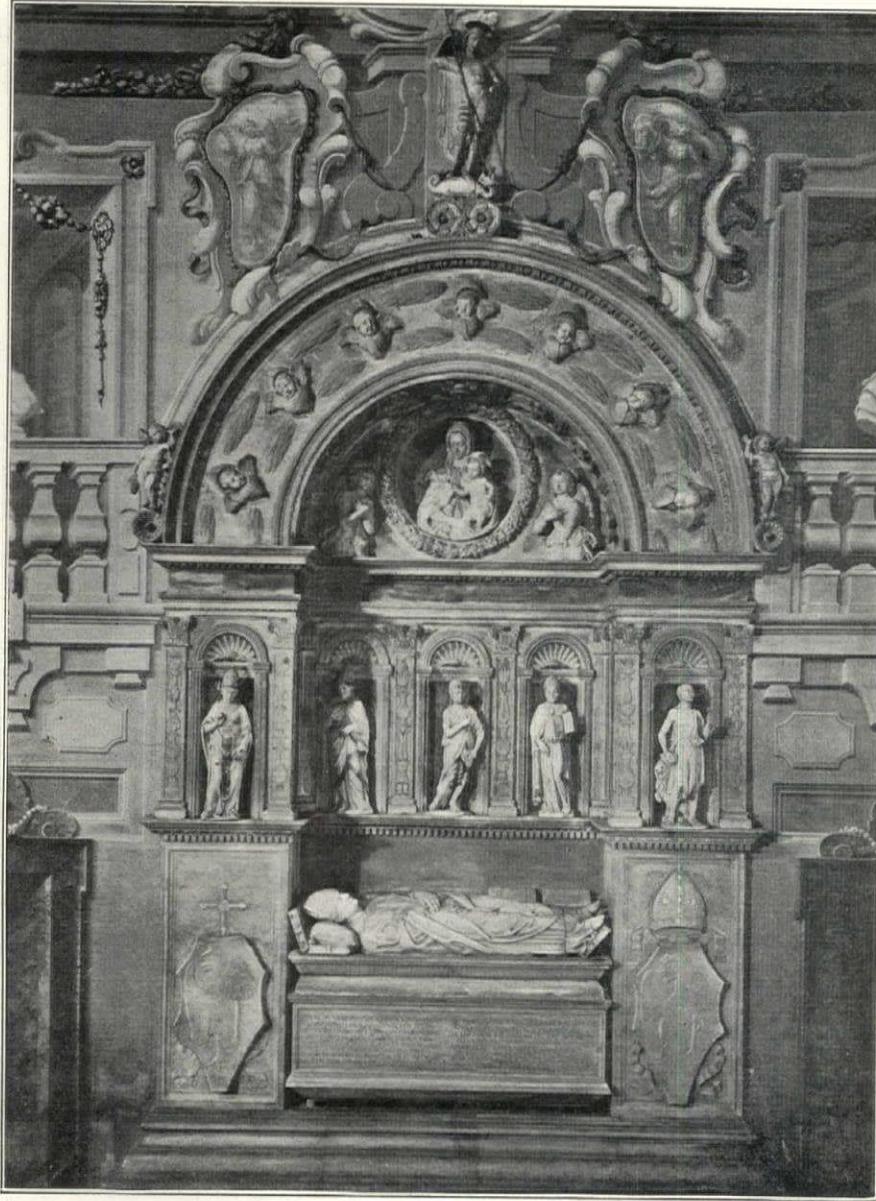
was a military prince and contended valiantly against the Popes Julius II. and Leo X., who desired to add Ferrara to the States of the Church. He maintained his ascendancy by inspiring terror. Courtiers and poets have created for this prince a reputation far above his deserts, but it must be granted that he contributed largely to the adornment of this city and that he had a very special taste for grandiose construction.

He was succeeded by Ercole II., whose wife, Renée, daughter of Louis XII. of France, granted asylum to Calvin and Marcot and herself became a Protestant. This marriage proves that the court of Ferrara, which in fact was at the apogee of its splendor, already enjoyed great consideration in Europe. Ercole's successor, Alfonso II., who shut Tasso up in a dungeon, dying without direct heirs, designated as his heir Cæsar, son of Alfonso I. and Laura Dianti, whose beauty was celebrated throughout Italy, and whom the prince had married after the death of Lucretia Borgia. Cæsar, who had married the daughter of Cosmo I. de' Medici, had to yield up

to the Pope Ferrara all its possessions in the Romagna and withdraw to Modena; he thus became the head of the d'Estes of Modena, a branch which finally died out in 1803.

Ferrara as a State underwent the fate of all the States which were formed in Italy after the fall of the Empire, and which struggled long and dolorously to emerge from chaos and acquire a constitution. The long sequence of crimes registered in its annals, the bloody struggles, the intestine wars, the debased state of its morals, were the result of anarchy futilely ruling over a society deprived of moral tone and organization—where brute force had first to assert itself before the matter of setting up a constitution of any kind could be thought of.

But the breath of the Renaissance was felt everywhere where a political hierarchy was able to establish a State. In the six-



TOMB OF BISHOP ROVERELLA IN THE CHURCH OF S. GIORGIO, NEAR FERRARA.  
ROSELLINO AND AMBROGIO DA MILANO, SCULPTORS.

<sup>1</sup>Continued from page 38, No. 1340.

teenth century Ferrara became the very hearthstone of epic poetry, the cradle of the arts. Ariosto and Tasso sojourned there and contributed to the splendor of a court where the arts ripened slowly at the same time that murderous struggles and crimes of every kind ensanguined the city. It is true that Ferrara was very happily placed to profit by the Renaissance, whose rays reached it from every side. Situated between Venice, Rome, Bologna and Florence, it could receive inspiration and instruction from all the schools that already were established in those cities and could create in its turn a school suited to the temperament and genius of its own artists. The school of Ferrara has, in fact, certain traits which distinguish it from all others. Giotto certainly, more than any other painter of the first epoch, made an impression on Ferrara. He did much work in the city and, aided by his pupils, decorated several churches with his paintings, which, unfortunately, have been destroyed. The first native Ferrarese painter to distinguish himself was Cosimo Tura, a contemporary of Borso d'Este's, who, amongst other things, left us the magnificent series of miniatures preserved in the choir-book of the cathedral. Lorenzo Costa, who died in 1535, a man of remarkable talent, left Ferrara and retired to Modena; he, it is true, too closely imitated the manner of Francia, of whom he was really but a secondary disciple.

The school of Ferrara really begins only with the Dossi, of whom the most noted, Dosso Dossi, who died in 1559, was remarkable as a colorist who sometimes even reached to Titian's level; he painted the best portrait of Ariosto that has been handed down to us. The mythological scenes with which he decorated the palace that Duke Alfonso had built for the fair Laura Dianti made a sensation and were held as truly magisterial work. His brother was strong in landscape, a fact rather remarkable in an epoch when that field was rather disdained by painters.

Benvenuto Tizio, styled "Il Garofalo" and also sometimes called "the Raphael of Ferrara," is the artist who, with Dossi, contributed most to the glory of the school of Ferrara. He had worked in Rome with Sanzio, from whom he borrowed his suavity and *morbidezza*. He had a marked preference for religious subjects, and so was oftenest employed in decorating convents and churches; but his work was not very popular at a court where the moral tone was scarcely ascetic and where they more highly admired the bacchantes and mythological scenes evolved by his rivals. Duke Ercole II had almost to do him a violence before he could bring him, in his declining years, to paint mundane scenes founded on pagan mythology.

His pupil, Girolamo da Carpi, too closely imitated Corregio and allowed himself to be seduced by the deceptive brilliancy of the school of Parma. Ippolito Scarsella, nicknamed "the Paolo Veronese" just as Giuseppe Mazzuoli is known as "the Titian" of Ferrara, when he became old and unable to work, drowned himself in the Po. His pupil, Carlo Bonone, distinguished himself as a servile copyist of the Carracci. The several nicknames given to these leading painters prove that, in general, their school had no real character of its own and that they docilely yielded to the influence of the school from which they drew their inspirations. They were imitators rather than creators, but none the less it cannot be denied that even in this secondary rôle which they voluntarily adopted they displayed some remarkable qualities and, in particular, manifested a certain freshness in coloring, and an indisputable boldness and originality of conception which bring it about that, in spite of the ascendancy of others over them, we can recognize the individual character of their work, which has, in spite of its being imitative, still retained a personal imprint. The Ferrarese School of Painting, in spite of its many apparent defects, does count for something in the general art movement of Italy.

But sculpture in this city was less fortunate. Properly speaking, there is no Ferrarese School of Sculpture. The greater number of the artisans or artists who worked there came from other places, from Milan, Venice, or Mantua, or even from Florence or Siena. The Baptistery, the lions that guard the entrance to the Cathedral, the Cathedral porch, the bas-reliefs typifying the months, the "Last Judgment," the statue of Alberto d'Este, all things of which I shall speak farther on, mark in an interesting way the beginning of sculpture.

At the opening of the fifteenth century Jacopo della Quercia carved for the Cathedral a Virgin and Child; its rather massive aspect has a certain nobleness and the ability of the great Siennese sculptor declared itself in its rather vulgar simplicity. Yet this Virgin is superior to that which decorates the porch

of the Cathedral. But the most interesting sculptor of the times was Ambrogio da Milano, the author of the magnificent tomb of Lorenzo Roverella, which is to be found in a church in the suburbs. The bishop, coifed with his miter, with hands folded upon his breast, is stretched out at full length, his wrinkled countenance expressing his soul's profound serenity. To indicate that study was his favorite occupation, the sculptor carved a book under the cushion whereon rests the good bishop's head. Another he put behind him, and still another under his feet, while a fourth and fifth rest against the wall. Upon either side of the sarcophagus the prelate's arms are reproduced. Above, in the left-hand niche, Saint Augustin bends down his head while a dove, representing the Holy Ghost, coos or whispers in his ear; in the right-hand niche Saint Jerome, as an act of penance, strips off part of his clothing, and, with eyes raised to heaven, is about to beat his breast with the stone in his right hand. In the central niche stands Saint John surrounded by two other saints. The middle of the tympanum is occupied by the head and shoulders of the Virgin holding the Child, surrounded by a wreath of flowers and fruit. Two angels balance one another on either side, and besides these there are in the center seven other angels. Certain differences in handling to be noted here and there give reason for believing that Ambrogio was aided by a pupil; but the tomb is impressively perfect.

Another artist of much worth in the beginning of the sixteenth century was Antonio Lombardi, who belonged to a noble family. The greater part of his work is to be found at Bologna; Ferrara, where he was born and where he died, only possesses certain terracotta busts of the prophets executed by him and striking for their truthful and energetic character. HONORÉ MERCU.

#### THE EARLY USE OF CONCRETE.\*

THERE can be no doubt that concrete has been in use for building purposes from time immemorial—not made and applied in the way that is usual now, it is true, but with similar results.

In Mexico and Peru fragments of concrete buildings belonging to prehistoric times have been discovered, in the Italian colonies of Magna Græcia there is much evidence that the ancient Greeks used it extensively, while the Romans employed it on a large scale both in Great Britain and in Rome. Professor Middleton said—many years ago—that its use by the Romans could be traced as far back as 500 B. C., and that their method of using it for building walls was very similar to ours at the present time.

