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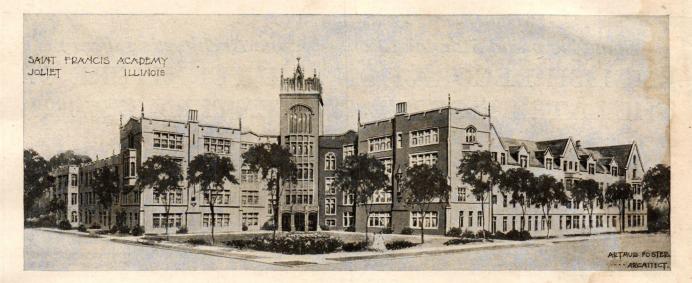
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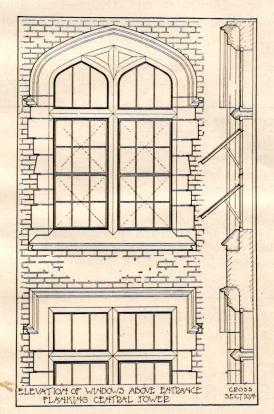
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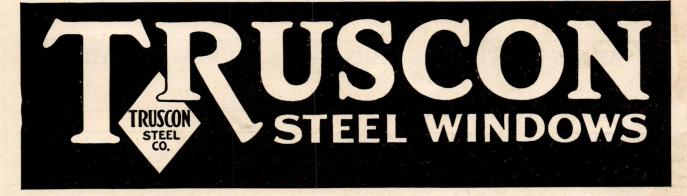
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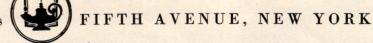
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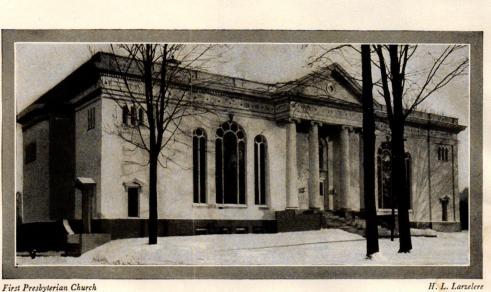
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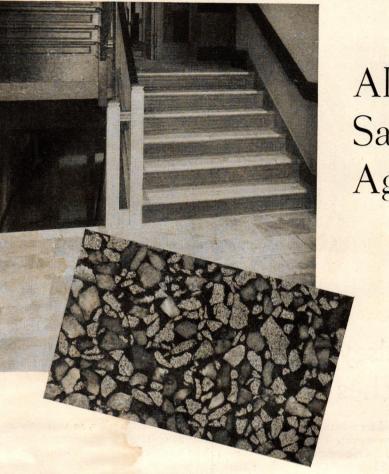
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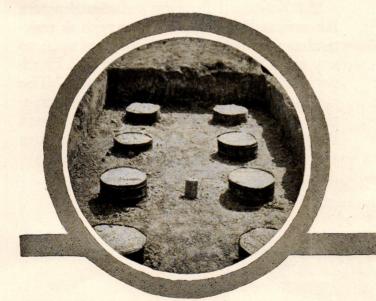
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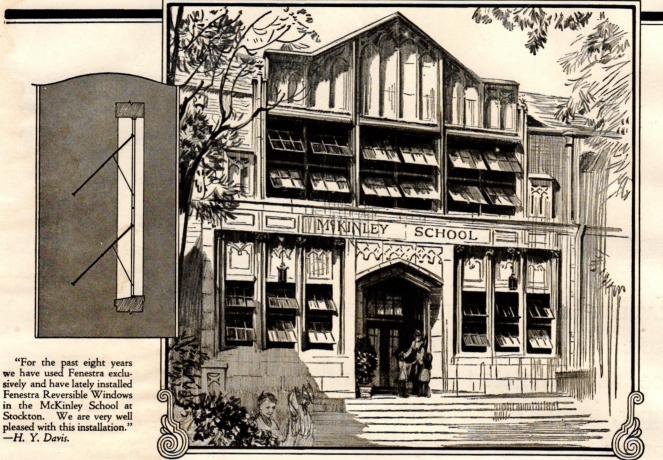


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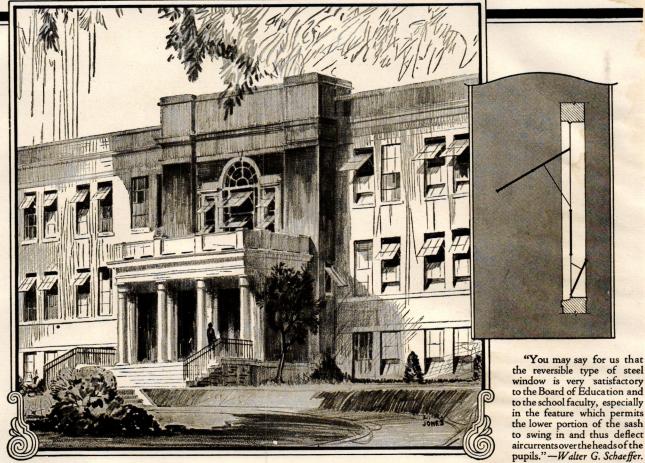
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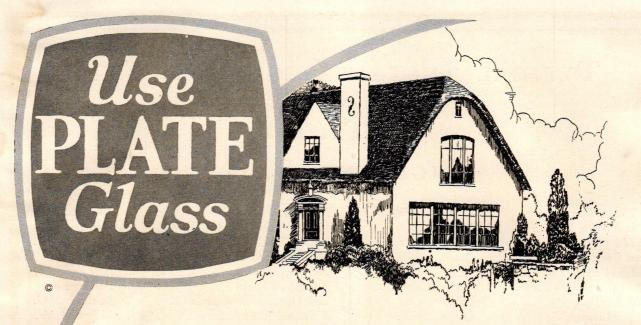
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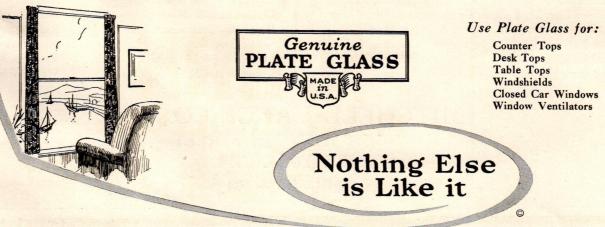


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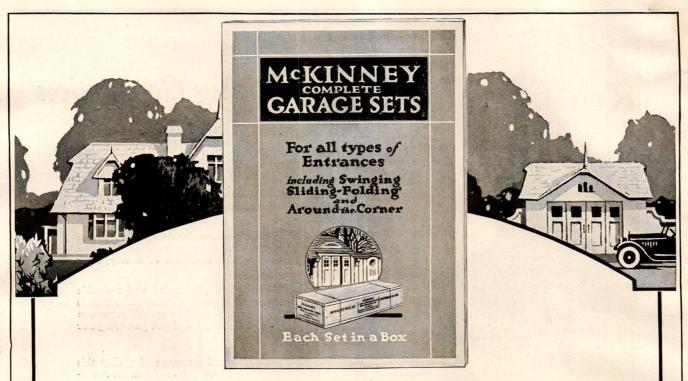
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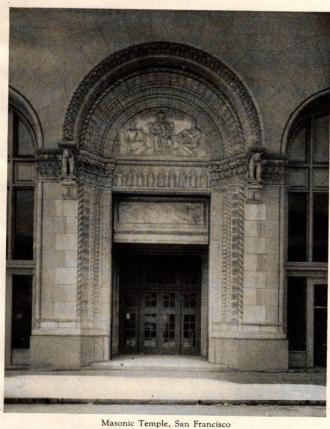
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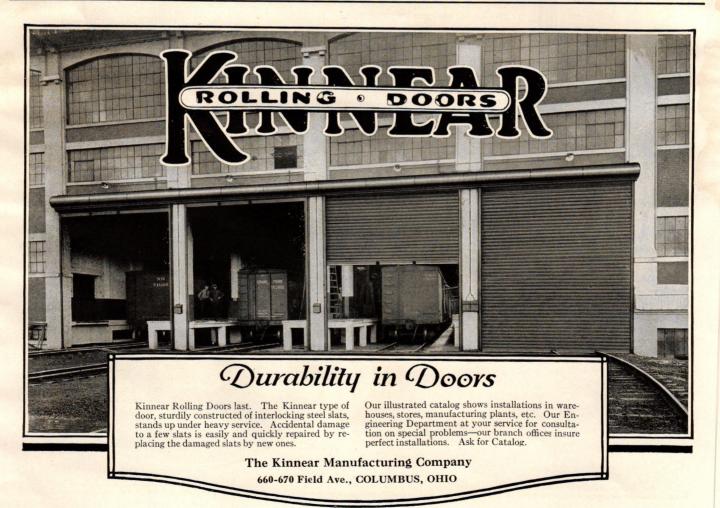
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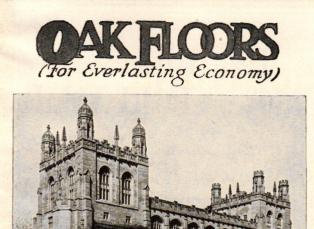
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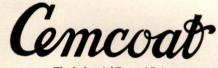
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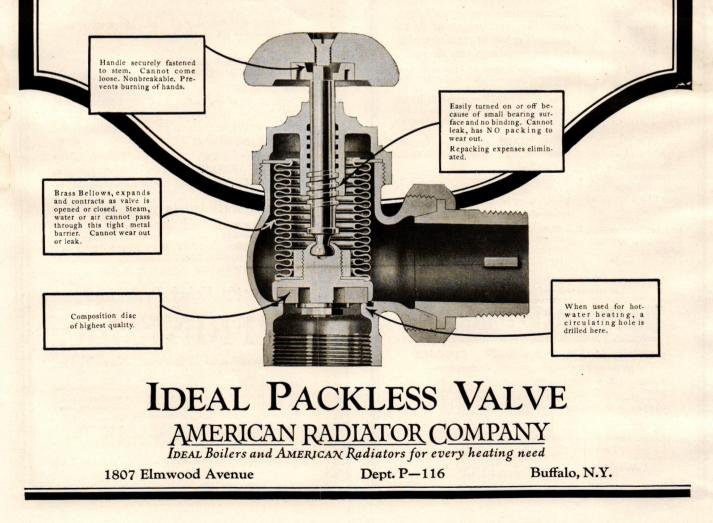
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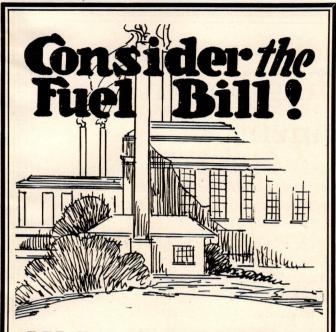
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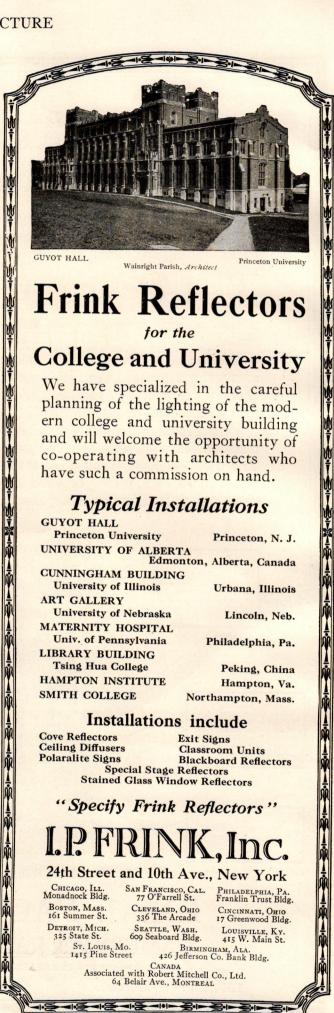
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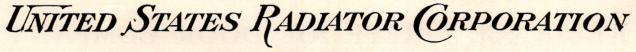
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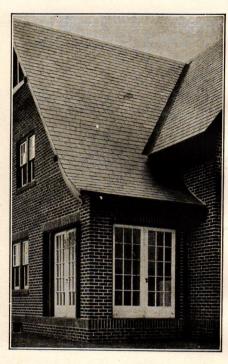
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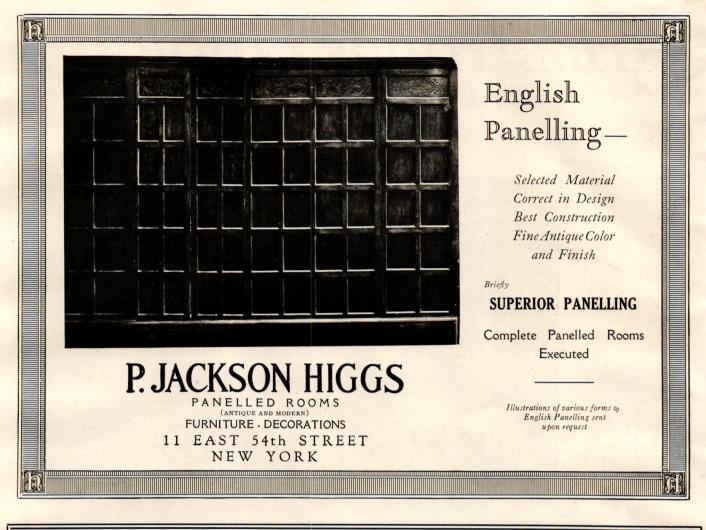
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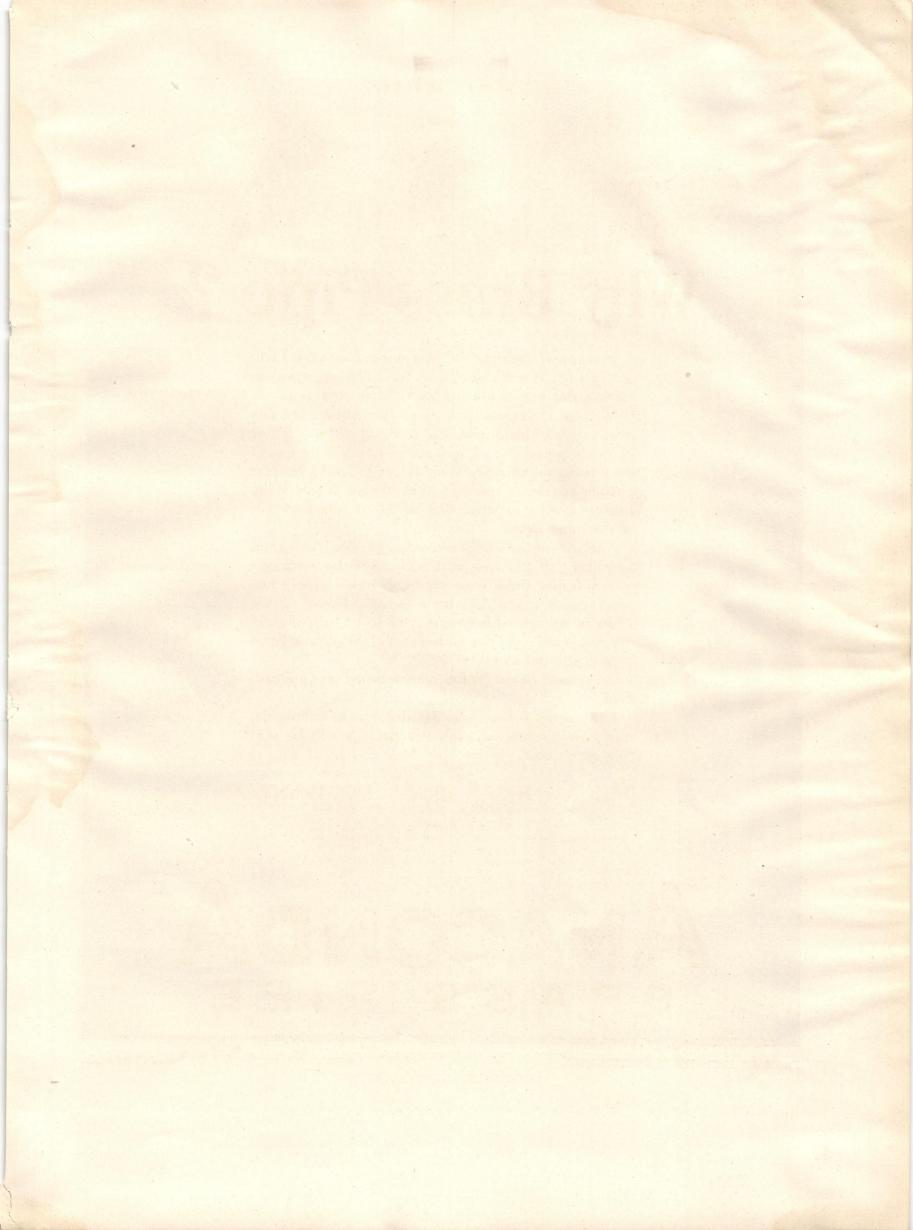
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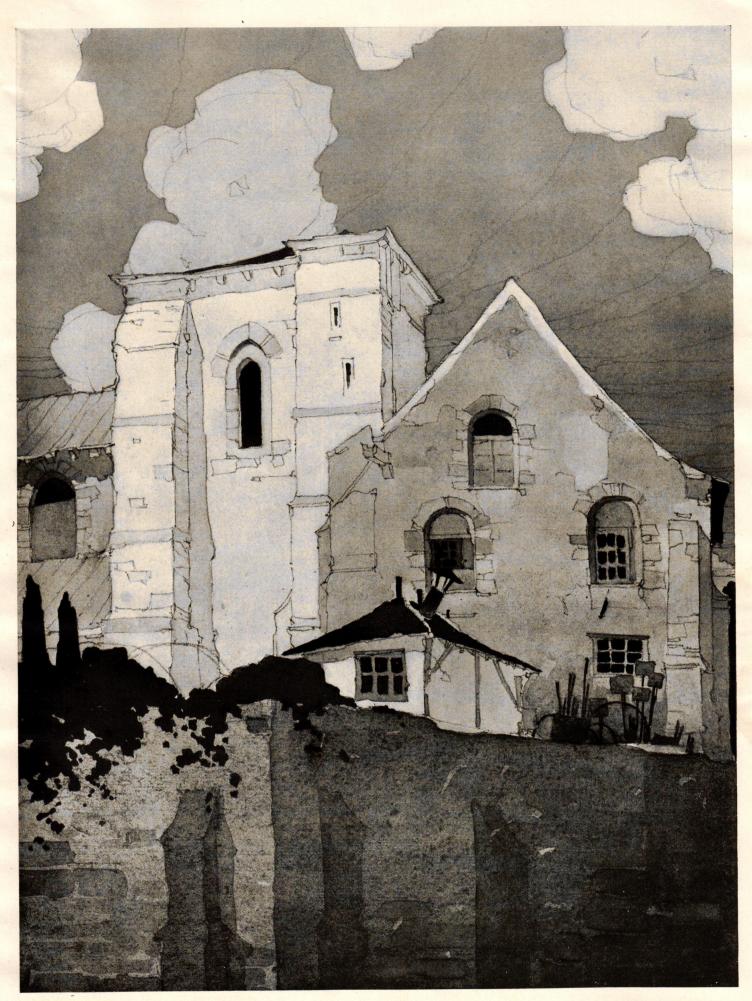
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FROM AN ARCHITECT'S SKETCH-BOOK