Both Romans and Normans had a thorough knowledge of mortar, as the walls of many roofless castles and the remains of city walls in many parts of the country prove, which, though exposed to centuries of rain and frost, are apparently as strong now as when built. This is owing in a great measure to the interstices of the stonework being completely occupied by the grout used with the core filling, and to the custom of mixing pounded tiles or bricks with the lime to form mortar, which causes it to acquire increased hardness with time. Hydraulic—or water-resisting—lime was not always available where many ancient castles were built, and no doubt the builders were well aware that the addition of pounded tiles or bricks with a non-hydraulic or rich lime converted it into hydraulic mortar capable of resisting climatic changes.

It is singular that a knowledge of this peculiarity should apparently have been lost. Smeaton, when experimenting with a view to adopting suitable materials for building the Eddystone lighthouse, found that when the pure lime was extracted from certain lias limestones the residue was clay, and from this he actually made a brick which, when pounded and mixed with a non-hydraulic lime, entirely changed its character.

Palladio says: "In ancient times coffer work was made by taking boards laid edgewise, according to the thickness of the walls, filling the space between them with cement and all sorts of small stones mingled together, and continued after this manner from course to course."

Alberti, another ancient architect, also wrote:

"I have observed that in other places the ancients, who were wonderfully expert in making great works, followed different methods in filling up their foundations. In the sepulchre of Saint Antonini they filled them up with little pieces of very hard stones, each not bigger than a handful, over which they per-

\*Extracts from a paper by Mr. Thomas Potter in "The Builders' Journal."

fectly drowned the mortar. I have known other instances where the ancients have much the same sort of foundations and structures, too—of coarse gravel and common stones that they have picked by chance, and which lasted many ages.”

Philibert de L'Orme, a French architect, writing in 1568, describes the usual custom at that period for making concrete as follows:

“The excavations being made, whether for houses, harbors, bridges or buildings in a marshy soil or even on land, and if being deep and wide, stones of a large size cannot be used for the foundations, the best and surest method is to prepare a mortar composed of quicklime recently burnt, mixed with river sand which contains a quantity of pebbles of all sizes, provided the largest be not bigger than the fist or the size of an egg, and that the whole be interspersed with smaller pebbles and gravel, such as are usually found in rivers. This material, moistened with water and mingled with lime, serves both for mortar and stone, and mixed with a sufficient quantity of sand must be thrown at once into the excavation, without any labor from the mason's trowel. It is only necessary to dress it with a spade. Having thrown in a layer about half a foot in thickness, large single stones may also be thrown in and mixed here and there with it as may be convenient, but without touching each other; after this you will again throw upon them the mortar of pebbles and gravel as before done, and this must be repeated till the excavation is full, throwing the whole from above with all sorts of small pebbles. The composition thus executed hardens and solidifies so firmly in the foundations that, being heaped up in a mass and bound together, it becomes a uniform body or rock, such as nature forms, of a single block and so strong and hard that when dry it cannot be broken either by piles or any other instrument, nor can the pebbles be separated from it without breaking them to pieces.”

In England the use of concrete seems to have been almost forgotten or neglected for centuries, until about 1774, when Smeaton wrote about it and practised with it. Other engineers interested themselves in connection with foundations—Rennie, Smirke and Brunel among others—but in a general way its adoption was very slow.

Semple, an engineer, used it for the foundations of a bridge over the Liffey, however, in 1753, and writing about it at the time said:

“There are three different ways of making use of lime in such a work as this; one is to mix the lime made liquid with its proportion of sand and small stones in such a manner as may clothe every stone and particle of sand with it; the second to turn them up altogether like mortar; the third to lay each of the three, as it were, in thin layers, still observing the same proportion. Judicially mix the lime, sand and stones, for if not equally mixed how can you expect them to petrify and unite into one solid mass?”

General Pasley, in his treatise on limes and cements, published in 1847, says:

“Concrete is a recent improvement first adopted by Sir Robert Smirke (!) with success in the foundations of the Penitentiary at Millbank, where the soil, chiefly of peat moss, was soft, to a great extent. The origin of its use arose in this way: in excavating for one of the piers of Waterloo Bridge the workmen had a good deal of difficulty, owing to the very compact state of the gravel forming the bed of the river, which, everywhere else had been found perfectly loose. The effect had been produced by the accidental sinking of a bargeload of lime over the spot some time before, which had cemented the gravel into a solid mass, resembling the calcareous conglomerates of nature which are gradually formed by a similar process. Mr. Rennie, the engineer, having mentioned the circumstance to Sir Robert Smirke, the latter, with great judgment, availed himself of the hint, and subsequently used concrete in all his foundations, none of which has ever been known to fail.”

A strike of the carpenters in Paris in 1840 led to the extensive use there of concrete floors, and the *modus operandi* was identical with previous systems of making concrete, viz., a platform was formed at ceiling level, the aggregate was placed on it and leveled off to where required, and liquid grout was run in to fill the interstices. It was impracticable to mix the two materials—the aggregate and the matrix—on mixing boards, owing to the quick-setting nature of the matrix—plaster-of-Paris.

A system somewhat similar had been employed in Nottinghamshire and Derbyshire, where gypsum quarries were close at hand, and in Italy, for very many years.

In Paris, however, reinforcement (by means of flat bars on edge, rods with their ends turned down to get a grip of the con-

crete, and other devices, the iron being embedded in the concrete) was gradually introduced and soon became well-known and in common use. The rods and bars were usually fixed near the ceiling level to resist the tension strain, and vertical members were attached thereto, and to corresponding rods or bars near the floor level to resist the shearing stress, a principle similar to systems in use in this and other countries at the present time, and claimed as modern discoveries.

As a matter of fact all known systems of concrete construction for foundations, walls and floors, and generally, are identical with or grounded on similar methods practised—some—many centuries ago, but which the cycle of invention rejuvenates at intervals. The American form of hollow terra-cotta block, or burnt clay slab construction, and the many variations of the same are possibly taken from the ancient method of forming floors in Italy, or of quite a similar character adopted in Paris over sixty years ago. The latter form of floor is illustrated in Fairbairn's “Engineering,” published in 1870, and possibly in earlier editions of the same work.

The first concrete floor in which the common form of rolled iron joist was used as a support for the concrete was for a house, No. 18 Boulevard Filles du Calvaire, Paris, the span being eighteen feet. At that time rolled iron joists were scarcely known in this country.

In 1856 M. François Coignet, a French engineer, introduced a system of concrete construction which he called “Béton Aggloméré” and in which lime and suitable aggregates—as hitherto—were the component parts. The materials being mixed together dry and thoroughly amalgamated, a very moderate amount of water, just sufficient for adhesion, was sprinkled over the mass.

For wall building temporary wood encasements were used and small portions of the materials were cast therein at a time, workmen then gently tamping or ramming them until they were thoroughly consolidated. There does not appear to have been much novelty in the process; great care in dealing with the work being the principal factor.

M. Coignet stated at a public meeting in Paris that he had erected many buildings with Béton Aggloméré, one being a house three stories in height, 60 x 40 ft. on plan, in which every part, walls, floors, roof, string-courses, mouldings, etc., was composed of the material, and without bond-iron or lintels of any kind. The component parts of the concrete were:

	Parts.
Sand, gravel and pebbles.....	8
Clay, burnt and powdered.....	1
Cinders, powdered .....	1
Unslaked hydraulic lime .....	1½

The cost was stated to be 4s. 6d. per cubic yard in some parts, up to 10s. 8d. for others. The description of the materials and the cost of the work read strangely at the present time. The house was said to be near St. Denis; it would be interesting to know if it is still in existence.

Dr. Fox, a doctor practising in Bristol, obtained a patent in 1844—in conjunction with Mr. Barrett, a builder—for floors formed with cast-iron joists and concrete. The joists were deeper in the middle than at the ends and were fixed about eighteen inches apart. On the bottom flanges of the joists wood laths about one-half inch square were laid, and a small distance apart, to give a grip to a rough coat of plastering-mortar which was squeezed through from the top to form a key for the ceiling-plaster under. Upon this rough-plaster coat concrete was laid and the surface plastered over with lime-ash mortar and highly troweled to form a smooth walking surface, a common method in the West of England at that time. This is probably the first kind of concrete and iron floor publicly used in Great Britain. It was adopted for the Grosvenor Hotel, near Victoria Station, and many other buildings.

Wilkinson, of Newcastle, introduced his concrete floors in 1854, and sometimes used iron ropes embedded in the concrete in place of rods or bars, for reinforcement.

Dennett's floor came into use about 1857, Cheyne's about 1863, Hornblower's in 1873, and Swarbrick's in 1875. The last-named was the prototype of the hollow terra-cotta lintel system of construction. The slabs were rebated at the ends to encase the bottom flanges of the joists, as a protection from fire, and had dove-tailed projections on the top to key with the concrete-filling over. Since the date of Swarbrick's patent the variety of systems of floor construction introduced in this country, on the Continent and in America are legion.

As a monolithic wall-building material there is but little evi-

dence of the use of concrete in olden times to any great extent, other than as a core between facings of some other materials. The construction of mud, clay and cob walls between planks or boards is a very ancient process in this country, similar to the *tapia* walls of Spain, the *pisé* walls of France and others, and must have been practised in very early times, perhaps co-eval with wattle-and-daub. "Cob walls" were very common in Great Britain, where some kind of unctuous clay and chalk were procurable, up to within the last fifty years. They were very susceptible to rain and frost, necessitating stone or brick foundations and overhanging eaves to keep them dry. "Mud-walling" and thatching were usually combined as one occupation in rural districts, but both have gone so nearly out of use that skilful workmen of that class are now rarely to be met with. It is not at all unlikely that owing to the objections to mud walls, lime-concrete must on occasions have been substituted for cob or mud to fill in between the boards, and it is quite possible that isolated buildings with walls of this kind exist in out-of-the-way districts where lime, gravel or stone chippings were available. Peter Nicholson's "Dictionary" and Cresy's "Cyclopaedia of Engineering" both contain illustrations of panel boards or encasements which would do equally as well for clay, cob or concrete walls.

It is remarkable how soon, comparatively, processes when they go out of use for a time are forgotten, and after an interval are hailed as new discoveries, and, as a matter of course made the subject-matter of patent-rights. In no instance is this more apparent than in the use of concrete. A London architect, writing to a public journal in 1848, says he has used concrete for foundations of buildings in London, but in the provinces he is unable to, as he can find no one who knows anything concerning it. Sir C. W. Pasley writes in 1847 that a Mr. Thomas Cooper had used lime concrete for the formation of a sea-wall at the East cliff, Brighton, some years previous, and that to the best of his belief it was the first application of concrete other than for foundations.

Mr. Ranger, a Brighton builder, took out a patent in 1832 for making concrete blocks in moulds and using them in masonry. He slaked, or otherwise reduced to a powder, Dorking or Reigate lime, and mixed it with gravel, stone chippings or similar aggregates. The proportions were 1 part of lime to 10 parts of aggregate, mixed and cast in common wood boxes or frames. Apparently the only claim for a new invention was that hot water was used for mixing, to hasten the setting. The College of Surgeons, in Lincoln's Inn Fields, was built with Ranger blocks. Sir C. W. Pasley minutely describes the process, in which there was nothing novel, but which shows how little there was known about concrete at that period.

Concrete blocks, since Portland cement was in common use, have been the subject-matter of many patents, none of which appears to have been commercially successful until lately, when improved forms of metal moulds have facilitated their manufacture.

In the seventies, Mr. Spencer Hayward, an architect, invented iron moulds in which to cast concrete bricks; Mr. Sidebotham, another architect, introduced concrete slabs for facing walls and filling between with concrete; Mr. Lish, of Newcastle, made moulds for an ingenious method of making hollow blocks, which he called the Z system; Mr. Cornish, a builder, adopted another way of slab-building; Mr. J. C. Sellars, of Birkenhead, made hollow concrete blocks and used presses, dies and other arrangements for their manufacture. These and numerous others for various reasons were in favor only for a time, and so far as I know have been almost forgotten.

Aspdin in 1824 was the primary cause of bringing concrete into more extended use, but it was a slow affair; Mr. James Wylson, an architect, in his treatise on limes and cements, written twenty years after that date, mentions it as having only just been introduced in London, and gives no particulars concerning it, although the first cement manufactory, Frost's, was erected on the Thames in 1825. It was for some reason, however, a failure until Messrs. White & Sons took it over in 1845 and made Portland cement a success.

Sir C. W. Pasley, who had been making many experiments with limes and cements, in a letter written to Dr. Garthe, of Cologne, in 1852, said that although living within ten miles of Robins and Aspdin's manufactory he had never heard of what they were doing until he accidentally met Mr. Aspdin at the Great Exhibition of 1851.

In 1865 Mr. Tall, a bricklayer by trade, brought the use of monolithic cement-concrete walls into much prominence, by the

introduction of wood frames or movable panels, very similar to those described by Peter Nicholson, and in Cresy's "Cyclopaedia," and to the fact that he received a commission from the Emperor of the French to build several concrete cottages at the Paris Exhibition. This created quite a widespread interest in this form of construction. Unfortunately Mr. Tall published such absurd statements as to the strength, cost and easy application of concrete by means of his frames, which turned out quite fallacious, that it almost entirely stopped its adoption, and even now it has not altogether retrieved the good name it should have as a wall-building material.

In 1877 Mr. Thaddeus Hyatt published for private circulation the result of a large number of experiments made by Messrs. Kirkaldy for him in connection with concrete for various objects in 1860-70, the results being identical with similar experiments made within the last few years. He proved that concrete, cement and iron when exposed to great heat underwent a similar degree of expansion. A severe fire and water test showed that concrete stood both, without any serious deflection or loss of strength, and he also proved that concrete beams with iron embedded therein were capable of considerable elasticity without rupture, and that when loaded sufficiently to effect considerable deflection they resumed their original shape when the load was removed.

Mr. Hyatt also made many experiments with reinforced beams, similar to some that are being adopted at the present time, and using rods and bar iron as tension members and corresponding rods near the floor level, linking the two together by vertical bars: he made trials with reinforced beams up to 40 feet in length and tabulated the results.

It has been said lately that the result of trials with rods and bars having no arrangement to prevent sliding proved that the grip of the concrete was alone sufficient. Mr. Hyatt riveted small plates of iron to the ends of his tension rods and bars, and in the published results a considerable number when loaded are stated to have slipped and broken away from the plates.

In 1874 Major Seddon, R. E., made numerous experiments with unarmored concrete at Chatham with the object of testing whether it could with safety be adopted for landings and floors for government buildings. One was with a slab of concrete 14 feet 6 inches by 13 feet in the clear of supports, the sides not pinned into any walls, the materials being 12 parts of broken brick ballast, 4 of cement, and 3 of sand, and 6 inches thick. Eighty men marched on it at quick and double pace, then jumped simultaneously with no effect, but when weighted with 10½ tons of bricks it collapsed. The slab was only twenty-one days old, when it could not have attained more than 50 per cent. of its ultimate strength.

Since that date the use of concrete is modern history.

#### REHABILITATION OF SOME FRENCH CHATEAUX.

**P**ASSING St. Germain a few days ago I noticed that the scaffolding which for a long time has covered one façade of the palace was being taken down, and some new stonework round a door—designed, I believe, by M. Puché—was beginning to appear from behind its barricade.

These restorations at St. Germain are an old story, but latterly they have been keeping pace with an industrious, and, on the whole, admirable series of changes in the famous palaces of France. These changes, which in most cases are not restorations (ominous word!) so much as rehabilitations or reconstitutions of old rooms, of old groupings of furniture, and so forth, are due to the desire of the Department of Fine Arts to lay the history of the houses even more freely before visitors. It occurred to me that a few notes on these changes might be useful. I write of places within easy reach of Paris which are commonly visited by English people.

Taking them in the order of their nearness to Paris, I begin with the house that happens to be the smallest of them all—La Bagatelle, on the edge of the Bois de Boulogne. Here is a case of innovation, not reconstitution. The white house, which in these days makes one wonder how it keeps so clean a face under the smoke which often pours across the Seine from the Puteaux factories, has at last come into the possession of the Paris City Council. After many changes of ownership it ought to rest for ever in safe hands. This is the house which the Comte d'Artois, brother of Louis XVI, built in a month in order to win a bet from Marie Antoinette. He inscribed "Parva sed Aptā" over the door, which was a classical way of saying that the whole thing was a bagatelle. After belonging to the Duc de Barry, who

often used to live there, the house was bought by Lord Hertford (the Steyne of "Vanity Fair" and Monmouth of "Coningsby"), and through him passed to Sir Richard Wallace. The delightful garden is cut out of the Bois, and the house itself is an elegant box, without elaboration, such as you might build in a month. In the garden a botanical school is to be established.

At the Château of Malmaison, near Rueil—three-quarters of an hour by tram from Paris—a Napoleonic museum is being formed by the curator. Malmaison is the house where Napoleon as First Consul lived with Josephine, but many of the relics were removed long ago. Some of the furniture is in the Grand Trianon at Versailles, and some of the books of the library which Napoleon cherished more than any library he ever had were scattered as far as Marseilles. From Marseilles they are being brought back, and soon the curator will throw open more rooms in the château than the public have ever seen before. I do not know any more interesting souvenir than this house of the best and probably happiest part of Napoleon's life—the life which he abandoned for "reasons of State" when he divorced Josephine. It was here that he said good-bye to Josephine, with misgiving and tears; here that he came like an unquiet spirit after his return from Elba—Josephine was dead—and said to Queen Hortense: "I expect to see Josephine at every turn of these walks." And well he might. All the time when he was absent in Egypt and in danger of losing his influence in France she had used her salon to rally waverers to his side, and when he was at home she had laid out the garden and enlarged the house into a consular Trianon to please him. It was to Malmaison that he came again to spend his days of bitter agitation after Waterloo. The bed he died on has been on view there, I think, ever since it was brought from St. Helena, but the other relics that are being gathered together will give no doubt a new importance to Malmaison in the eyes of English visitors who often overlook it.

The restorations of St. Germain, which are almost finished, were begun in 1862. Of course, the Franco-German war interrupted them, and even after the war they were interrupted again between 1890 and 1893. Lately £4,000 a year has been granted by the Service des Batiments Civils, and £1,200 by the Service des Monuments Historiques. I suppose that the Château of St. Germain, no longer having on show beds in which kings slept and chairs on which they sat, and having only mediocre pictures to console you for the want, can never be as interesting to visitors as places like Compiègne—to leave Versailles and Fontainebleau out of the comparison, because they are incomparable—where you can see the original furniture. But as the only brick palace of the French Renaissance, the château is remarkable, and probably the first impression of everyone who looks at its great shining windows without iron crosspieces is the same—that it is a modern-looking building which you might easily have supposed to be a couple of hundred years younger. If you are a Jacobite, of course, you will think St. Germain the noblest of all French châteaux, for there James II., after his expulsion from England, lived with the penitential chain round his body. There he died and was buried. The last time I went into the parish church there were two wreaths of white flowers on his monument bearing the address of some devout legitimists of the Thames valley. His widow lived there till her death, and her little court did not retire even then. For all I know, their descendants would still be in the château if the court had not been turned out in the Revolution.

The monument to James II was erected by Queen Victoria, as though to show that the House of Hanover can be Jacobite too. Perhaps this gift was regarded by Jacobites as an even more bitter attention than the services of the Office of Works, which so obligingly undertakes every year to place the tributes of high treason on the statue of Charles I. in Trafalgar Square. James II. used to say that the magnificent view from the great terrace of St. Germain (Alfred de Musset called it "The Balcony of Paris") reminded him of Richmond. Everything depends on the point of view. It reminded Louis XIV of St. Denis, where one day he would have to be buried. That was perhaps the real reason why he built Versailles. The museum of French and Roman antiquities in the château has reached a high state of excellence, and it is a good plan to take it as a preparatory step to Cluny.

Fontainebleau is too well known and too glorious for it to be necessary to say anything to encourage English visitors to go there. There you have at once the grandeur of a palace and the informality of a hunting-box, and the combination, if not the noblest, is perhaps the most attractive thing in France—the palace one would like most to live in. The reconstituted rooms are those

of Joseph Bonaparte (Napoleon's eldest brother, who became King of Spain); of Louis Bonaparte (who became King of Holland); of Queen Hortense, his wife; of the sisters of Napoleon; of Pope Pius VII., who consecrated Napoleon, signed the concordat with France, and was a prisoner all the time he was at Fontainebleau; of Murat (Napoleon's brother-in-law), and of some other famous persons.

Lastly, M. Tabaraud at Compiègne is turning certain rooms of the château, which have not hitherto been on view, from a furniture warehouse into a harmonious series, which make you think that the Kings and Queens and Emperors might come in at any moment and take up their life where they left it off. The chairs are placed about the rooms as presumably they used to be, instead of round the walls in rows—wood is on the hearth; clocks are going. The curator tells me that since the Czar and Czarina stayed at the château for three days in 1901 the average number of visitors has nearly trebled. It seems absurd, but so it is. No one had lived in the house for thirty years.—*St. James's Gazette.*

## BOOKS AND PAPERS

IT is rather startling to find, when it comes to a comparison of the Greek and Roman orders, the authors of the new work<sup>1</sup> on "The Orders," issued by the American School of Correspondence, at Chicago, crediting the Roman portion of their illustrating diagram (Fig. 50) to Vignola, while for the Greek portion they have turned to Asher Benjamin, a worthy New England architect, or carpenter-architect as many believe, about whom not much is now known, but who can hardly be counted among the best-known of the authorities on Greek architecture. However, as Mr. Benjamin's diagram was sufficiently clear for our authors' purpose, it was certainly amiable on their part to give the excellent gentleman full credit. It is but another instance of the way in which printer's-ink seems to add dignity to the commonplace.

As a certain amount of architectural instruction, particularly that which relates merely to drawing, can be efficiently imparted by print or script, it was inevitable that the several correspondence schools should prepare and publish text-books especially adapted to their educational methods, and it was also inevitable that among the earlier of such books should be one dealing with "the orders," in spite of the fact that there are already many books satisfactorily explaining the subject.