ÉGLISE SAINT-ANDRÉ-CHARTRES.

By Samuel Chamberlain.



Apartment-House Construction

By H. Vandervoort Walsh Instructor, Architectural School, Columbia University

ARTICLE I

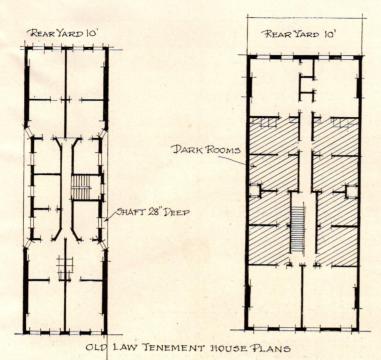
INFLUENCES THAT HAVE MADE OUR MODERN CUSTOMS OF CONSTRUCTION

'HE customs and traditions of construction which are followed in the building of apartment-houses are more related to the interests of the community than other methods of building. The general safety and health of the community at large have had more influence upon the laws governing the system of erecting tenement-houses than private dwellings or even great public enterprises. In no field of building is the architect or contractor made to feel the restricting rule of the welfare of the majority more than in the designing and construction of multi-family houses. He finds that his personal liberty in this business must bow first to the well-being of the majority. In the great centres of population, where the necessity of having tenements is pressing, laws have allocated the traditions of building to channels which are more or less recognized as the safe minimum of standards for health, for strength, and for fire resistance.

However, it was not always so, in this country, that the builder of tenements was made to bow to laws governing construction. In fact, only about twenty to twenty-five years ago the builder of multi-family houses in our American cities could do almost what he pleased. And we found him out; that is, we found that human nature can be so selfish that it will go down to almost any degree of ruthlessness to win out in the competition for successful moneymaking. These old builders were more concerned with how many rooms they could possibly squeeze upon a certain area of ground than with how many rooms they could plan to have healthful light and air. They devised ways of making as cheap a structure as possible, just strong enough to stand together, until they had sold it to some money-mad investor who thought he saw a wonderful gold-mine of renters in the structure. These builders thought nothing of damp, foul, and smelling cellars, thought nothing of people trapped on upper floors in a fire with no means of escape except by wooden stairs, thought nothing of leaky and filth-oozing plumbing, thought nothing of requiring thirty or more families to use one broken-down water-closet, thought nothing of leaky roofs that drained the rain down through plaster walls, eating away their strength and causing them to scale off like great foul sores on the human body. Their one thought was the time-honored thought of making as much money from their building enterprises as they could, and the purchasers of their products thought only of how much rent they could collect from the poor humanity, obliged to live within the walls of these monuments of human greed.

It is true that these early builders of tenements did not know as much as we do to-day about sanitary affairs, but there are plenty of signs, in these days, that the same human nature is still rampant, and that we would have about as poor and as cheap tenements erected now, if it were not for the protection of the laws which have been formulated in our large centres of population. It is quite often that we hear protests against these tenement-house laws by contemporary builders, protests against their restricting character and against their minimum requirements. It is true that to a certain extent these laws do hold back progress, but in another sense they have fostered progress by allowing the honest man to compete with the dishonest, by establishing standard minima of requirements. They have established rules in a game that had no rules.

In studying the influences which have moulded our modern customs of building tenements, then, it is quite evident that certain public-safety requirements have had a great deal to do with the evolution of modern methods of construction. If we look back to 1902, we find that previous to that year, in the city of New York, there had been kept but very few and scanty records of the methods of building tenement-houses. There existed at that time in this city 82,000 tenements which were a disgrace to the community. All the world knew of this scandalous part of city living. London, Paris, and other leading cities of Europe had their eyes open to the horrible menace of the tenement, but our American cities were just beginning to open their eyes to the conditions of building which had grown up under a system of speculative building in which the winner was the man who could skirt nearest to the edge of safety. There were no rules in the game, and the conscientious builder had a hard time to prove his right. When the tenement-house department of New York City was established to begin a systematic investigation of these buildings of which there were practically no records, its inspectors revealed conditions which were astounding. It is so many years ago that the young men of this generation have but faint glimmerings of the conditions of those buildings, although they still stand, somewhat improved. Twenty years wipes out the memory of such things and especially the indignation against the evils of those buildings. But no real understanding of our modern customs of building apartments can be had unless one knows the conditions which brought about changes and reforms in laws.



The inspectors of this tenement-house department found structures which crowded every available inch of ground-plenty are still in existence to-day. The greed for renting area was beyond comprehension. Tall, six and seven story tenements, which were first erected in 1879, were built upon plots of ground twenty-five feet wide and one hundred feet deep, the building extending as far back on the plot as ten feet from the rear line. Apparently even this little breathing space would have been covered if it had not been for an old law on the books prohibiting it. In order to get a little air into some of the rooms which were placed between the front wall of the building and the rear, a narrow air-shaft was constructed along the party line. This was nothing more than an indentation of the wall about twenty-eight inches, about the length of the arm of an average-size man, and this indentation extended in length about sixty to seventy feet. This air-shaft was intended to give air and light to the interior rooms, but that was quite impossible, for there was no fresh-air intake at the bottom to create an upward current, and most certainly the narrow width did not permit much light to come down to the rooms six floors below the roof. Indeed, this narrow shaft was really worse than none, for the foul odors of cooking or of water-closets would accumulate up through its height and pass into the upper rooms through the windows intended for fresh air. But, worse than this, these shafts were like chimney flues; if a fire broke out on the lower stories the unfortunate tenants on the upper floors were caught in a fiery furnace, for often the only means of escape was down a silly little fire-escape placed inside of this shaft, since the main stairway was constructed of wood and burned with rapidity. We are reminded again and again in these days of this old folly, when we pick up the papers and read of fifteen lives lost in this old-law tenement on Lexington Avenue or some other avenue, in spite of all the modern appliances for fighting fire that we have to-day.

But even more gloomy than the above facts was the discovery that there existed 350,000 rooms in these tenements of New York City which were absolutely dark, with no window in them at all, with no sunshine nor even any kind of daylight or fresh air coming into them. Still worse, some of these rooms were removed two rooms away from any room that did receive light and air from either the street or the narrow back court. In some extreme cases rooms were found which were removed from any room with a window in it by as many as four rooms. And in these prisons of darkness the spiders spun their festoons of cobwebs, the vermin grew fat in the beds where a half a dozen slept, the rats and mice chewed the old shoes and the dirty rags thrown around the room by human beings who had lost all hope and pride in living.

Thus these old builders of tenements had made every square inch of floor area pay tribute in rent, in their mad competition to place from a hundred to a hundred and fifty persons within the confines of their structure. They built without restrictions, and they built without regard to the health of their tenants.

Another condition of fatal import to the inhabitants of these tenements was the discovery that thousands of these tenements had no fire-escapes at all, and that the only means of exit in time of fire was down a rickety old wooden staircase. Other buildings showed fire-escapes installed at the rear, leading down into the narrow ten-foot wide back yard which was surrounded with a high wooden fence, a fine trap for panic-stricken people. Mention has already been made of those fire-escapes installed within the confines of the narrow air-shafts in the interior of the building. Is not the utter indifference to human safety shown by these conditions an example of how little respect human nature can have for the welfare of the community?

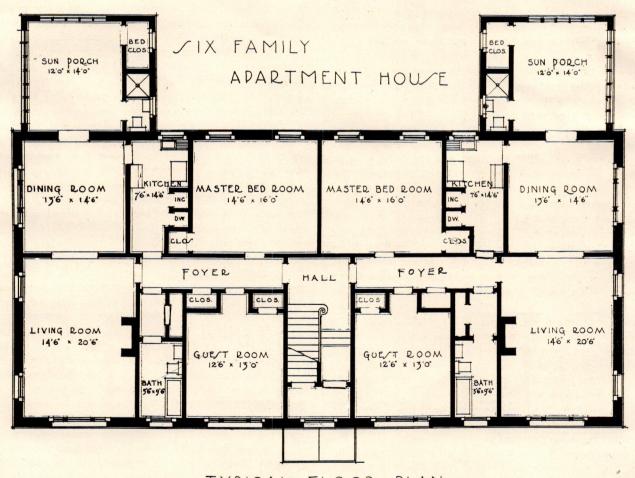
But added to greed was ignorance, and there were found, in connection with thousands of tenements, sewer-connected privies in the back yards. These served the inhabitants of the building. Over masonry-built vaults or privies were erected wooden shelters in which were wooden seats with holes cut in them. Fecal matter was dropped from these directly into the masonry vault below, which was, in turn, connected with the sewer in the street by a pipe that was plugged up. When the vault became too full, the janitor opened the plug and drained the contents of the privy into the sewer, allowing at the same time a thin stream of water to trickle through for flushing-out purposes, which was not really accomplished. Often the janitor would fail to open the plug, and the vault would overflow, the condition becoming so foul and rotten that the sick in the house would refuse to use it. This resulted in such horrible practices as using the floors of vacant rooms for disposal places, of throwing waste into buckets or cans and depositing them in the cellar or other places.

In 1867 the Metropolitan Board of Health adopted a resolution requiring that all privies and water-closets be connected with the public sewers. Think of it—before this date the privies above described were not even required to be drained into the sewers, and in fact large sections of the city were without sewers!

There is no need of pointing out the unsanitary conditions of privies of this kind, connected or unconnected with the sewer. The mere thought of such toilet facilities in a block where from three to four thousand people are herded sends a shudder down one's backbone. Yet when the tenement-house law was proposed, in which a regulation was introduced to abolish all of these privies in the back yards and make the owners install water-closets, a great opposition arose. The United Real Estate Owners' Property Association, an organization of some seven to eight thousand tenement-house owners, sought at two sessions of the legislature to repeal this section of the law, and also had proceedings started as test cases to try out the con-

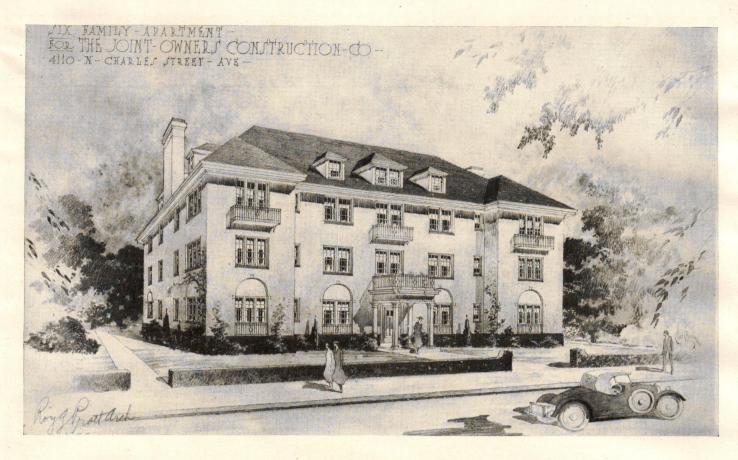
(Continued on page 6)

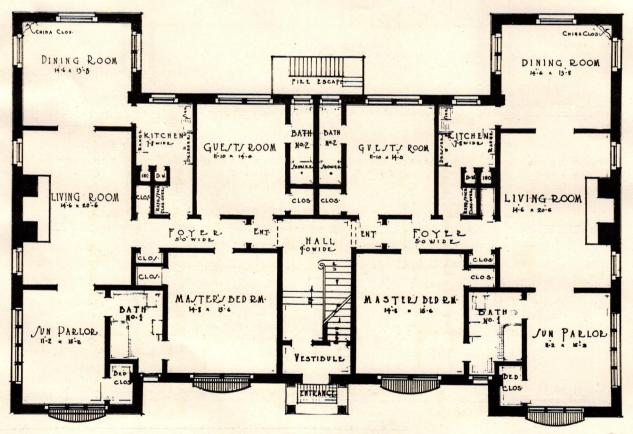




TYPICAL FLOOR PLAN

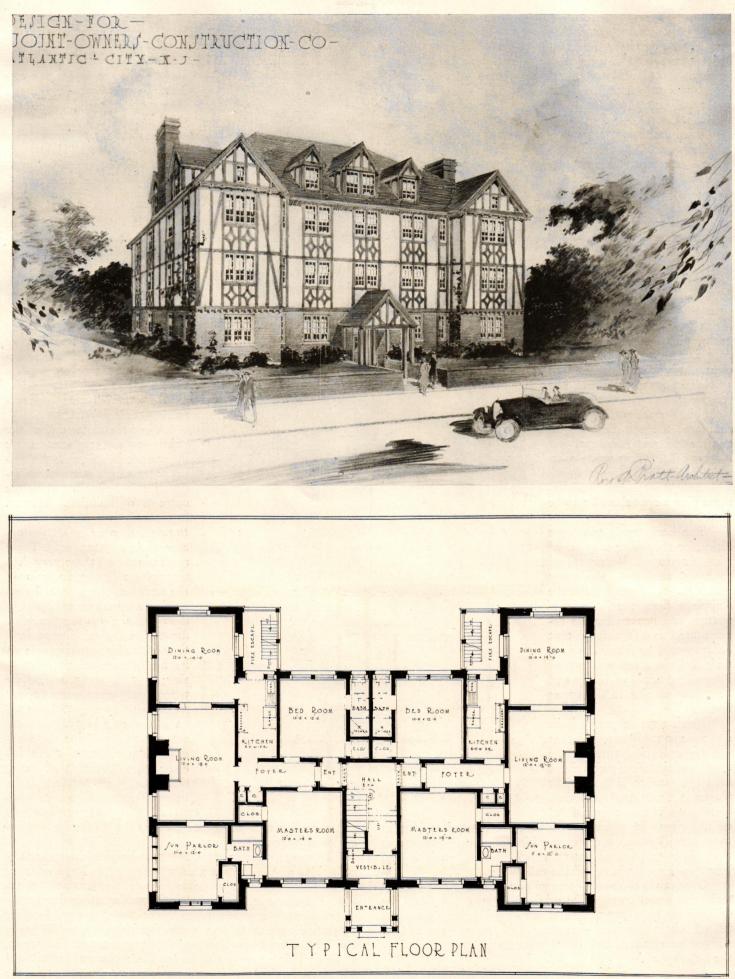
DESIGN FOR TENANT-OWNERSHIP APARTMENT-HOUSE, GUILFORD, BALTIMORE, MD. Roy G. Pratt, Architect. 3





TYPICAL FLOOR PLAN

DESIGN FOR TENANT-OWNERSHIP APARTMENT-HOUSE, GUILFORD, BALTIMORE, MD. Roy G. Pratt, Architect.



DESIGN FOR TENANT-OWNERSHIP APARTMENT-HOUSE, ATLANTIC CITY, N. J.

Roy G. Pratt, Architect.

(Continued from page 2)

stitutionality of the law. Have we not heard of other realestate associations that in modern times have tried to contest laws that were intended to protect tenants from extortionate rents? Human nature repeats its acts in difforent generations under differ

ferent generations, under different ways, but the same greed is at work.

But in addition to the previously mentioned evils of tenement-house construction, there were hundreds of little evils. Cellars when constructed were not made waterproof, and ground water leaked into them, keeping them always damp and musty, and in this smelling atmosphere the janitor lived, buried below the grade too deep to get much ventilation and light through the windows. The cellar floors, too, were often only earth, plumbing-pipes would rust and burst their contents over the absorbent floor, or even whole sections of them would be removed, and the basement would be flooded with the house drainage, the soil becoming a saturated and stagnant, wet blotter of decaying waste matter. Many cases were found where in this fearful environment pigs were raised by some tenant.

The back yards, too, were filthy, for they were only paved with flagstones, loosely fitted together, and no drains were provided. In heavy rains the drippings from the leaky roof gutters and broken leaders accumulated to such a depth that cellars would be flooded and remain so for long periods, causing ill-smelling odors of decay and dampness to rise to the upper floors.

Roofs were so poorly built and were so rarely repaired that rain-water leaking through the floors and interior partitions kept the wooden lath and the plaster in a saturated condition. Great slabs of plaster would fall

off and never be repaired. In fact, the plastering done in these buildings was the cheapest kind of work. Some roofs were found to have no gutters at all, and no provision had been made for draining off the rain-water.

Thousands of cases of sagged and broken-down wooden staircases were found. The original construction had been of such cheap workmanship that railings pulled loose and fell off, oilcloth-covered steps and floors rotted out and remained unrepaired, and lights were entirely omitted from the hallways.

Such careless and indifferent construction breeds careless and indifferent tenants, who threw garbage and refuse down dumb-waiter shafts; and when water-closets stopped up and overflowed and were not repaired threw fecal matter down the air-shafts. Imagine the living conditions of people who have one public sink for each floor, or one water-closet to be shared by all on one or two floors, or houses in which water

> second floors, and not to the third, fourth, fifth, or sixth. Is there any wonder that tenement-house living was

is delivered only to the first and

looked upon by the more fortunate classes as utterly impossible, that apartments were not considered to be fashionable? But, although they were not looked upon with favor, yet little was said against them, for so many looked upon these tenements as a sort of evil that, by the fate of the world, were ordained to be a part of the city life. Many, too, knew little about the fearful conditions of these buildings. Not until public sentiment was aroused by education and disclosures was anything done to pass laws correcting these evils.

The general demand of the public for better places to live in was not in this case the ruling force which stamped an indelible impression upon the customs of building. Rather, legal restrictions were necessary to establish, once for all, reasonable minimum standards. These regulations had three very definite points: (1) the protection of the health of the tenants by requiring a minimum standard of light and air; (2) the provision for the safety of tenants in a time of fire by requiring safe exits and fire-resisting construction; and (3) the provision for the sanitary arrangement of the plumbing system. Unfortu-nately, when a law of this kind sets out to determine the minimum requirements, these become the standards of work, since nearly all builders desire to cut down the cost of construction in order to compete,

and therefore they all get as close to the minimum requirements as they possibly can.

However, there were a few who believed in the apartment idea as the coming method of living in large cities, if conditions in these structures were made pleasant and healthful. Experiments were tried in New York City in the socalled French apartments to make this type of dwelling attractive and appeal to a more discriminating public taste. One of the first of this class was the Stuyvesant at 18th Street, between Third Avenue and Irving Place, planned by Richard M. Hunt, architect. These experiments were tried in the

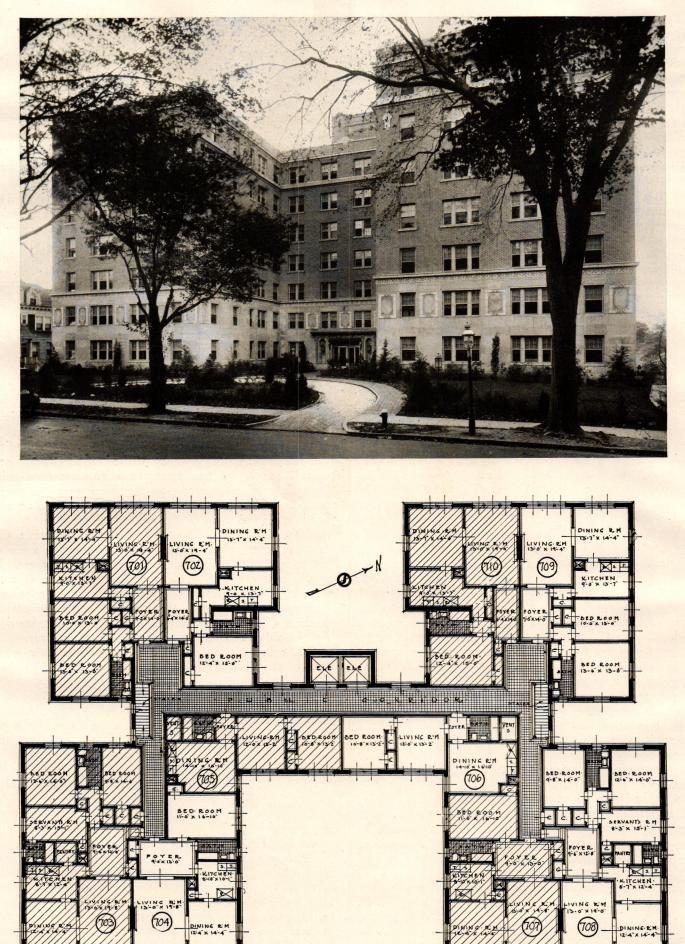
(Continued on page 8)



TYPE OF BACK YARD PRIVY



THE FILTH OF A PUBLIC SINK



APARTMENT-HOUSE, 77 SOUTH MUNN AVENUE, EAST ORANGE, N. J.