Engaged to prepare such a book, our authors have set about their task with diligence and have performed it with a good deal of simplicity—which in such a case is a virtue of purest water—and much clever ingenuity. For example, although this work consists of a portly volume of text and a portfolio of fifty-eight plates of a larger size, all of these plates are actually found at a reduced scale—a sufficiently large scale, too—in the volume of text, which thus becomes a complete entity in itself—while the larger plates are of use mainly as set "copies."

Almost all the other writers on the orders have taken Vignola's classic work as their starting-point, but almost all of them have felt the desirability of simplifying his rather elaborate and complex system of notation and measurement, and among others our authors announce that theirs is an "adaptation and simplification," but at second-hand, as their work is based on Prof. Laureys's "Analysis of the Five Orders," published in 1870 at Brussels and used in the Royal Academy classes there. Among other departures from Vignola's method is the abandoning of his perplexing system of measurement and proportion by using modules and minutes, and the substitution therefor of a scale based on parts of the entablature. Whether or no this change may fairly be called a "simplification," it unquestionably increases the understandability of the explanatory descriptions. As the best modern usage regards Vignola's rules as things to be broken—like all other, save mathematical, rules—and as it regards the system he developed merely as a "point of departure," from which to vary or upon which to improve, we have always doubted the real value of the refinement of proportionate measurements set down with such superfluity by those who have prepared books on "the orders," and we should have preferred to find that our authors had carried their processes of simplification even farther than

<sup>1</sup>"Study of the Orders."—Authors: Frank Chouteau Brown, Architect, Boston; Frank A. Bourne, S.M., A.A.I.A., Architect, Boston; Herman V. Von Holst, A.B.S.B., Architect, Chicago. Adviser: J. R. Coolidge, Jr., A.M., Architect, Boston. Editor: Alfred E. Zapf, S.B., Secretary American School of Correspondence, Chicago. Compiled from the Instruction Papers in the Architectural Course of the American School of Correspondence, Chicago, Ill.

they have. But, as their book is a text-book, we suppose that for the sake of the teachers, who have to examine and mark their pupils' work, a fair abundance of rigid data had to be provided.

In a measure, an attempt is made to put users on their guard, but, unfortunately, the authors speak of the subject then happening to be under discussion as an "example," when they really meant to draw attention to the fact that it was merely a "type." However, the introduction of supplementary illustrations, both in line and photographic (the book contains 145 text-cuts in addition to the seventy or eighty full-page plates), goes a good way toward drawing attention to the fact that Vignola did not say the last word and that there are many other ways than his.

The book is excellently printed, the explanations are clear, not verbose, but a little lacking "readable," and the illustrations are workmanlike, if a little lacking in refinement.

To the book proper is added a useful bibliography of works that, to a greater or less degree, cover the same subject, and also a "glossary of terms." Now, a glossary of architectural terms is our particular joy, and so we ran through the few pages devoted to this branch before turning to the more important part. We met with disappointment, for, almost for the first time, we found before us a glossary that was reasonably full, one that was essentially confined to the branch actually covered by the treatise to which it was appended, and containing almost none of those absurd and unused—because unusable—terms that generally are to be found in glossaries. Besides, the terms given were, as a rule, intelligibly explained. Still, we did come upon two terms that seemed out of place. "Fust" is, to be sure, "in the dictionary," and, though we never before encountered it, its connection with *fût* is so obvious that anyone might guess it meant a column's shaft. But why call that morsel of matter anything else than "shaft"? "Façure" we look at askance and, even after reading the definition here given, we confess to being unable, without a diagram, to know just what architectural member our authors intend to burden with a hybrid name.

## ILLUSTRATIONS

NEW YORK COUNTY NATIONAL BANK, EIGHTH AVE. AND FOURTEENTH STREET, NEW YORK, N. Y. MESSRS. DE LEMOS & CORDES AND R. L. DAUS, ASSOCIATED ARCHITECTS, NEW YORK, N. Y.

PLAN AND SECTION OF THE SAME.

DETAIL OF SIDE ELEVATION AND SECTION OF THE SAME.

CIVIL DISTRICT COURT-HOUSE, NEW ORLEANS, LA. MESSRS. F. N. BROWN, A. TEN EYCK BROWN AND P. THORNTON MARYE, ASSOCIATED ARCHITECTS, ATLANTA, GA.

BOSTON BAPTIST SOCIAL UNION, BOWDOIN ST. AND ASHBURTON PL., BOSTON, MASS. MESSRS. BRAINERD, LEEDS & RUSSELL, ARCHITECTS, BOSTON, MASS.

The erection of this building was enabled by the bequest of \$350,000 made by the late Daniel Sharp Ford, to whose memory the main hall is specifically dedicated. The building is divided into two distinct parts, as suggested by the will—that devoted to the immediate use of the Social Union, and a store and office building to furnish revenue for the care of the building and support of the work.

The part designed to form a memorial is arranged primarily for the monthly receptions and banquets of the Union, with rooms for the meetings of its committees and the convenience of its members. The entrance is from the front on Ashburton Place and is marked by two large bronze lanterns. Three doors lead into the Memorial Vestibule. In this, opposite the entrance doors, are three inner doors entering the Daniel S. Ford Hall, which occupies the most of the first two stories.

At either end are stairways, which lead below to the coat-room and retiring-rooms for men and women; to Kingsley Hall, and the reception-room, while those ascending lead to the galleries of Ford Hall, the Social Union parlor and the Union's suite of three rooms across the front.

Ford Hall will seat 650 at table and has serving-rooms at both floor and gallery levels. Kingsley Hall is seated with 425 opera chairs and will accommodate 250 at table. The coat room provides for the checking of the wraps of a thousand people. The Social Union portion is finished throughout with mahogany and Old Con-

vent Siena marble. This is probably the last to be obtained, as it is said that the quarry supply is exhausted.

Great care has been taken to make the lighting and ventilation of these halls and rooms as perfect as modern skill can devise. Ford Hall is lighted in the daytime by a large elliptical-domed skylight in the center, glazed with opal glass in shell pattern, and great windows on Bowdoin street. By night it is lighted by hundreds of small frosted lamps placed in the rosettes of the ceiling cornices. A number of lamps are placed above the glazing of the dome, that this may retain its color in the evening effect of the decorations.

The supply of fresh air is taken from the court above the roof of the hall and drawn through cotton filter-bags down to the sub-basement, where it is warmed and pushed up to the hall. The warm air is introduced through a multitude of small ducts concealed in the ceiling, and is removed through the front of the stage and at the floor and gallery level at the rear of the room. The area for openings, both for entrance and exit of air, is so large and so arranged that the twenty-five cubic feet per minute for each occupant of the room may be moved without anywhere creating a perceptible motion of the air. The temperature of the room is automatically regulated by a system of thermostat control.

Special means have been taken to keep the vestibule always full of warm air under pressure, so that the opening of outside doors may mean an outward gust rather than an inward draught of cold air to be felt by the occupants of the building.

The office portion of the building has entrances on Ashburton Pl. and the center of the Bowdoin St. front. These are entirely distinct from the entrances to the Social Union portion of the building, but communicating doors make it possible to use all portions of the building together. A room suitable for a restaurant is placed next to the Bowdoin Street entrance. The office portion of the building has been plainly and substantially finished with all things necessary to insure its comfort and convenience.

The mechanical plant of the building, occupying most of the sub-basement, is one of the most complete in the city, including duplicate boilers for power, an electric-light plant in duplicate, a pumping-plant in duplicate for the operation of the elevators, fans and heaters necessary for the ventilation of the various halls, and a compressed-air vacuum-sweeper system.

PLANS OF THE SAME.

EXTERIOR DETAIL OF THE SAME.

AUDITORIUM DETAIL OF THE SAME.

### Additional Illustrations in the International Edition.

HÔTEL DE VILLE, ST. GILLES, BRUSSELS, BELGIUM. MR. A. DUMONT-HEBBELINCKX, ARCHITECT.

This illustration is copied from *l'Émulation*.

PLANS OF THE SAME.

TOWN HALL, COLCHESTER, ENGLAND. MR. JOHN BELCHER, ARCHITECT.

HOUSE AT GRUNEWALD, GERMANY. HERR F. SCHUMACHER, ARCHITECT.

These views are copied from *Blätter für Architektur*.

OFFICE OF THE ASTOR ESTATE, THAMES EMBANKMENT, LONDON.

COSTA PACHECO'S BUILDING, CENTRAL AVE., RIO DE JANEIRO, BRAZIL. SENHOR A. MORALES DE LOS RIOS, ARCHITECT, RIO DE JANEIRO, BRAZIL.

CORBURY PARK, ENGLAND. MR. JOHN BELCHER, ARCHITECT.

CHURCH OF ST. JEAN L'ÉVANGÉLISTE, RUE DES ABBESSES, PARIS, FRANCE. M. A. DE BAUDOT, ARCHITECT, PARIS, FRANCE.

The fact that this is a reinforced-concrete building is very thoroughly disguised by the application of an external skin of brickwork and tile, the concrete surface being actually brought to the front only to form certain of the decorative lines and fillets of the door and window treatment.

## NOTES AND CLIPPINGS

"SHAKEPROOF."—Already a new word has been coined because of the San Francisco disaster. Henceforward the best buildings in that city are to be not only fireproof, but "shakeproof."

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THE fact that the daily papers of the best type on Tuesday gave an unusual amount of space to the details of the murder of Stanford White on the roof-garden of Madison Square Garden, New York, may be taken as an indication of his standing in the community, and the interest felt by many in his unusual personality. Unusual he was, an anachronism, in fact. He belonged not to today, but to the time of the High Renaissance—if not to the remoter times of Sybaris and Syracuse—when men seemed to live merely that they might pursue, enjoy and create beauty. There are men a-plenty who can pursue and enjoy beauty, but not so many who can create it, and the murdered architect was a creative artist to the extremist limit, a man whose talent verged on genius, and as genius has been cleverly defined as a form of insanity, it is not, perhaps, to be wondered at that he was at times erratic in conduct and performance. But if he felt like indulging in an eccentric piece of brickwalling, as in the new woman's club on Madison Avenue, he re-established himself as a sane and conscientious as well as progressive artist by giving the most anxious attention to the details of the new church for Dr. Parkhurst, a few blocks away. It was rarely, though, that he allowed himself to indulge in meaningless eccentricity; there was everywhere apparent a striving after a desirable effect, an effect of texture and color, rather than one of mere form. The consequence is that his work was always warm and human, never chillingly correct and conventional.

BORN in 1853, the son of Richard Grant White, the well-known essayist, Stanford White began his architectural career in the office of Gambrill & Richardson. Then, after a few years spent in travel in Europe, he returned to this country and at the age of twenty-eight succeeded Mr. W. B. Bigelow as the third partner in the now well-known firm of McKim, Mead & White. Owing

to the peculiarly individualistic methods which this firm has adopted, each claiming and being accorded the right to handle the jobs that come in through and because of his personal efforts or qualities, it is peculiarly easy to determine the authorship of the work that is turned out in the firm name, and it is generally known that Mr. White was responsible for, amongst other notable buildings, the Tiffany and Fish houses, Madison Square Garden, the Washington Arch, the Judson Memorial Church, and a very large number of costly and picturesque country houses. Perhaps he was seen at his best in monumental work, properly speaking, as in the Adams Monument in Rock Creek Cemetery, Washington, and the pedestal for the Farragut Monument in New York, and many others in different parts of this country. He was a rapid, tireless and inventive worker. His death will be a serious loss to his partners, the profession, and the public.

JUDGING from the reports that reach us from the other side of the ocean, the recent competition for the Carnegie Peace Palace at The Hague came perilously near to being a complete and final fiasco. Apparently, all that the judges, able and distinguished as they were, could agree upon with absolute unanimity was that there was not one of the two hundred and sixteen designs submitted that was suitable for the designated purpose. The prizes were awarded, to be sure; but the recipients were specifically advised that there was no chance that their designs would be carried into execution. Apparently, then, the judges, the competitors, Mr. Carnegie, the citizens of the Dutch capital and, in fact, the entire interested world have met a serious disappointment which might perhaps have been avoided, since the trouble seems to have been largely, if not wholly, caused by the terms of the competition programme, which, intended perhaps to be liberal, proved actually to be merely loose and misleading. The absence of a rule limiting the number of drawings to be furnished greatly added to the labor of the judges, who found they had before them more than three thousand drawings, which filled the walls and screens in seventeen large rooms!

A SIMILAR charge of looseness and insufficiency certainly cannot be brought against the programme which Professor W. P. Laird has prepared for the competition which is to determine the selection of an architect for the new group of buildings to be erected on Bloomingdale Heights, in this city, for the Union Theological Seminary. But in this case, as in others where Professor Laird has prepared the programmes, his anxiety to be precise and full in his statements has caused him to indulge in a greater flow of "language" than is desirable: a programme of twenty printed pages containing one hundred and fifty-seven paragraphs, seems so prolix as to make quite possible the defeat of the very aim which gave rise to the elaboration. In its actual form the document ought to have been made more accessible by an index.

Although the trustees do not have at command a very large sum, they do not for this reason deny themselves the pleasure of adopting a most generous and liberal attitude towards the architectural profession. The four invited architects and four others from the volunteers will each be paid eight hundred dollars, and the architect selected by the trustees, with the advice of Messrs. R. S. Peabody, Walter Cook and Professor Laird, will be authorized to carry out his design at the regular rates. In fact, this programme is notable and commendable for one thing: copies of the "schedule of charges," bearing the Institute's seal, have been procured from the Secretary, and each programme has one of these official sheets bound in with the rest of the pages and numbered as "paragraph 158." Consequently neither trustee nor successful competitor can have any misgiving as to how he is to comport himself toward the other. The device is so excellent that we hope to see it adopted in other cases.

THE death, at Liberty, N. Y., last week of Mr. Charles E. Tripler, suggests the thought that he may narrowly have escaped being one of the greatest of benefactors to the traveling public of this city. Everyone can recall the enthusiastic hope entertained eight or ten years ago by a part of the scientific and manufacturing world, who believed that, through the improvements Mr. Tripler had introduced into the process of liquefying gases, mankind was about to have at its command in "liquid air" a new mechanical force. It is unfortunate that, at the time when the world was agog over the extraordinary phenomena that Mr. Tripler could set before his audiences, he and his backers should have persisted in the attempt—now proved chimerical—to make use of liquid air as a source of motive power, to the neglect of its qualifications as a therapeutic or hygienic agent. In the way of refrigeration and ventilation, liquid air could, it was shown, render much service to humanity, but at the time there did not appear to be a large enough localized demand for it which would warrant its production in spite of the attendant large cost. At the present moment there is in the subways in this city precisely the localized demand for the relief that can be afforded as completely and scientifically, if not as economically, by no other agent than liquid air. The vices to be cured in the subways are the partial vitiation of the atmosphere and the generation of heat given off by electric lights and motors, both varieties of vitiation being evenly distributed throughout the entire length of the subways. The cure, the annihilation of these vitiations, then, should be applied evenly all over the system, and this can be done by the simple process of having, say, every fifth or tenth train made up of platform-cars carrying open vats of liquid air, the evaporation of which, as the train is drawn through the tunnel, would cancel an equivalent number of heat-units given off by electricity, and would at the same time add a considerable bulk of pure air to the contents of the tunnels. Such a method of dealing with a very difficult situation may seem fantastic, but it is none the less scientifically practicable. That, however, is not to say that it is also economically practicable. But in view of the great cost of applying an effective cure by any of the methods that have been suggested,

all of which are admittedly of doubtful value, it should be worth someone's while to figure out just how much more costly it would be to employ as a positive cure the known properties of liquid air.

THE acrostic that for a while hid amongst the inscriptions carved upon the front of the Boston Public Library—a species of Gothic conceit not without precedent—is quite outdone in the way of audacious misuse by the bronze doors of the new State-house in Harrisburg, Pa. The models for the doors were made by Mr. Otto H. Jahnsen, of New York, and now that the doors are in place it has been discovered that the score of heads in high-relief that are used as bosses are not, as the architect of the building declares they are, "ideal" heads, or, as one of the Capitol Commissioners calls them, "mere types," but are actual portraits of various worthy, and some alleged-to-be unworthy, individuals. That the portraits of Mr. Huston, the architect of the building, and of Mr. Barnard, the sculptor—of most other things about the building than the doors—should be found in such a place can be defended by abundant precedent: and though the portrait of M. S. Quay may seem objectionable to some, he was, none the less, a notability, was United States Senator for many years, and is dead. But that amongst the others should be portraits of several of the disgraced members of the recently disrupted "Republican machine" is as undesirable as it is nauseating. In an evil sense only can these portraits be considered to be "typical."

THE very serious and costly, but fortunately non-fatal accident in the department store of the Adams Dry Goods Co., New York, a fortnight or so ago, which resulted from the collapse of a large roof-tank, has been followed by a similar but more distressing disaster at Pittsburgh, Pa., where a three-story building on Liberty avenue collapsed, burying several of the occupants in the ruins. The frequency with which accidents of this nature occur seems to prove that it is quite time that building-permits should no longer be granted for the erection of wooden roof-tanks, since the greater number of accidents come from the giving way of the metal hoops with which the wooden staves are kept in place, and it is the testimony of the factory underwriters that, even under careful and skilled observation, it is not at all easy to keep these hoops in good condition or know when the danger-point is nearly reached. As all-metal tanks are somewhat objectionable, amongst other things because they are not properly connected with a lightning-rod system, it would seem as if here were another chance to use reinforced concrete, a use all the more natural since Monier invented the process in order to make certain large flower-pots, and since a considerable use of the system is made by makers of drain-pipes and vats. The way in which roof-tanks are supported on and attached to the roof also needs the careful oversight and inspection of the authorities. In this connection we will cite the case of a San Francisco building which not only itself survived the shock and fire, but also had its roof-tank preserved because the latter was supported on brick walls, in place of the common braced iron work.

## SOME OLD FRENCH COURTYARDS.

TAKE the French Quarter away from New Orleans and what have you left? A city modern enough from a Southern standpoint, with wide parallel streets, showing houses, some pretentious, some not, with side gardens, screened verandas and the ever-present open sewer flanking the edge of the sidewalk. But why take away the French Quarter when there is to be found such mystery, such marvel, such narrow streets meeting one another at right angles and leading off into heaven knows what further mystery and marvel; where the people, though American citizens for generations, still lead a strangely foreign life and speak in foreign tongues? It is a peculiar sensation to come upon, in the streets of this American town, a purely American type of man, well groomed, dressed in the usual manner, conducting himself one minute with the frank complacency of the American gentleman and the next to see him turn to a companion and jabber away in the excited *patois* of the French Quarter, gesticulating, shrugging his shoulders—a veritable transformation. It is this dual French and American nature that makes New Orleans so intensely interesting to tourists.

Easily the most attractive feature of the French Quarter is its courtyards, and yet you may traverse its quaintly foreign streets for hours, days, and not find one, though they are all

doors that may be observed to one side of the shop—if you happen to be looking for them; though otherwise they would escape your notice entirely. From them the paint is peeling and the old iron knocker is rusted with age. Once open, these doors admit you to a long, narrow alleyway of flagstones that in turn leads to an open court from whence stairs rise to balconied stories above. The staircase is usually more or less circular, as such a form of construction is economical of space. Sometimes the flagged passageway leads you to a side staircase that rises under cover, and then through a door at the extreme end into the open court that winds away into a formal garden with set flower-beds, fountains and statuary, upon which a neighborhood of areas, more or less dilapidated, look down.

Dilapidation is everywhere throughout the French Quarter. Occasionally it is arrested by industry, occasionally it is concealed by an enrichment of vines, but almost always it is adorable in the effulgent light of romance and tradition. The most abandoned old alleyway in the French Quarter has its own peculiar character, its own interesting habits, and its own exhibit of doorways and windows, the charm of which even filth cannot wholly obscure. Life is intense in the French Quarter; at the same time the people are languid, esoteric, full of strange inherited remembrances and aversions. An aristocratic old Creole family may pursue existence in its dilapidated old home undisturbed by the brawling life of the tavern next door. Furthermore, the dilapi-



A TYPICAL OUTSIDE STAIRCASE.



A NEW ORLEANS COURTYARD.

about you. In the architecture of the old French town European ideas of privacy were strictly observed and a residence was supposed to disguise itself by turning its plainest side to the street, thereby saving its true beauties for the more intimate life that obtained within its walls.

Passing down Royal Street, beyond the antique shops, beyond the old Hotel St. Louis, one gradually approaches the heart of what may be called the remains of the old Creole district. Here one may appear to be passing a bookshop or a tiny *magasin* for the disposal of Catholic relics—crucifixes, rosaries, and as side issues (to make trade better) false hair and carnival costumes—but in reality one is passing the house of some exclusive old family who rent the front shop for revenue and who peer discreetly down at the passer-by from above, through the blinds of the dark, shuttered veranda that projects over the sidewalk. The entrance to such houses is usually through two great oak

dation of the French quarter does not appear to interfere in the least with the complacency and happiness of its inhabitants. Take Conti Street, beginning at Royal, and pass Bourbon and on in that direction, and you will strike a region of humble homes, some tenantless and gone to ruin, others inhabited by artisans of various kinds. Enter and see. The austerity of the plain, formal front door passed, you find yourself often in interiors denoting a comfortable prosperous life. On through the hall and dining-room and you strike the inevitable courtyard—the true pleasure-ground of the householder. Here vegetation is rank. The high brick walls which cut it off from the neighboring courtyard are overgrown with vines. Fruit trees of various kinds cast shade in which tired workers rest in comfort out of the glare of a too-insistent sun. Here, too, we find the huge cisterns—a feature of every New Orleans courtyard, as the yellow Mississippi water is impossible for cooking, drinking, or laundry work. Even the

poorest tenement in the French Quarter has its courtyard where the multitudinous inhabitants sun their beds, dry their clothes, and rest and gossip, once the day's work is done. It is in this tenement region, in these very courtyards, that yellow fever first manifested itself last year and toward which the eyes of the world are turned, now that warm weather is again at hand.