Charles P. Whiskerman, Architect.

7

8

ARCHITECTURE

(Continued from page 6)

early seventies and were said to yield on the money invested as much as 30 per cent. It showed that there were a few people in the city who would take to the apartment, if the buildings were planned for comfort and safety. But it was not until after 1873 that this new form of living became fashionable. However, this new growth started a force in this field of construction which tended to improve methods. This new force was the competition of builders to erect structures which could show improvements superior to other buildings and thus attract tenants of more exacting taste. This, we might say, was the leavening influence which a small class in the community had in developing the so-called "apartment de luxe." This influence in later years extended beyond the limited field of fashionable apartments and had much to do with the improvement of the methods of building ordinary tenements.

Thus we see that the customs of construction which are used for erecting apartments to-day have been moulded most by legal restrictions which were enacted to correct old evils, and also by the competitive spirit of contractors trying to attract a tenantry which was becoming more educated to better types of buildings.

So to-day, when we observe the improvements of equipment in the bathrooms of the new apartments erected for the middle classes, we can thank the spirit of competition, created by an exacting minority. Or when we regard the fireproof stair-wells and stairs in this same class of apartments, we can thank the legal restrictions which were passed to correct the evils of the past.

It is well, then, in studying our modern methods of building to realize from whence the ideas came and the reasons for them. Many critics of our tenement-house laws claim that they are very restricting in their limitations, and that progress would have been made by the natural influence of public opinion. History shows the reverse, however, and justifies the laws that gave rules to the building game.

to whether the thorough cleansing, which the glass is get-

ting, will serve to heighten the general effect or not. The

genial old supervising architect, to whom much credit for

the present excellent up-keep of the cathedral must be ascribed, seems dubious over the advantage thus gained.

From an Architect's Sketch-Book-Chartres



Renaissance tower of the Église Saint-Aignan.

the incomparable cathedral, but because of the essential loveliness of the entire city.

One finds here everything that is typically, irresistibly French. The people of Chartres are unusually cordial, the countryside unusually refreshing, and there is an atmosphere, quite indefinable, that makes one hopelessly and enthusiastically francophile. The privilege of spending a few leisurely weeks there is a great one, for rarely is there to be found a more fruitful sketchingground.

One hesitates to venture comment on such a matchless monument as the cathedral. A few writers have approached doing it justice, most notably Henry Adams, but it seems the part of wisdom, good taste, and a due reverence to leave it unbesmirched by the inadequate vocabulary that is usually one of an architect's limitations.

It is interesting to note, however, that the work of replacing and releading the stained glass, removed so hastily during the war, is far from being completed. The work is being financed by the state, and is said to involve over three million francs. Opinions vary as

By Samuel Chamberlain Sketches by the Author

I would be difficult to find a French town more invigorating to the wandering "sketcher" than the somewhat neglected city of Chartres. Its many-sided charm has been the subject of appreciative writings and of the works of artists, would-be and otherwise, for ages. Its reaction upon one versed in architecture is immediately gratifying, not merely on account of the incomparable cathe-

Several American stained-glass men who were spending the summer in Chartres, however, believe that even an added brilliance is the result of the present releading. Not as rich in old houses as Rouen, for example, Chartres has nevertheless whole streets of them, and a few that are as splendid specimens as can be found anywhere. The magnificent old half-timbered affair that serves as a fishmarket, among other things, leaves little to be desired as to

its mass or proportion. Many of the wedge-shaped intersections of the narrow streets lead to the existence of delightful old corner houses, wedge-shaped themselves.

The lazy little stream that winds through the lower part of the town furnishes many happy corners to sketch.



The Cathedral from the Bas-ville.



Old houses adjoining the Port Guillaume.

Particularly there is one point of view, here reproduced, that has apparently been the vantage-point of etchers and lithographers for centuries, to judge by the interpretations of it to be found in the corner bookstore.

The sparkling old Église Saint-André crowds up to the edge of this stream, and when the reflections are favorable gives a glittering ensemble that almost makes one forget the cathedral looming up in the distance. Another of the churches in Chartres, the Église de Saint-Aignan, is noticeably many-perioded. The Renaissance tower, a bit foreign to the ensemble, is entirely charming in itself.

From the view-point of color there is everything that is typically French and nothing that is particularly exceptional in Chartres. One is constantly tempted to compare the French and Italian sunlight, to contrast the wealth of brilliantly colored wall surfaces found in the Italian villages with the subtly varied monotones which are the heritage of the towns of France. The stucco wall surfaces, most prevalent in the old houses of Chartres, are not brilliant in color. There are soft browns, and some well-seasoned shades of buff and ochre, but generally one finds grays cold grays and warm grays of a thousand tones. And upon analysis there seems no better tone that could serve as a background for the orange and red-tile roof textures, the handsome roofs of blue-gray slate, those light and effective coverings that reflect such strange and fascinating high lights on rainy days. The cathedral, of course, is capped by its magnificent copper roofing, the soft mineral green of which combines so gracefully with the rain-washed stone. But the small, none too regular, red tiles that provide a patchwork of harmonious color for a majority of the old houses, are indeed happy to gaze upon. Seemingly every shade of red and brown and ochre is here. Washed and stained and brought into harmony by countless rains, spotted with moss and silver lichens, they serve as a sparkling background for the innumerable chimney-pots that shoot up through the roofs at random spots.

Unlike those of Venice, for example, French rural chimneys often have the characteristic of appearing rather unpremeditated. Their quaint irregularity, and the forest of red chimney-pots that struggle for a place to perch on their summit, lead one to imagine that the chimneys are really a result of a sort of self-determination.

There is another type of roofing, a large and very efficient moulded tile, more frequently seen in the reconstructed towns and the suburbs of Paris. Its color is an irreconcilably awful orange. It is certain that the rain and the moss will have to work long and patiently to tone it down.

The cathedral, in addition to being the object of the visits of many English-speaking tourists, had an unusually large cluster of American etchers, aquarellists, architectural students, and sweet girl graduates about it this summer. Chartres also serves as a summer rendezvous for many French artists and architects, all of them most cordial and companionable people. Many of them expressed their astonishment and lively interest in the competition recently created by a well-known American newspaper. Fifty thousand dollars, translated in terms of depreciated francs, is rather an awe-inspiring lump as things are now with the French architects. A new and beautifully printed French book on American architecture had made very much of an impression upon them, and upon more than one occasion the Café de France at apéritif time was the scene of a question-firing match such as the humble writer has seldom experienced.

Cafés and quaint hotels do have their part to contribute to the charm of French towns, and no small part of one's

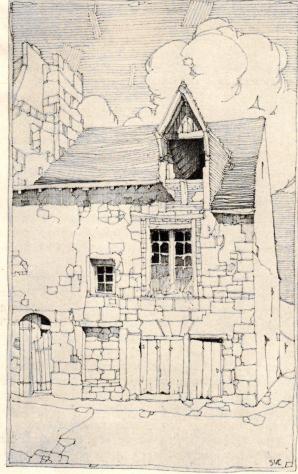
green-shuttered windows, the gaily colored posters, and the haphazard awnings that contribute the more forceful spots of color to the picture. A discordant noteisoftenstruck, however, in the modern storefronts, many of which are unqualified monstrosities.

Chartres betrays its proximity to Brittany and the Touraine by many



regret in quitting Chartres manifests itself in a sneaking reluctance to relinquish the company of the gay and chattering evening table on the terrace of the corner "bistro." But even without that most gratifying of institutions, Chartres is a joy unending to any one who unpretentiously wields a pencil. It's worth going back to many a time.

A street vista.



AN OLD BARN.



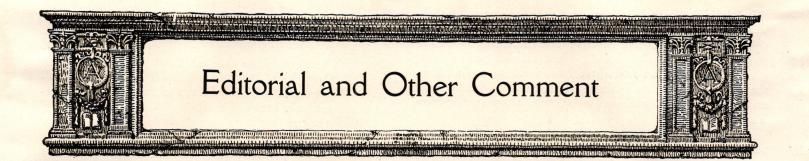
THE SHOEMAKER'S HOUSE.



A CORNER IN THE BAS-VILLE.



A SUNNY SIDE STREET. By Samuel Chamberlain. FROM AN ARCHITECT'S SKETCH-BOOK.



1923

W^E believe we can say in terms of deliberate and wellconsidered optimism that the new year is going to be a wonderfully full year for architects all over the country, and that the long era of uncertainty and hesitation has about passed. There is more building to be done than ever before in the history of the country, and it is to be spread over the entire land from East to West, North and South.

No one who travels these days but sees the evidences of activity in the construction of residences; thousands are going up wherever you look. Money for the financing of new and large enterprises is becoming more available.

Comparing ten months of 1922 with ten of the year before the increase of construction amounted to as much as 50 per cent.

The F. W. Dodge Company's review of building activity shows a tremendous amount of new work contracted for, and every day shows prospects of the most encouraging sort.

The figures run into many millions and the work is distributed over the country in a way that should bring renewed encouragement to every architect in the land.

We shall endeavor to keep our readers informed in every way we can of the new things that are being done, and of the things that in the experience of men in authority are of special interest and value to those who have so generously and loyally supported us during the past bad years. We had to increase the printing order for every issue of ARCHI-TECTURE during 1922, and even then we did not print nearly enough to meet all demands.

We have some very definite and special plans in hand for the new year, some of which we shall announce later, that we believe will make ARCHITECTURE more than ever the leading periodical in its field.

We have the organization, and also the hearty support of the men to whose encouragement and judgment we already owe so much of our success, and we shall spare no endeavor to keep our pages worthy of their continued regard and respect.

To make a magazine first of all of practical usefulness is the idea that controls our editorial policy; to do this and at the same time serve the highest interests of every member of the profession, to make the architect's work and his place in the community more valued, will be made manifest in every number for 1923.

The Chicago Tribune Building Competition

THERE are always those who look upon competitions in general as a rather futile and unsatisfactory method of bringing out the best talent in any field of artistic endeavor.

They say that the qualified haven't the time to speculate, while the unfit rush in and only make the problem for juries and committees more impossible. But the trouble has been and, no doubt, will continue to be with many competitions that the awards are not adequate to the work expected, or sufficient to permit the best ability to leave temporary and well-rewarded work for what, in the nature of things, must be purely speculative.

So we are made painfully aware of many public and institutional buildings throughout the land that bear witness to the futility of ill-regulated and meanly conducted competitions.

No competition for years has brought out so many designs and engaged the talents of so many men of high standing in their profession as the one for the new building of the *Chicago Tribune*, the announcement of which we published in our July number.

The conditions were fair and generous in the extreme, and made an appeal to architects all over the world. Hundreds of designs were submitted, and besides those awarded the great prizes there were ten invited competitors who received special prizes in acknowledgment of particular distinction. Many others won and merited high praise. The result of this notable competition promises not only to add another noble monumental building to our national architecture, but to stimulate and encourage better design in general.

The Tribune says designs were submitted from every civilized country in the world (twenty-two nations were represented), "all of them beautiful in a marked degree," and that all of them will ultimately find purchasers and, we trust, carry their message of beauty throughout the land.

We have too often been prone to think of Chicago as preeminently the embodiment of our so-called national spirit of commercialism, of restless and unmitigated materialism, of the essence of modernism and civic selfishness, indifferent to all but the great god of business and bunk. But we doff our hat to the splendid enterprise, the fine, uncontaminated idealism that is expressed in *The Tribune's* attitude:

"Mr. Howells has given *The Tribune* all that its heart was set upon. He has given it beauty and power. He has given us beauty, but not mere loveliness. He has given us majesty without unmeaning pomp. He has done something that will lift our new home out of the category of commercial profit-makers, and will make it an ornament and an inspiration to the city we love."

On other pages of this number are published the winning designs, and several others that were considered notable. We congratulate Mr. Howells and *The Tribune*, and we congratulate, too, those other gentlemen who, if they have not won the prizes, have yet given of their best, and have contributed to the splendid spirit and high endeavor that marks the work of the men who are helping to make our American architecture an honor both to themselves and our country.