The materials most used for construction in the French Quarter were brick and clapboards. The former were very often rough-cast. But from the brick houses the plaster is falling—falling—and from the clapboards the paint is peeling, in many instances never to be replaced. The interior trim of these houses is often extremely good and worthy of reproduction, some of the door-casings and mantels being uncommonly interesting. The interior glass door—of true Gallic origin—is often found and the balcony in one form or another is justly considered an indispensable feature. These verandas present a curious mixture of the ideas of many nations. The most popular form is the wide veranda furnished with shutters, a style peculiar to the Bermuda Island, to San Domingo and the West Indies, from whence many Spanish

## ITALIAN CITIES—XVI.

## FERRARA—II.

ARCHITECTURE knew a glorious epoch in Ferrara, as the numerous monuments there attest. The good qualities of these I shall try to bring out in a series of brief descriptions. Among the best known architects I shall mention were Bartolino de Novara, Bartolomeo Tristano, Cristoforo da Milano, and especially Biagio Rossetti. The last mentioned was truly a citizen of Ferrara and had the title of ducal engineer, an office which brought him an income of twenty-six lire per month. He busied himself indifferently, turn and turn about, with military architecture, with civil architecture, and with ecclesiastical architecture.

In the last half of the XVIth century Giovan Battista Aleotti, of Argenta, was very much in fashion, as also was Alberto Schiatti.

Amongst the churches and palaces of Ferrara, so numerous and so remarkable—even amongst the whole series of monuments



CATHEDRAL OF S. GIORGIO, FERRARA, ITALY.

emigrants migrated to New Orleans, bringing their ideas with them. The same latticed verandas are found in Charleston and in most tropic or semi-tropic seacoast towns in the Far South. Next in favor is the narrow, iron-trimmed balcony overlooking the street or the courtyard. An interesting collection of old wrought or, as it is called there, "forged" iron work, is to be found in the French Quarter of New Orleans in connection with these old balconies, some of it remarkably attractive.

The flora of the old French courtyards is interesting. The Grand Duke Jasmine is a great favorite below Canal Street, and this well-known botanical specimen lends beauty and fragrance to many an old courtyard. The magnolia is a common feature of the French garden; the oleander, the Spanish bayonet and the fig tree with its hot dense shade; the mignonette, the poppy, and the petunia flower there in riotous brightness and beauty. The periwinkle quite outgrows itself; the snap-dragon, too, the daisy, and the amethyst plant besides candytuft, larkspur, lobelia, phlox, sweet elyssum, and other species too numerous to mention.

MRS. THADDEUS HORTON.

produced by Italian genius—the Cathedral of Ferrara stands incontestably as one of the finest. Throughout the entire peninsula one would have difficulty in finding anything more harmonious and at the same time more sedate, and if it lacks a little something in breadth of expression, it none the less remains a finished and coherent piece of work. In this building, two styles are found united in a perfect whole—the Gothic and the Lombard, the pointed arch and the full-centered arch. And these two styles, thanks to the architectural disposition of the different portions of the edifice, do not war with one another, but form a whole of most satisfying qualities. The church was built by several members of the Aleardi family. It was begun in the first half of the XIIIth century by Guglielmo II. At his death his two sons, Guglielmo III and Adelardo, continued the task begun by their father. It has the exact form of a triptych whose three parts are of equal dimensions. Three kinds of marble were employed in the building, white, red and blue, though, thanks to weathering, the colors to-day are nearly uniform. The architect, for the sake of lightening the façade, had the happy idea of dividing it by three

longitudinal galleries, which stretch across the front from side to side, thus preventing the front from appearing too massive. The first of these galleries is formed by quadrangular colonnettes, united by full-centered arches, to the number of nine for each valve of the triptych, and combined in groups of three by great pointed arches, in the upper part of which is a rose-window or "oculus." The second gallery is a pointed arcade, the arches, also in groups of three, so spaced as to correspond to the divisions of the lower gallery, being supported on coupled colonnettes, except that the couple becomes a cluster where one group of three is separated from the next group. In the third gallery the pointed arches, much larger than those below, are only four in number for each division of the façade. In each of the three gables above them is a rose-window, over which again is a fourth and lighter gallery, the pointed arches of its arcading following the rake of the gable and being supported by twin colonnettes which rest on corbie—steps, as it were. On each side of the central porch rises a large pier or buttress, ascending to above the roof-lines, where each is crowned with a tabernacle whose crowning feature about ranges with the apices of the three gables, which, in turn, are ornamented with the figures of a lion, a cross and an eagle. The middle section of the triptych is distinguished by a slightly-projecting porch, carried through two stories. The portal itself is Romanesque in style, the full-centered arch being supported by two columns which, in turn, are borne, so far as the front columns are concerned, by human figures, which in their turn rest upon couchant lions. In the tympanum over the door is a bas-relief of St. George and the dragon, and below this the lintel bears sculptured scenes from the life of Christ.

The upper part of the central composition, which corresponds in height to the lowermost gallery, dates from the beginning of the XVth century. It consists of an arcade of three trefoiled arches. In the middle opening stands a statue of the Virgin with the Infant Jesus, which has stood there since 1427. In the spandrels above these arches are shown four men emerging from their tombs, and just above them runs a wide frieze representing the Last Judgment. Finally, the pediment which crowns the composition bears in its tympanum a bas-relief of Christ seated on His throne and surrounded by four saints, two kneeling, the others standing, and by the heads of prophets and apostles. The tympana of the two arches on the curtain-wall also bear bas-reliefs, that on the right showing demons hurrying the condemned souls toward a boat whose steersman seems to be an altogether Pagan Charon; the one on the left shows Abraham and certain saints, the former holding several trunkless heads in a napkin. At the left of the door, over a memorial slab, is placed a fine bust of Pope Clement VII, by G. Albenga and dating from 1605. It was this Pope who added Ferrara to the States of the Church. On the other side, in a niche, is a statue of the Marquis Alberto d'Este, which is of more value as an historic document than as a work of art.

At the right is a smaller door, surmounted by a tympanum wherein is sculptured a cross and a hand, signing a blessing. Above the arch which encloses this tympanum a female head, very expressive, projects from a roundel. No one knows either who she is or whence she comes. In popular tradition she is called the "Ferrara Madonna," and to her is attributed the foundation of the city. In like manner tradition has it that Mantua and Verona were founded by women.

The two flanks of the Cathedral, of brick, are different from one another: one, the north side, has a long gallery of colonnettes with antique capitals. The south side, which fronts upon the market-place, has not preserved its original aspect. Here two superposed galleries support their arcadings upon coupled columns. Below them is a loggia and a number of miserable shops, while at the far end is the campanile. The loggia dates from the last half of the fifteenth century, when it was built by the cloth-makers and silk-merchants, Ambrogio da Milano being employed in its execution. Here it was that the princes and their guests were wont to assemble at times of rejoicing and public fêtes, which they could look upon in serene comfort. On the upper part of the loggia, on the façade toward the Cathedral, are fixed six bas-reliefs which formerly decorated a side doorway, and symbolizing six of the months of the year. They are curious examples of ancient carving.

If the façade of the Cathedral has preserved its pristine splendor, the same cannot be said of the interior, which was wholly made over in the XVIIIth century. Before that time the pavement sloped downward, so that it was often flooded by the river, the water sometimes standing there to the depth of several feet.

The church, in three naves, has the form of a Greek cross in

plan. Its length, not including the entrance vestibule or the choir, is one hundred metres, while its width is forty.

The notable pilasters of the choir, and in fact the choir itself, were the work of Biagio Rossetti at the end of the fifteenth century. The octagonal font dates back to the year 1000: it is cut from a single block and is decorated with symbols. It is of considerable size, being computed to hold eleven hectolitres, and of necessity, since it was used for baptism by immersion.

We find here also five XVth-century bronze statues, somewhat rude in style, some terra-cotta busts, a very beautiful wooden crucifix, the only work of Antonio of Ferrara, choir-stalls—carved and inlaid—and a bishop's throne, which is not without value in spite of its belonging to a relatively recent epoch. The Cathedral also contains many paintings, from the XIIIth to the XVth centuries—from the primitives to the decadence. The apse is decorated with a "Last Judgment" by Bastiano Filippi, called "Il Bastiano," a composition directly inspired by Michael Angelo. Then, here and there, there are works by Cosimo Tura, Gerolamo da Carpi, Guercino and five paintings by Garofalo, of which the most admired is a glorious "Virgin." Aside from the beauty of the leading figure, this painting is worthy of attention because of its landscape, bathed in a bluish tint, which serves for the background. The Virgin's hair is done up in bands and twisted into knots over each temple, and the Infant is deliciously naive. Francia also is represented, and Vasari expresses himself on the subject as follows: "Wishing not to have to envy neighboring cities, the Ferrarese resolved to decorate their Cathedral with one of Francia's works, and so ordered from him a painting. In this he painted a great number of figures and so it was called the 'Painting of All Saints.'"

This brief description discloses what of interest can be found in and about the Cathedral of Ferrara, the first church in Italy to unite the pointed with the full-centered arch. Let me add that it has some points of resemblance with the Church of S. Zeno at Verona. In fact, in both edifices we find columns upborne upon lions, doors decorated with symbols of the months, and a cross dominated by a hand signing a blessing.

The campanile, of blue, red and black marbles, is quadrangular in form and consists of four stories. Each of these stories has upon each front two long windows, whose arches spring from the capitals of columns, while pilasters buttress each angle. This campanile is rather heavy, an effect due to a lack of unity in its conception and the slowness with which it was built: its architect is unknown. It was begun in 1412 by the order of Nicolas VI, and after an interruption work was again begun on it in 1451, under Borso. Some years later, the first story was complete, and in 1466 the second also. The third was not finished until 1493, and it was only in the last years of the sixteenth century that the fourth—which still lacks its crowning feature—was carried to its present height.

We must note that certain church buildings have been diverted from their sacred duties: such, for example, are S. Romano, already doing duty as a church in the tenth century, but now used as an iron warehouse; S. Andea, also a storehouse, but filled with cannon and artillery wagons. Sta. Maria della Consolazione also houses artillery caissons, and the Convent of the Benedictines is used as a barracks, as is also the cloister of the Dominicans.

In reverse of what happened at the Cathedral, where the exterior was respected while the interior was injured by alterations, the Church of Sta. Maria in Vado, though exhibiting to the observer of its outward aspect nothing of interest, is found to be one of the most beautiful churches in the city, once one decides to enter it. It dates from the end of the XVth and beginning of the XVIth centuries. Biagio Rossetti, whose handiwork is found in many buildings in Ferrara, was the architect, assisted by Bartolomeo Tristano, who finished it. It is a Latin cross in plan. The arcades which divide the church and separate the naves from one another rest upon columns raised up on pedestals. The vaults are covered with paintings that are pretentious, tedious and insignificant. But the Church of Sta. Maria in Vado, aside from its architectural qualities, is especially celebrated because it contains the chapel of the miraculous blood. In the Middle Ages a certain prior of Ferrara, Pietro by name, felt his faith weakening and scepticism taking possession of his soul. He entertained, we are told, serious doubts as to the value of the sacrament of the Eucharist. One day while he was celebrating the mass and held the consecrated host upraised in his hands a jet of blood suddenly spurted from it and made a great stain on the wall of the chapel. The miracle was duly attested by two archbishops, and in the end plenary indulgences used to be

granted to all who came thither to pray. At the present time it is still held in great esteem.

The Church of S. Francesco, like the preceding one, was built after designs by Biagio Rossetti, under Ercole I, who, in 1500, laid the first stone where stood an earlier church consecrated to the founder of the third order. The terrible earthquake of 1570 grievously injured it, but, thanks to the liberality of the reigning prince and the people at large as well, the damage was speedily repaired. Unfortunately, they replaced the pointed windows with full-centered ones. The façade, of brick, is severely simple, being relieved only by buttresses that add to its stability. It is divided by a denticulated terra-cotta cornice, while the frieze below it is decorated with medallions wherein can be traced the features of different saints belonging to the Franciscan order. The interior, like that of Sta. Maria in Vado, has the form of a Latin cross. The main nave has at each side a series of twin columns bound together by four arcades. Above these runs a frieze *en grisaille* on a gold background. In the lateral naves the architect has preferred to use domed vaults. Eight chapels with their arcades find place along the sides. The capitals of the supporting columns are of carved brickwork and are truly original in effect. S. Francesco contains a high relief of "Jesus on the Mount of Olives" by Cristoforo di Ambrogio, and also a fresco, "The Betrayal of Jesus," by Garofalo. The church also contains a considerable number of tombs of artists, poets, warriors, statesmen and even those of Ugo and Parisina.

The Benedictines of a rich abbey in the neighborhood of Ferrara, the Abbey Pomposa, met the expense of building a church dedicated to St. Benedetto, the founder of the order. This monument is Renaissance in style and its brick façade is decorated only by marble pilasters. In it, as in the other church of the same epoch, the barrel-vault has been employed, broken now and then by flattened domes. The monotonous repetition of this arrangement of pillars and the distribution of the chapels produce a weariness in the visitor, and makes him regret the variety that ruled in the mediæval temples where Gothic art shone in all its splendor and knew how to embellish stonework with the fantasies of exhaustless imagination. The paintings in S. Benedetto belong, for the greater part, to the decadence. Yet there should be noted a remarkable portrait of St. Charles Borromeo, the best likeness and most significant portrait we have of him. In all probability he sat for this portrait during a sojourn he made in Ferrara. It is here, too, that was buried the author of "Orlando Furioso," the great poet Ariosto.

The best and finest Renaissance building in Ferrara is surely the Church of St. Christopher, near the Campo Santo. On ascending the throne, Borso felt the need of building a church on the site where stands the more recent structure due to Ercole I, who added the cloisters. The part of the city where this church stands is silent and deserted, and this sense of isolation magnifies the impression made by its façade, of brick, majestically severe. The decoration reproduces the device of Ercole I, the diamond and pomegranate. The cloisters are especially charming, the arcades being painted in bright red, while the colonnettes are of a lighter tint that produces a most agreeable contrast. Still it is to be regretted that the garths have been converted into cemeteries, a fact which throws a gloom on what but for this would be a scene full of a melancholy charm. In this church lies Borso in his sumptuous tomb. HONORÉ MEREU.

(To be continued.)

#### CAISSONS AND COMPRESSED-AIR ILLNESS.<sup>1</sup>

**I**N its simplest form a caisson when in position is an iron cylinder somewhat bell-shaped at its lower extremity and closed at its upper by a sliding door, which forms the ceiling of the chamber wherein the men work and which separates it from what is known as the material-lock, or the chamber through which the buckets filled with soil escape through the sliding doors that constitute the roof of the caisson. Leading out of the upper part of the caisson, just underneath the ceiling already referred to, is a door which, when open, allows of entrance into another chamber called the air-lock, and through which the men gain entrance into and emerge from the working-chamber proper. If a caisson is large it may have two or three shafts or cylinders leading into it. It is not necessary to have the material-lock on the same cylinder as the air-lock. In Amsterdam I found the soil was removed through a material-lock on a different shaft from that by which the men entered and left the working-chamber.

<sup>1</sup> From a paper by Thomas Oliver, M.A., M.D., LL.D., F.R.C.P., read before the Society of Arts.

This is known as the Zschokké lock and is worked automatically. On the Tyne the caissons had three shafts each with its air and material-locks. When built and placed in position, *e.g.* on the bed of a river, a caisson is a pneumatic chamber which would swim but for the large amount of concrete superimposed upon it. Air under considerable pressure is pumped into the caisson to keep the water out of it and allow the men to work therein. The surplus air escapes by the cutting edge of the bell-shaped expansion, and by this means ventilation is secured. In tunnel making caissons are constructed in another manner, since the line of procedure is not vertical but horizontal. Caissons have to be strongly built so as to withstand enormous air-pressures. On one occasion a caisson burst in France and the inmates were immediately killed. When the necessary depth has been attained, the caissons are filled internally with concrete, and they then become the foundations upon which the piers of the bridge are built.

To enter a caisson, a workman must first pass through the air-lock. Having closed the outer iron door of this chamber, a valve is opened which allows compressed air to escape into the air-lock from the working-chamber, and when the pressure inside the air-lock has become equal to that of the inner chamber, the door which separates these two and which has been kept firmly closed owing to the high pressure, now opens practically of itself. Through this the workman passes into the shaft of the caisson, and descends by an iron ladder to the bed of the river, where excavation is proceeding. In passing through the air-lock the men undergo what is called "compression." The rise of pressure should be gradual, especially in the case of men who are commencing caisson-work for the first time, for although no serious effects are usually produced, symptoms of an unpleasant nature may be experienced. As a consequence of the rise of air-pressure, the membrana tympani may be forcibly driven in, and the men may not only suffer extreme pain in the ear, vertigo and headache, but may become deaf. Permanent deafness and rapture of the tympanic membrane have occurred. These can be prevented by the men swallowing air and passing it up to the eustachian tube into the middle ear, so as to equalize the pressure on the two sides of the tympanic membrane. Beyond these effects, which may be regarded more as unpleasant sensations than anything else, nothing is experienced by the men during compression. The abdomen shrinks, so that if a workman is wearing a belt, he generally tightens it.

Having finished their work the men leave the caisson by ascending the ladder and again entering the air-lock, the inner door of which they close behind them. The pressure within the air-lock and the working-chamber is, for the moment, the same, but on turning the handle of a tube, which communicates externally, air is gradually allowed to escape from the air-lock outward and the pressure gradually falls. When the pressure inside the air-lock equals that of the external atmosphere the outer door is opened, and the men emerge from the air-lock envelope in a thick mist or fog owing to the low temperature of the expanded air. In coming out of the air-lock the men undergo what is called "decompression," and it is during, but more especially after decompression, that symptoms of caisson-disease or of compressed-air illness show themselves. Experience and experiment have alike demonstrated that it is rapid decompression that has to be guarded against, since it is responsible for much of the illness that occurs. The sojourn in the air-lock ought to be proportional to the length of time the men have spent in the caisson, the depth at which and the pressure under which they have been working. During the act of decompression the cold in the air-lock is often intense. The temperature may fall as much as 40 degrees Fahrenheit, and as the men have been previously heated by their work the sudden chilling of the surface of the body may have a prejudicial effect. When in Amsterdam a few months ago I was much gratified by seeing the workmen from the air-lock each with a blanket-shawl round his shoulders and trunk the gift of the employers. In order to reduce the risk of chilling of the body and to make their period of confinement in the air-lock as comfortable as possible for the men, the Dutch employers heat the air-locks by electricity. This circumstance, coupled with the fact that the men are paid for the time spent in the air-lock, has diminished the impatience of the workmen and made them more submissive to the length of time required to be spent in decompression, which in Holland is longer than in most countries.

The pressure inside the caisson is regulated in accordance with the depth the men are working at. In tidal rivers this pressure rises and falls. One pound of air-pressure displaces 2 feet 4 inches of water. In other words, 10 metres of water are equivalent

lent to 1 atmosphere of pressure; or, expressed otherwise, 1 atmosphere—i.e. a pressure of 15 pounds to the square inch—is required for every 33 feet of water. If men were working at a depth of 100 feet 3 atmospheres are required, or a pressure of 45 pounds to the square inch inside the caisson. In speaking of pressure inside the caisson, the figure is always that over and above the normal atmospheric pressure, of which no notice is taken.

Only skilled and careful workmen should be in the charge of the air-lock and of the movable doors inside the caisson through which the excavated soil is removed, since the slightest carelessness and inattention to duty may be fraught with the most serious consequence to the lives of the men inside the caisson.

The time spent by the men in the caisson is inversely proportional to the pressure. Experience has shown that as excavation proceeds and greater depths are reached the pressure rises and the shift has to be shortened. At Newcastle there were a day and a night shift. The men worked on an average 10¼ hours, viz.—

6 A. M. to 8.30 A. M.	= 2½ hours.
9.15 A. M. to 1 P. M.	= 3¾ "
2 P. M. to 6 P. M.	= 4 "
	—————
	10¼ "

when the pressure was 25 pounds. The length of the shift was shortened as the pressure rose to 35 pounds. Four hours was the longest time spent at a time in a caisson, and the greatest depth attained was 70 feet below high-water level mark. At St. Louis, when the pressure was 50 lbs., one hour at a time was spent in the caissons. At the new viaduct in course of construction at Amsterdam I found the men working at a depth of 66 feet and a pressure of 30 lbs. Here the men work on a four-hour shift twice a day, separated by an interval of eight hours.

Since the longer a person is immersed in compressed air, and the higher the pressure he is exposed to, the greater must be the amount of air absorbed and retained in solution in the blood and liquids of the body, so the more apparent is the necessity for shortening the shifts, and the length of time spent by the men in the caisson as the pressure is increased. Four hours, even under such low pressures as 20 to 25 pounds, are quite long enough. This was found to answer well enough at Newcastle, and it is the length of time allowed in Holland, when the men are working at a depth of 66 feet and in a pressure of 30 pounds. It is when the men are subjected to too rapid decompression that danger arises. The difficulty is to get the workmen who are coming off their shift to recognize the necessity of slow decompression. One minute for every 5 pounds of pressure or three minutes for each atmosphere was the time allowed on the River Tyne for decompression. To some physiologists this is too short a time, and it is certainly short when compared with the forty minutes required in Holland for the decompression of men who have been exposed to two atmospheres. Hill and Macleod recommend:

Atmospheres.	Pounds.	Shift.	Decompression Period.
+ 2	30	4 hours	30 mins. to 1 hour
+ 3 to 4	45 to 60	4 hours	1 hour to 2 hours
+ 5	75	1 hour	1 hour to 2 hours
+ 6 to 7	90 to 105	½ to 1 hour	2 hours

No workman should be employed without having been previously examined by a medical man. No man who is addicted to alcohol, nor one who is subject to catarrh of the nose or throat, or who has a weak heart and lungs should be employed. Experience has shown that young men between the ages of 20 and 30 who are temperate, whose tissues are still elastic, men who are of spare rather than of stout build, not only do the work better, but are not so liable to caisson-disease. Snell's experience, as soon from the subjoined table, is confirmatory of the opinion I have just expressed:

PROPORTION OF SICKNESS AMONG MEN OF DIFFERENT AGES.