Apartment-Houses

DURING the past year we had the pleasure of publishing in the pages of ARCHITECTURE a valuable and instructive series of articles on the essentials of "The Construction of the Small House." These articles met with the greatest appreciation and there have been many inquiries for the book that Mr. Walsh has made out of the material and which will be published some time early in the New Year.

Believing that there is even more demand for a complete and adequate presentation of the subject of the construction of the multiple dwelling, we have asked Mr. Walsh to supplement his articles on the Small House with a consideration of the modern apartment-house in all of its aspects, from the inexpensive walk-up to the most modern and up-to-date abiding place of the rich.

In dealing with this important and vital topic Mr. Walsh will point out how tenement laws have continued to improve sanitary conditions and fire-prevention construction, and done away with many of the old and vicious conditions that permitted landlords to build and alter without regard to any other consideration than their own profits.

Nothing but complete extermination can ever do away with some of the horrible conditions that still exist, even in some of our so-called most enlightened centres of population; but never again can unscrupulous owners build without consideration for the public health and safety.

We shall show, in connection with Mr. Walsh's articles, many examples of apartment-houses in various sections of the country, and we feel confident that this series will prove of the greatest value to all of our readers, no matter what may be their special field of endeavor.

The Volume Index for 1922

The complete index of ARCHITECTURE for 1922 is now ready and will be sent without charge to all subscribers upon request.

A College of Arts and Crafts

THE California School of Arts and Crafts has been incorporated as a College of Arts and Crafts under the laws of the State of California. The incorporation was formed "to establish a college or seminary of learning for the teaching and training of all manner of persons without limitation as to sex, creed, or race along lines of the industrial, normal, and fine arts, and of such other educational lines as the future needs of the State of California and of the United States of America may, in the opinion of the board of trustees of the corporation, demand." Under the articles of incorporation the college will be a semipublic institution and will not be conducted for profit.

Degrees will be conferred with entrance requirements of the same standard as those required by the University of California, Stanford University, Columbia University, and the Carnegie Institute of Technology. Courses leading to certificates and diplomas will be open to students who are not candidates for degrees.

The work of the incorporated institution has been arranged in three professional schools:

(1) The School of Applied Arts: A professional school preparing students for life-work in design, advertising and poster art, illustration, costume design, interior decoration and allied professions. Courses will be given in craft work in the metals, wood, textiles, and pottery. The work leads to the degree of bachelor of design or bachelor of arts in applied art.

(2) The School of Fine Arts: A professional school pre-

paring students for life-work in portraiture, figure work, and landscape and mural painting. The work in this school leads to the degree of bachelor of fine arts.

(3) The School of Education in Arts and Crafts: A professional school preparing students for positions as supervisors and teachers of the arts, crafts, and household arts in the elementary, high, and normal schools and teachers' colleges. The work in this school leads to the degree of bachelor of education in arts and crafts.

With the opening of the spring term in January many new advanced courses will be given. Among these courses will be the following: Furniture design; design in the art industries; graphic advertising (including poster and commercial design); costume design and illustration; textile design; interior architecture and decoration; ceramic art; metalwork and jewelry.

In these courses the instruction will be chiefly individual and will be partly based on advanced problems developed in co-operation with the art industries of Oakland, Berkeley, and San Francisco. Original research work will be required of all students. As the school has its own shops for woodworking, metal-work, jewelry, pottery, and printing, much of this work will be done at the school. However, a part of the time devoted to research work will be given to first-hand work in the art industry plants. During the final year the student may devote his entire time to one selected line, part time in school and part time in the industry. In this way the student may specialize in furniture, in textiles, in costume design, in advertising, or other selected lines.

Resolution Passed by the American Group of the Société des Architectes Diplômés par le Gouvernement Upon the Death of Lloyd Warren

THE following resolution was passed by the American Group of the Société des Architectes Diplômés par le Gouvernement, at the first meeting after the death of Lloyd Warren:

Whereas, The Members of the Société des Architectes Diplômés par le Gouvernement having heard with deep sorrow of the death of their fellow member, Lloyd Warren, it is unanimously

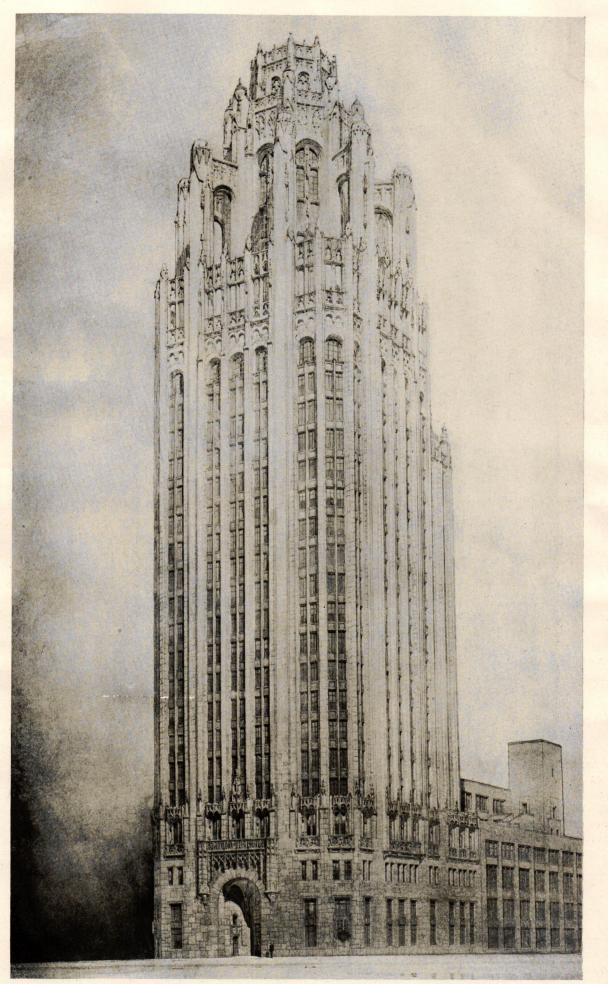
Resolved, That in Lloyd Warren we have lost not only a loyal and constant friend, but one whose generous life and unselfish activities on behalf of the young students of Architecture and the allied arts in America, have had for many years our admiration and whatever co-operation the Société has been able to give. The hand which he held out to the young men who needed help brought assistance to many students who, but for him, would have gone unaided. That our Société will keep before it the example of Lloyd Warren as an inspiration, and will deeply feel our loss in not having him any longer in our councils.

The Death of Andrew J. Robinson

ANDREW J. ROBINSON, who was one of the oldest and most prominent builders in Manhattan for half a century, died recently.

Mr. Robinson was the head of the firm of Andrew J. Robinson Company, builders, with offices at 15–17 West 38th Street. Among the buildings he erected was the St. Paul Building, the Transit Building on Forty-second Street, and the Union Theological Seminary at Broadway and 120th Street.

He was a member of the Merchants' Association, the Master Builders, Transportation Club, and a patron of the Metropolitan Museum of Art.



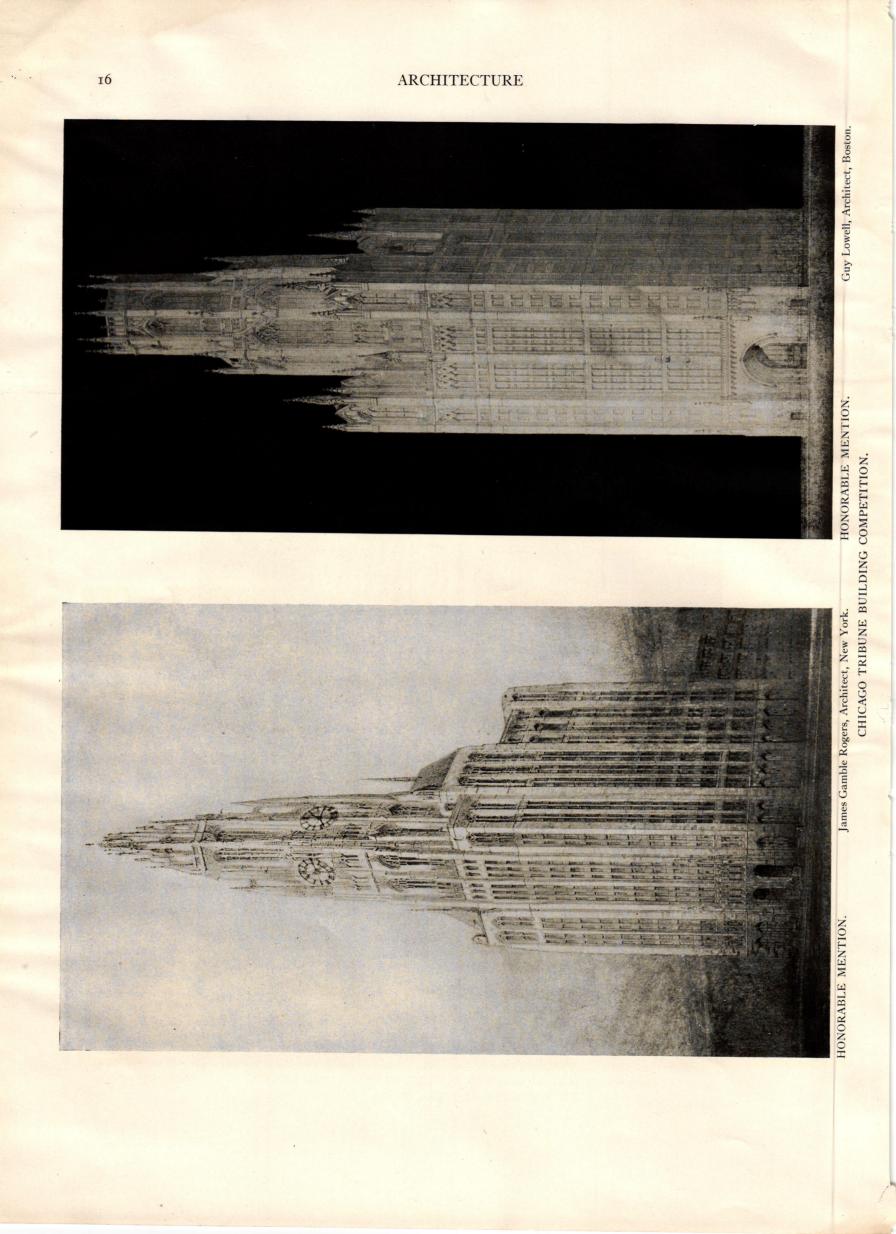
FIRST PRIZE DESIGN, CHICAGO TRIBUNE BUILDING COMPETITION. Awarded to John Mead Howells, Architect; Raymond M. Hood, Associate, New York.

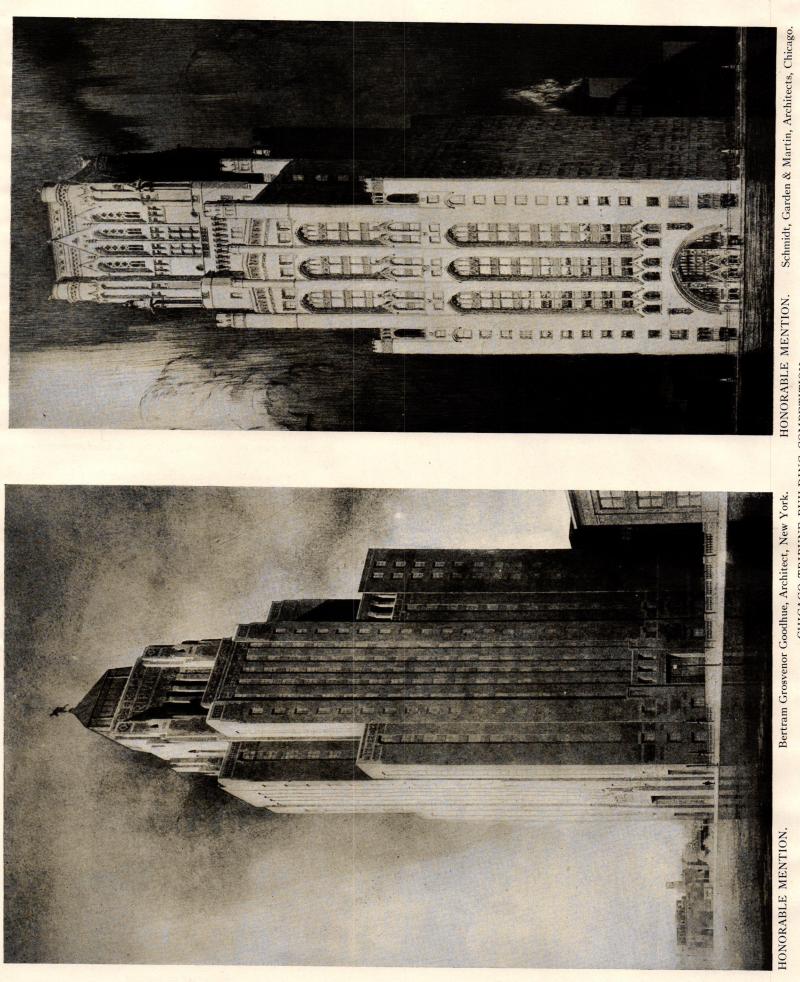


SECOND PRIZE DESIGN, CHICAGO TRIBUNE BUILDING COMPETITION. Eliel Saarinen, Architect, Helsingfors, Finland; Wallace & Grenman, Associates, Chicago.



THIRD PRIZE DESIGN, CHICAGO TRIBUNE BUILDING COMPETITION. Holabird & Roche, Architects, Chicago.



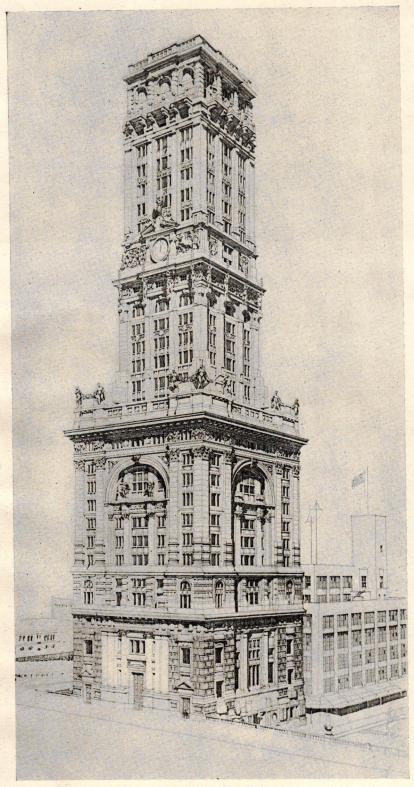


CHICAGO TRIBUNE BUILDING COMPETITION.

17

John Mead Howells to be the Architect of the New Chicago Tribune Building —Winner of the \$50,000 Prize for the Successful Design

JOHN MEAD HOWELLS, of New York City, son of the late William Dean Howells, one of the most admired and loved of American authors, has been awarded the first prize in the *Chicago Tribune's* \$100,000 competition, and will be the architect of *The Tribune's* magnificent new build-



Honorable Mention. Prof. Giuseppe Boni, Architect, Rome, Italy.

ing to be erected at 431-439 North Michigan Boulevard at a cost of \$7,000,000.

The immediate honorarium is \$50,000. Associated with Mr. Howells in the preparation of the design was Raymond M. Hood, of New York City.

Eliel Saarinen, of Helsingfors, Finland, won the second prize of \$20,000. His associates were Dwight G. Wallace and Bertell Grenman, of Chicago.

The well-known Chicago architectural firm of Holabird & Roche were awarded the third prize of \$10,000.

The remainder of the total of \$100,000 in prizes goes in \$2,000 allotments to ten recognized American architects who were invited to enter the competition.

The new structure will be known as the Tribune Tower, and will be executed in stone of a light color.

In style it is a Gothic expression of the American sky-scraper, an expression of the structural fundamental of the theme, which is a steel cage.

The fact that there will be no impediment to a view of each of the four sides of the building, and the further fact that its site is nearly square (100×135 feet), have given Mr. Howells an opportunity which he has seized with great skill and a fine appreciation of its possibilities.

The result will be an effect at once towering and militant. Mr. Howells says that the conditions he has had to meet provided the greatest opportunity that has yet been presented to an American architect for the working out so admirably of effects which up to the present time have been realized in the beautiful Woolworth and Bush Terminal buildings in New York City. Those effects—centring around the dominant theme of a Gothic tower springing from the ground to a height of 400 feet—have, however, never been carried to the point so fully expressed in Mr. Howells' *Tribune* design.

"Mr. Howells has given The Tribune all that its heart was set upon.

"He has given it beauty and power. The embattled crown of his building utters *The Tribune* ideal. The colossal flying buttresses which—both literally and spiritually—are the supreme note of the structure seem to us to utter a message both of challenge and of guardianship.

"He has given us beauty, but not mere loveliness.

"He has given us majesty without unmeaning pomp. From the great entrance that will be flush with the boulevard to the embattled chapel, 400 feet above, that will command leagues of lake and city, it is a militant structure. It has its feet firmly upon the ground. Its head looks starward.

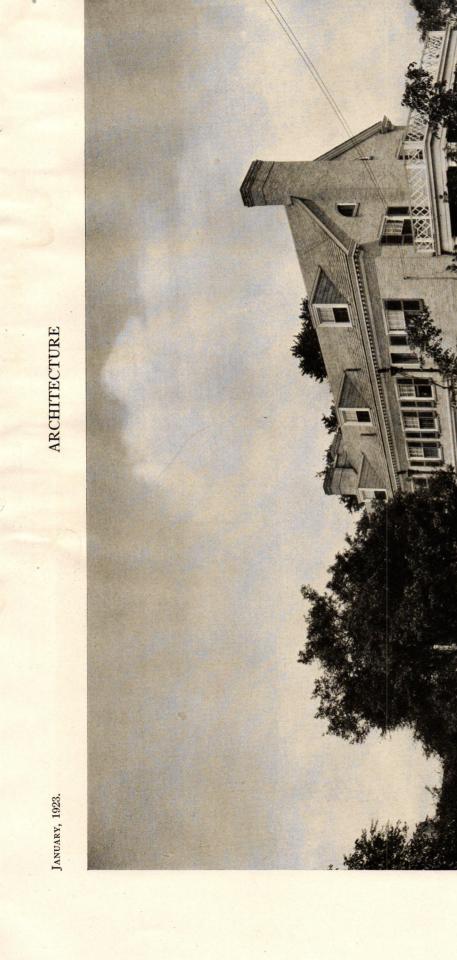
"Best of all—and *The Tribune* says this with a sincere heart—Mr. Howells, by the combined dignity and spirituality of his conception, has done something that will lift our new home out of the category of commercial profit makers, and will make it an ornament and an inspiration to the city we love.

"It is illuminating to read the earnest words

(Continued on page 29)



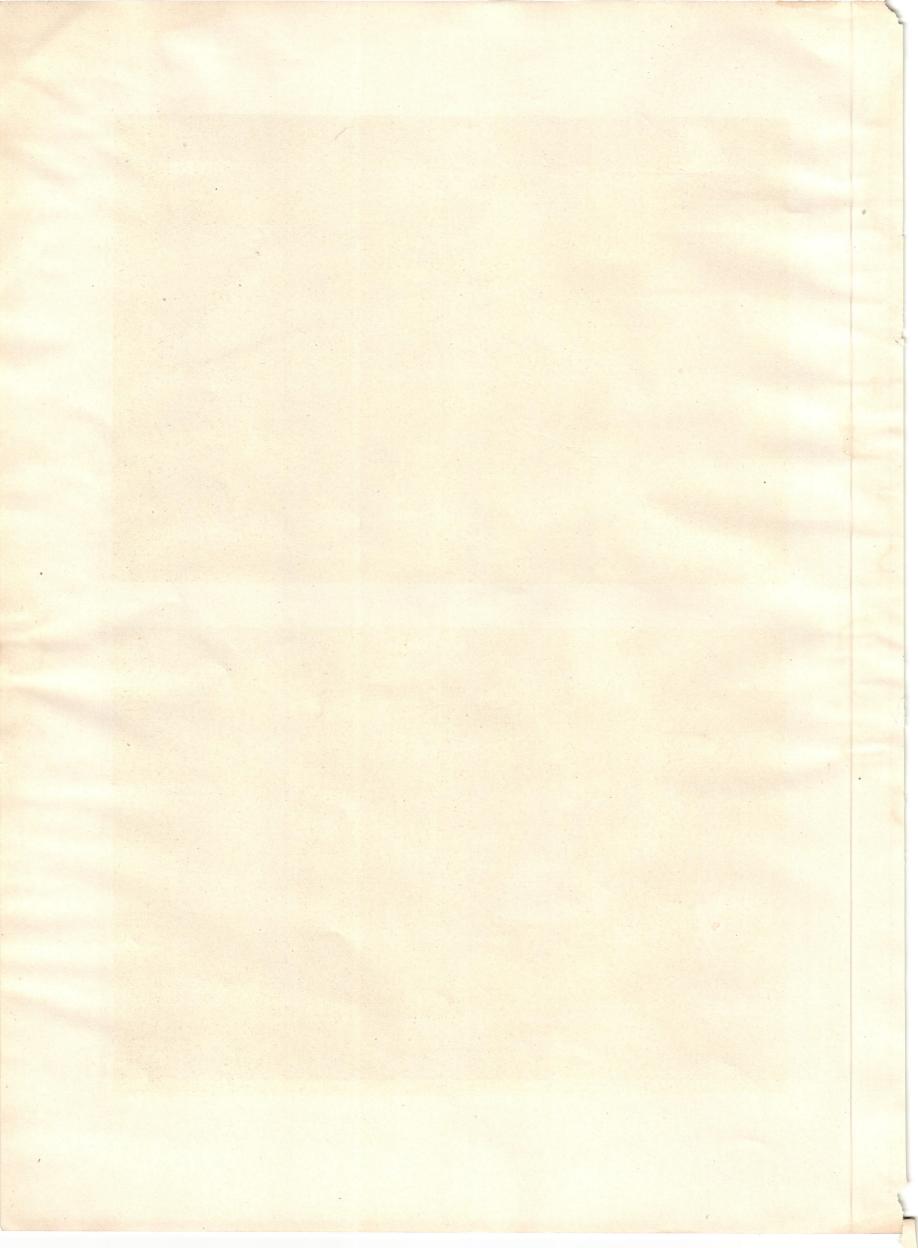




Albrecht, Wilhelm & Kelly, Architects. William Pitkin, Jr., and Seward H. Mott, Landscape Architects.

RESIDENCE, W. H. PURCELL, ALLIANCE, OHIO.

PLATE I.



JANUARY, 1923.

ARCHITECTURE

PLATE III.

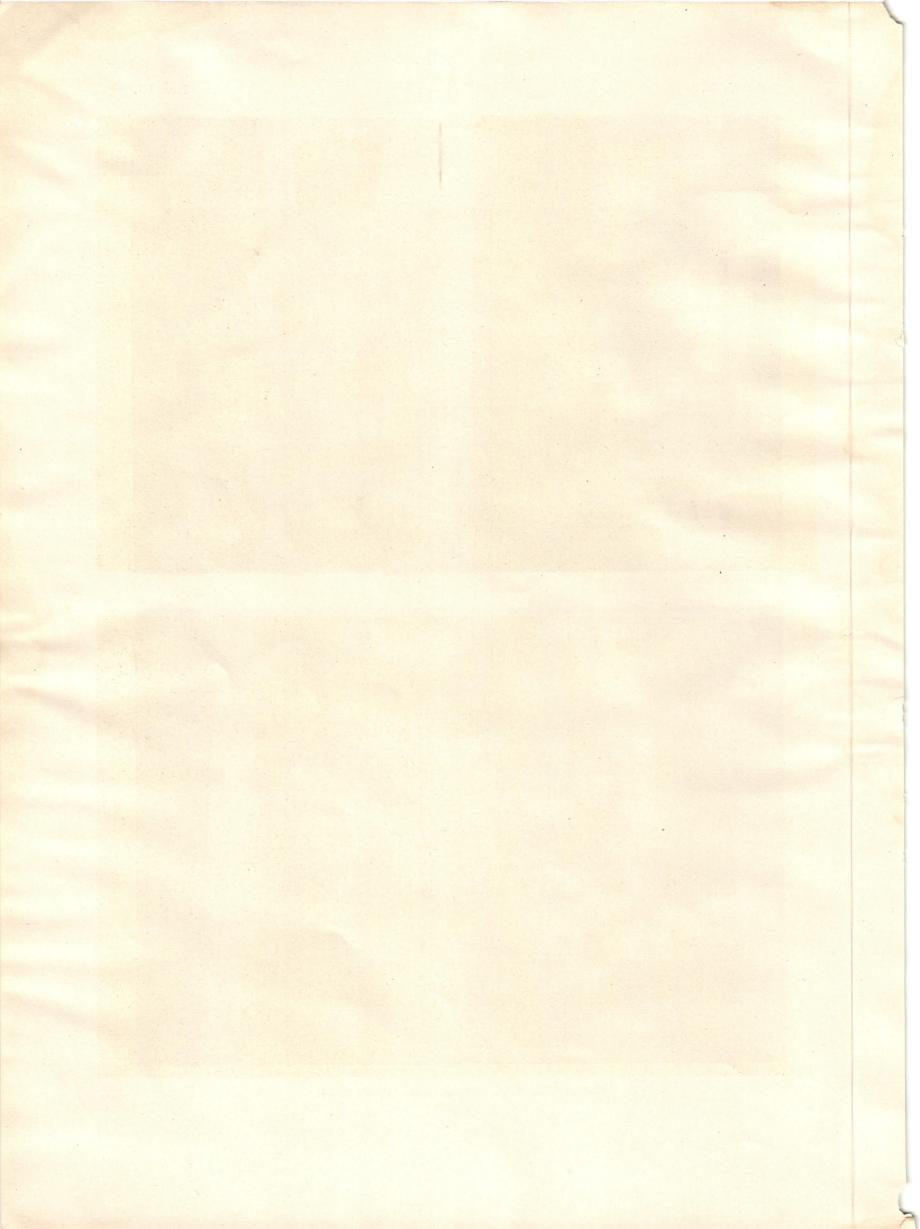


DINING-ROOM.