Men's Ages.	Number of Men Examined and Passed.	Cases of Sickness.	Cases per Cent
15 to 20	55	0	0
20 to 25	145	15	10.3
25 to 30	152	37	24.3
30 to 35	91	19	20.9
35 to 40	61	14	22.9
40 to 45	38	10	26.3
45 to 50	3	5	166.0

For muscular pains, rest in bed and warmth, and, when severe, hypodermic injections of morphia may be required. Nothing gives such rapid and lasting relief as placing the men back again in the air-lock and recompressing them. There ought to be a medical air-lock to the caissons large enough to accommodate two or three men in the recumbent position and which should be kept comfortably warmed. If workmen who are ill are to be recompressed, the compression should be made without delay. While this gives almost immediate and permanent relief in cases of muscular pains and in minor forms of loss of power, it is impossible to say how far it is capable of doing good in the severe type of nervous symptoms, where paralysis is pronounced and extensive. H. von Schrotter has on theoretical grounds suggested that caisson-workers should have the nitrogen in their blood which has been absorbed from the atmospheric air under high pressure washed out by breathing pure oxygen for five minutes before decompression. The suggestion has been proved to be practicable in the case of animals. Under the average pressures in which men work, it is scarcely called for. If pure air is supplied to the men, and plenty of it, and the shifts are not too long, there is not the least doubt that work in compressed air could be carried on at greater depths and under higher pressure than has hitherto been attempted, so that should the occasion demand it engineering operations of even greater dimensions could be undertaken and carried to a successful issue from the point of view of the health and safety of the workers. It is a question of close attention to minute details, and of these the most important are a plentiful supply of pure air and slow decompression.

PARK STREET CHURCH, BOSTON.

CONCERNING "the perfectly felicitous Park Street Church," as Henry James happily styles it, the following communication, coming curiously enough from Pasadena, Cal., is published in the *Boston Transcript*:

"Dear Listener—Many of your readers are doubtless aware that the present edifice of Park Street Church was built on land once occupied by a public granary erected in 1737, but few are familiar with the circumstances which led to the choice of its style of unpretending architecture. At the time of its purchase the lot bordered on a narrow, vagrant lane, ill-defined and tortuous, which had not been adopted by the authorities, though in 1784 it had somehow come to be called 'Centry Street' from the fact that it led up to Centry Hill, as Beacon Hill was then styled. The locality at that time was hardly respectable and certainly gave no intimation of the approach of Mr. Ticknor and his 'No 1, Boston,' which was eventually to dignify and illumine the region at the head of the street, "sole as a star, when only one is shining in the sky."

"As far back as 1662 Boston had decided to build an almshouse on the land near the corner of Beacon and Park streets, as at present defined, and gradually had devoted the slope as far as the granary to a workhouse, a bridewell or house of correction and a pound, this last being on the lot No. 1 Park street, now occupied as a residence by Mr. Thomas Wigglesworth, who at the age of ninety-one is very nearly the oldest living graduate of Harvard. On the 25th of May, 1795, it was voted that the land on Centry street should be sold by auction, a project to which the powers were moved by various considerations, but chiefly by the fact that the Commonwealth had decided to begin the erection of a State House worthy of its distinguished fame and dignity near the head of that street, and it was by no means becoming that the splendor of such an edifice should look down upon the sin, poverty and misery of the town within a few feet of its entrance. It was also voted to grade Centry street and widen it by taking another portion of the Common, and thus to translate it into a broad and handsome approach to the rising Capitol.

"The first sale under this decree was to Henry Jackson for the sum of \$8,366, by deed dated November 10, 1795, and included the lot then covered by the granary bounding 118 feet on Centry street, and thence running to the burying-ground. This conveyance was made subject to a condition that all buildings to be erected on said premises shall be regular and uniform with the other buildings that may be erected on the other lots in the parcel of land of which the premises are a party as aforesaid, and that they be of brick or stone and covered with slate or tile, or some other materials that may resist fire."

"This proviso, of course, put it in the power of the first builder on any one of these lots, the deeds to which all contained the same clause, to dictate to all succeeding purchasers who built

after him the type they were to follow. This was the first attempt of Boston to secure uniformity of plan and material from any of its grantees. Oddly enough, as the Park Street Church was not begun till the year 1809, the society was obliged to adapt their style to that of the houses which had already been built on the adjoining lots. This was done as far as possible, though the building at first resembled these more than it does now, since it was afterwards raised one story in order to provide a vestry and other accommodations.

"The second sale of the Park street land by the town was in 1801, when by deed dated March 24, the lot next to the granary, running seventy-eight feet on Centry street, was conveyed to General Arnold Welles, a well-known citizen who married Elizabeth, the eldest daughter and third child of General Joseph Warren. On the southeasterly half of his purchase he soon reared a substantial dwelling, three stories high and thirty-nine feet wide, of very plain design both without and within. This now remains pretty much as he built it and is occupied as above stated. It is the only house on the street that still retains a trace of the architecture of the earliest structures erected thereon.

"At the time of his purchase General Welles contracted to sell the other half to Isaac P. Davis, a successful rope-maker, on the same conditions. The house he forthwith built and three others that were added later formed the fifth block of continuous brick residences that had been constructed in Boston up to that date. They all were reared about the same time. For that period they were stately and admirable in their features and appointments, and from their impressive aspect well deserved to be called mansions.

"From the above facts it would seem that the title of each piece of real estate on Park street was originally affected by the peremptory and binding clause of the town deed, which in the face of any conclusive evidence to the contrary ought still to constitute a permanent flaw and liable to be enforced except in the case of No. 1.

HOWARD P. ARNOLD."

## ILLUSTRATIONS

ST. PAUL'S CHAPEL: COLUMBIA UNIVERSITY, NEW YORK, N. Y.,  
MESSRS. HOWELLS & STOKES, ARCHITECTS, NEW YORK, N. Y.

A plan of this very interesting building, of which the interior at present lacks the furnishing of both nave and choir, can be found in our issue for March 25, 1905.

NORTHWEST VIEW OF THE SAME.

EASTERLY VIEW OF THE SAME.

SOUTH TRANSEPT DOOR OF THE SAME.

MUSEUM FOR THE HISPANIC SOCIETY OF AMERICA, AUDUBON PARK,  
NEW YORK, N. Y., MR. CHARLES P. HUNTINGTON, ARCHITECT,  
NEW YORK, N. Y.

It was almost inevitable that an intelligent and educated man brought up in California should acquire a greater interest in matters of Spanish origin than is commonly felt by those living in the eastern part of the country, and Mr. Archer M. Huntington has had a rather happy inspiration in establishing in New York, rather than in San Francisco, the collection of Spanish literature and art to which he is devoting some portion of the great fortune he inherited from his uncle, the late Colis P. Huntington. Just what the collection is to prove to be cannot at present be known, as it is still in process of formation, and it will be some time before it is installed in the new building at Broadway, 155th and 156th Streets. In order that its growth and usefulness may not be stunted, Mr. Huntington has incorporated the Hispanic Society of America and joined with himself a number of gentlemen who share his tastes.

PLAN OF THE SAME.

COURTYARDS IN THE FRENCH QUARTER, NEW ORLEANS, LA.: TWO  
PLATES.

See article dealing with this subject elsewhere in this issue.

### Additional Illustrations in the International Edition.

ENTRANCE PORTICO: MUSEUM FOR THE HISPANIC SOCIETY OF AMERICA,  
WEST 156TH STREET, NEW YORK, N. Y., MR. CHARLES P.  
HUNTINGTON, ARCHITECT, NEW YORK, N. Y.

## NOTES AND CLIPPINGS

SEQUELÆ OF THE SAN FRANCISCO DISASTER.—On Saturday, May 19, one month after the earthquake and fire, the official roll of deaths due to the disaster footed up 395. At the same date, of the \$4,186,977 contributed by sympathizers and actually in the hands of the relieving organizations only \$225,261 had actually been disbursed! On the same day there were issued to those still in need 90,419 rations of food. Just five weeks after the destruction by fire of its new building, at Pine and Battery Streets, the firm of Payot, Upham & Co., a stationery and jobbing book house, opened its immense vaults, and the instant the big steel doors were swung open everything of an inflammable nature in the vaults burst into flames. All the concern's books, accounts and records were destroyed. Before the opening of the vaults a chemical engine was obtained, but the flames that sprang forth when the doors were opened defied the efforts of the engine crew, and not a paper was saved.

On May 16, for the first time since the fire, second-class mail matter was regularly delivered in San Francisco. During the long period of confusion no less than thirty carloads, averaging nearly 1,000 sacks to a car, arrived.

According to official figures, the Southern Pacific Company, during the exodus from San Francisco following the earthquake and fire, carried 300,000 free passengers. This total is for the nine days from April 18 to April 26. Of these passengers 67,000 were carried to interior California points, 7,684 to other States and 226,000 to suburban points around San Francisco Bay. The value of these free transportations is \$456,000. In addition, during the nine days mentioned, 185,000 persons paid their way out of San Francisco.

THE SCARCITY OF TIN.—Few features of the metal trade have caused so much anxiety in the last year as the growing inadequacy of the world's output of tin to meet the requirements of industry. Production had so far outrun consumption a few years ago that an accumulation of 33,000 tons (almost a half a year's supply at that time) was in sight. At the close of December, 1905, the excess had diminished to 13,500 tons, and last April it had fallen 2,000 tons more. According to *The Iron Age*, the quantity of tin mined annually prior to last year had continued to show a gain, but the rate of increase steadily grew smaller, and 1905 showed an actual reduction in the total yield, as compared with 1904. As a result prices have climbed to an almost unprecedented level. They are now more than 50 per cent. higher than in 1890, and almost three times as high as they were in 1895. This situation is particularly trying to consumers in the United States, because they are obliged to import what they need, and they use pretty nearly half—44 per cent., to be exact—of the total production of the world. Three-fifths of the tin now mined comes from the Strait of Malacca. The rest is supplied by islands in the Dutch East Indies, Australia, Cornwall and Bolivia. Deposits of the metal exist in this country—those in the Black Hills, Virginia, the Carolinas, California and Alaska being the best known—but practically nothing has been done to utilize them. The few attempts of that sort which have been made heretofore have not been successful financially, and for various reasons investors have hesitated to undertake new ones. *Engineering* points out that when tin is found in combination with quartz expensive machinery for crushing the ore is required, whereas alluvial deposits (like those of the Straits Settlements) can be worked more economically. It has been observed, too, that the ore in a particular vein often varies more or less in richness, and in consequence the assay of carefully chosen samples may prove misleading. In spite of these discouragements, however, the expediency of mining American tin may well be considered afresh. The prices which have prevailed for the last six months cannot fail to stimulate projects for putting the country in an independent position.—*New York Tribune*.

THE SIMPLON TUNNEL.—The Simplon Tunnel was officially inaugurated by King Victor Emmanuel May 19. The work of making a tunnel through the Simplon Mountain began November 13, 1898, from both the Swiss and Italian sides and the two boring parties met on February 24, 1905, after encountering many unexpected obstacles, the most serious being hot springs, and a temperature which at one time rose to 131 degrees Fahrenheit, making a continuance of the work impossible until the engineers found means of cooling the atmosphere. It is expected that the tunnel will be in full operation next September, thus opening direct communication between Milan and Paris.—*Exchange*.