LIVING-ROOM.

Albrecht, Wilhelm & Kelly, Architects. RESIDENCE, W. H. PURCELL, ALLIANCE, OHIO.

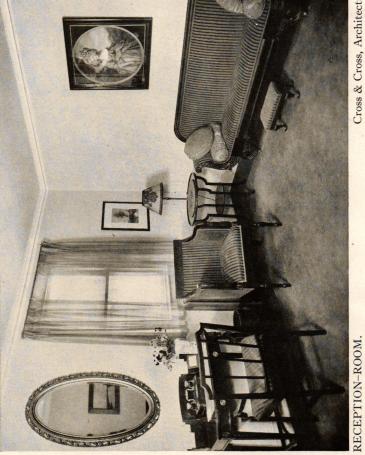


JANUARY, 1923.

ARCHITECTURE



PRIVATE DINING-ROOM.



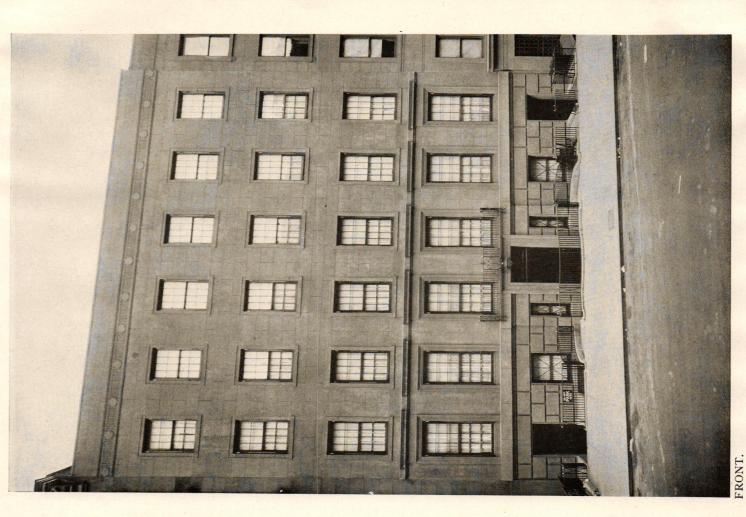
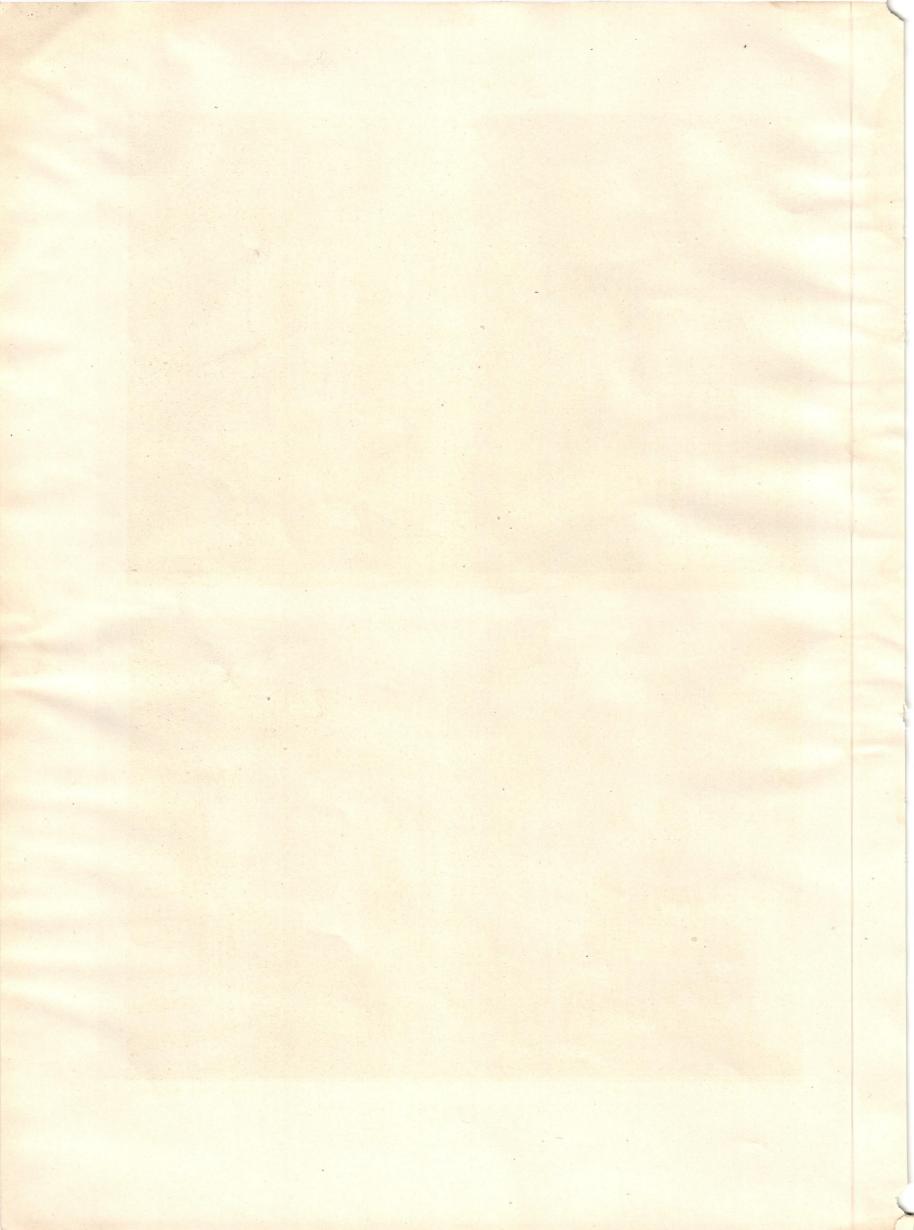


PLATE IV.

Cross & Cross, Architects.

YORK CLUB, 59 EAST 56TH STREET, NEW YORK (ALTERATION).



LOUNGE.



ENTRANCE-HALL AND STAIRWAY. YORK CLUB, 59 EAST 56th STREET, NEW YORK (ALTERATION).

Cross & Cross, Architects.

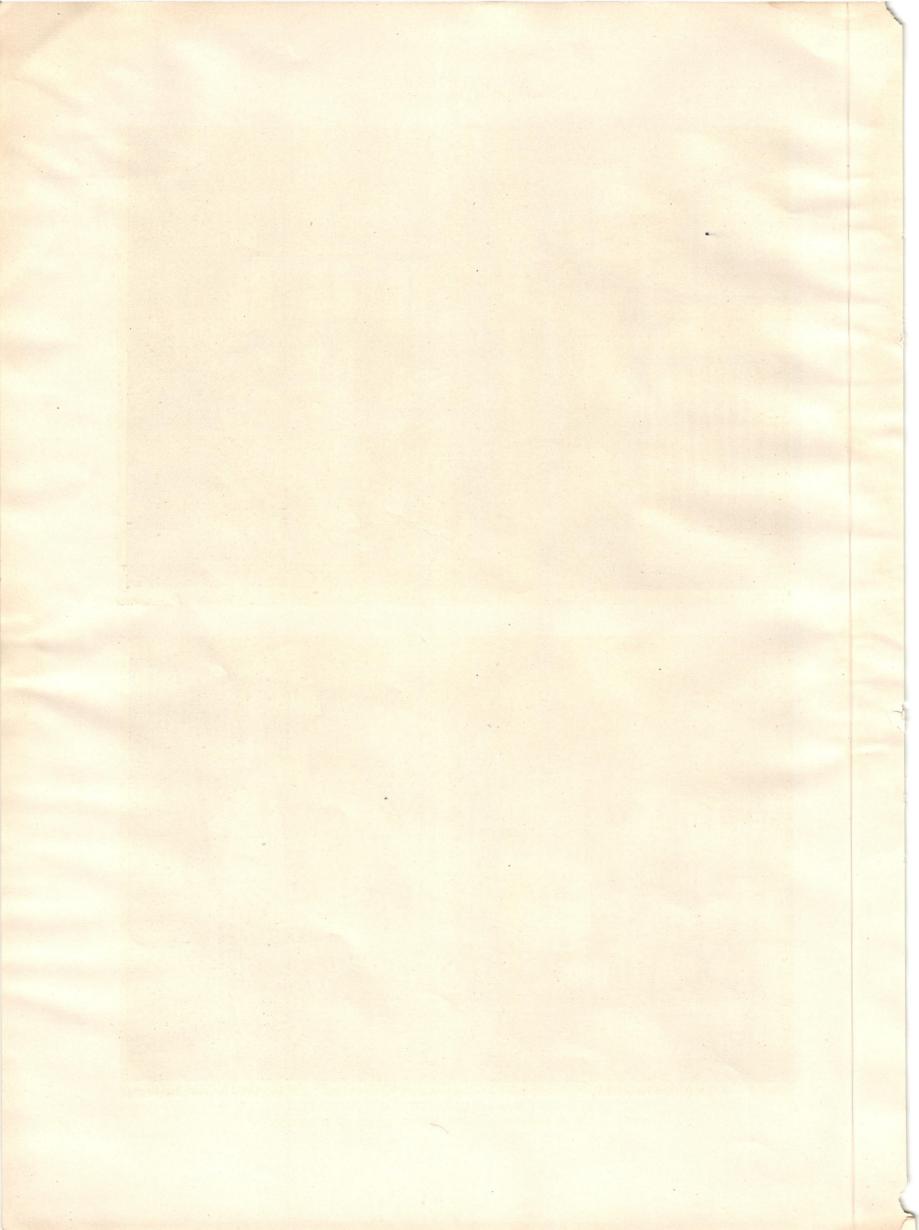


PLATE VI.

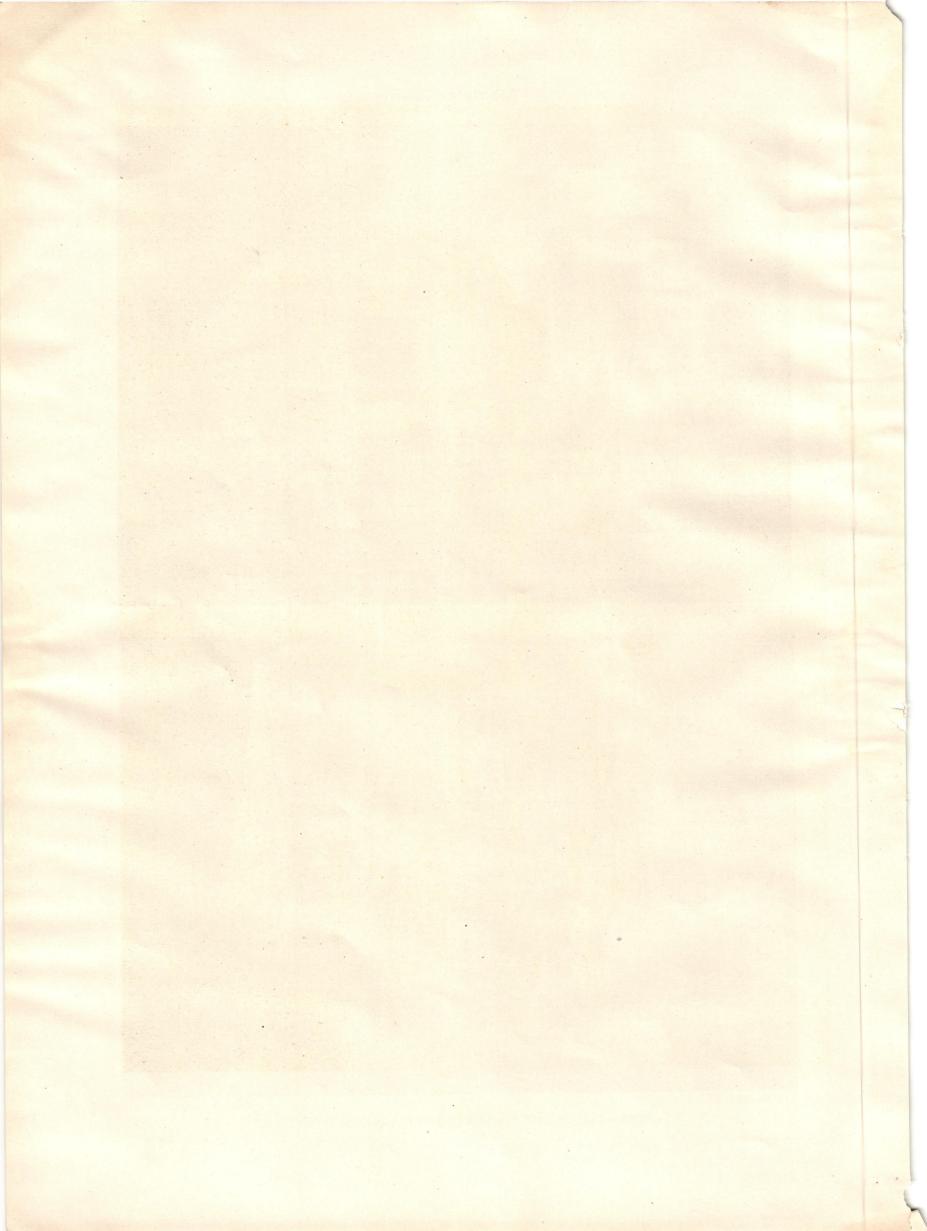


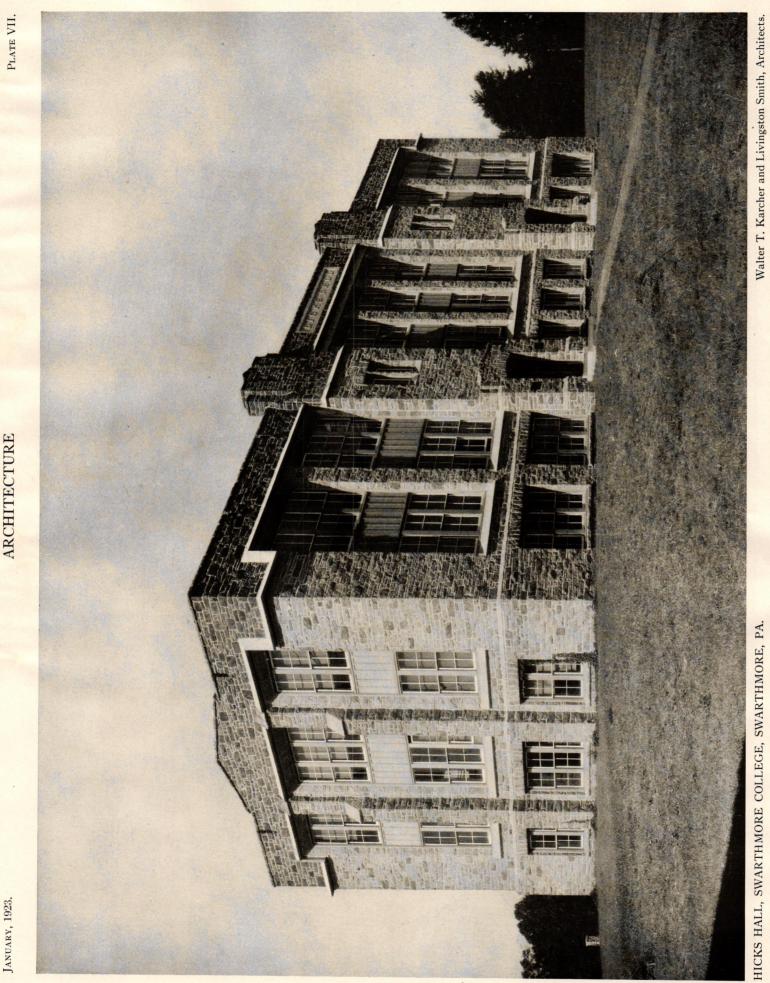


LIVING-ROOM.

Cross & Cross, Architects.

YORK CLUB, 59 EAST 56TH STREET, NEW YORK (ALTERATION).







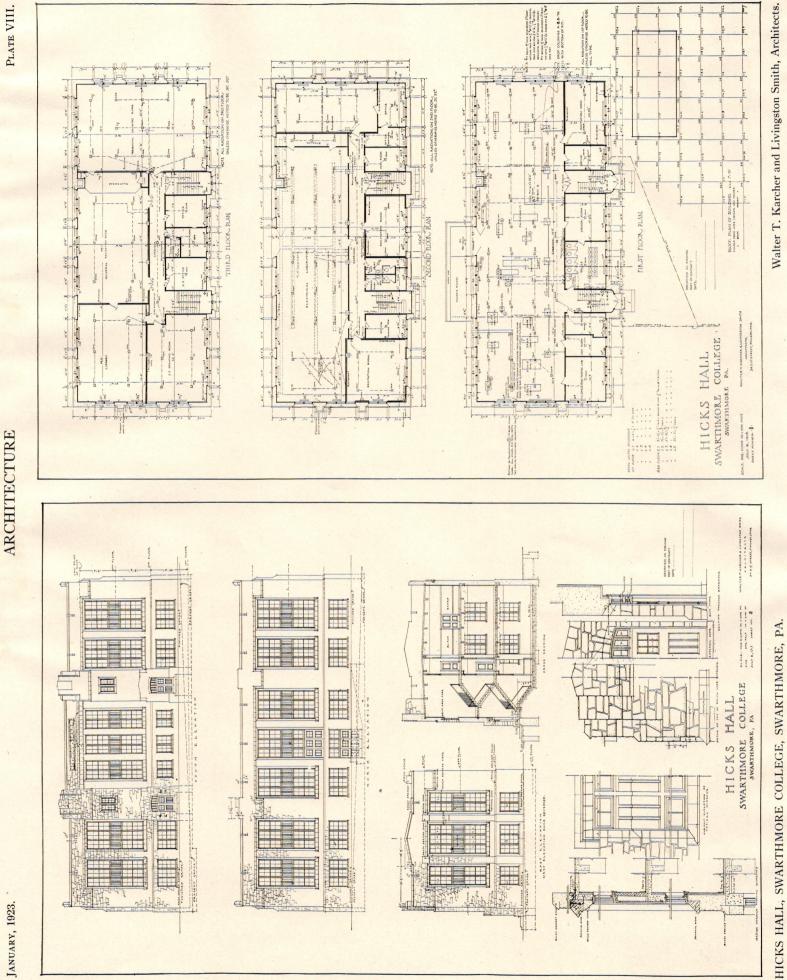
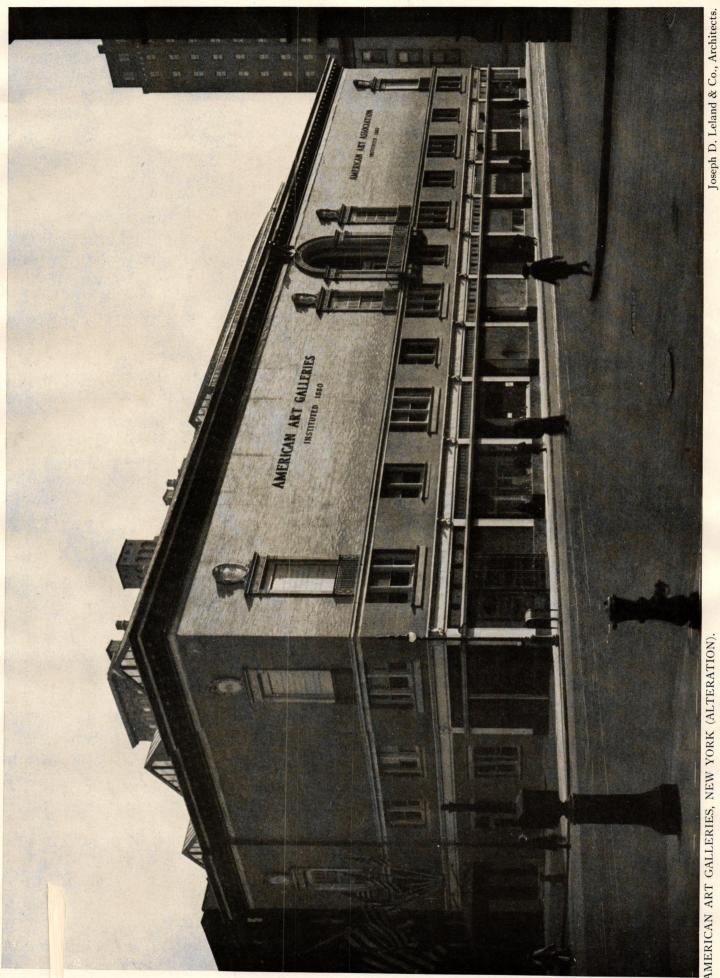




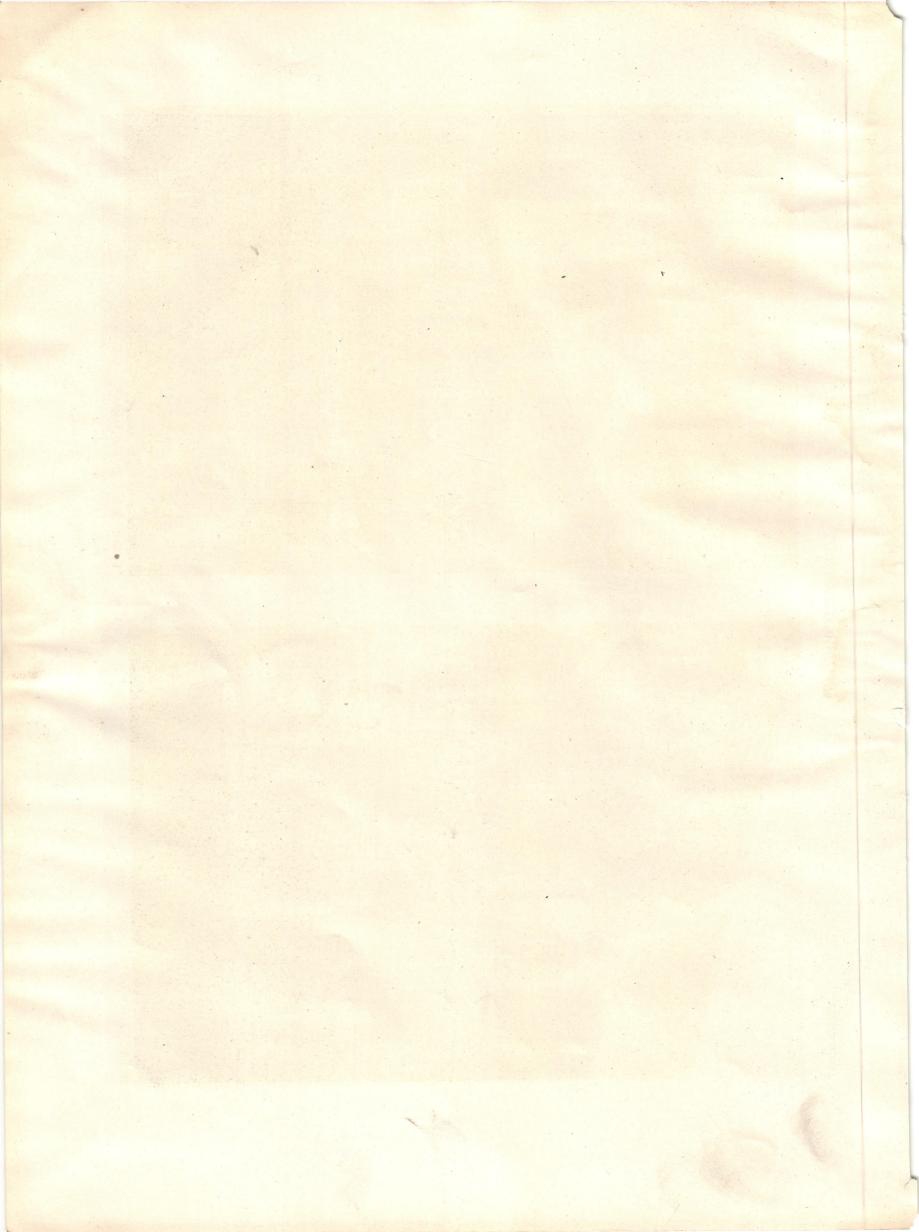


PLATE IX.



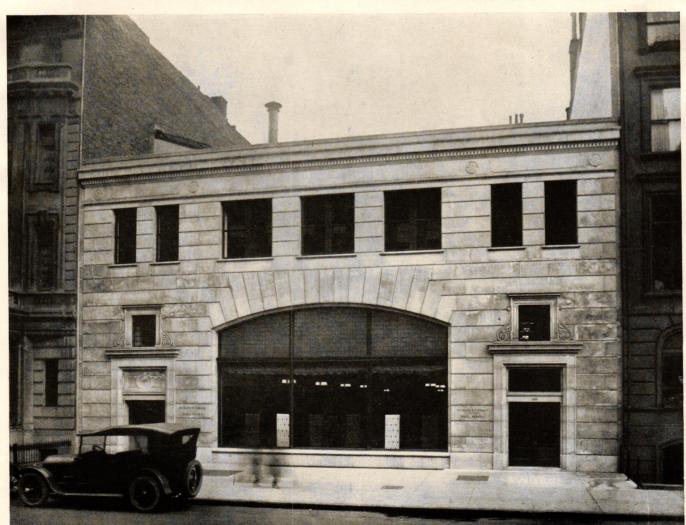
AMERICAN ART GALLERIES, NEW YORK (ALTERATION).

Second Prize, Altered Building Class, Fifth Avenue Association Annual Medal Award.

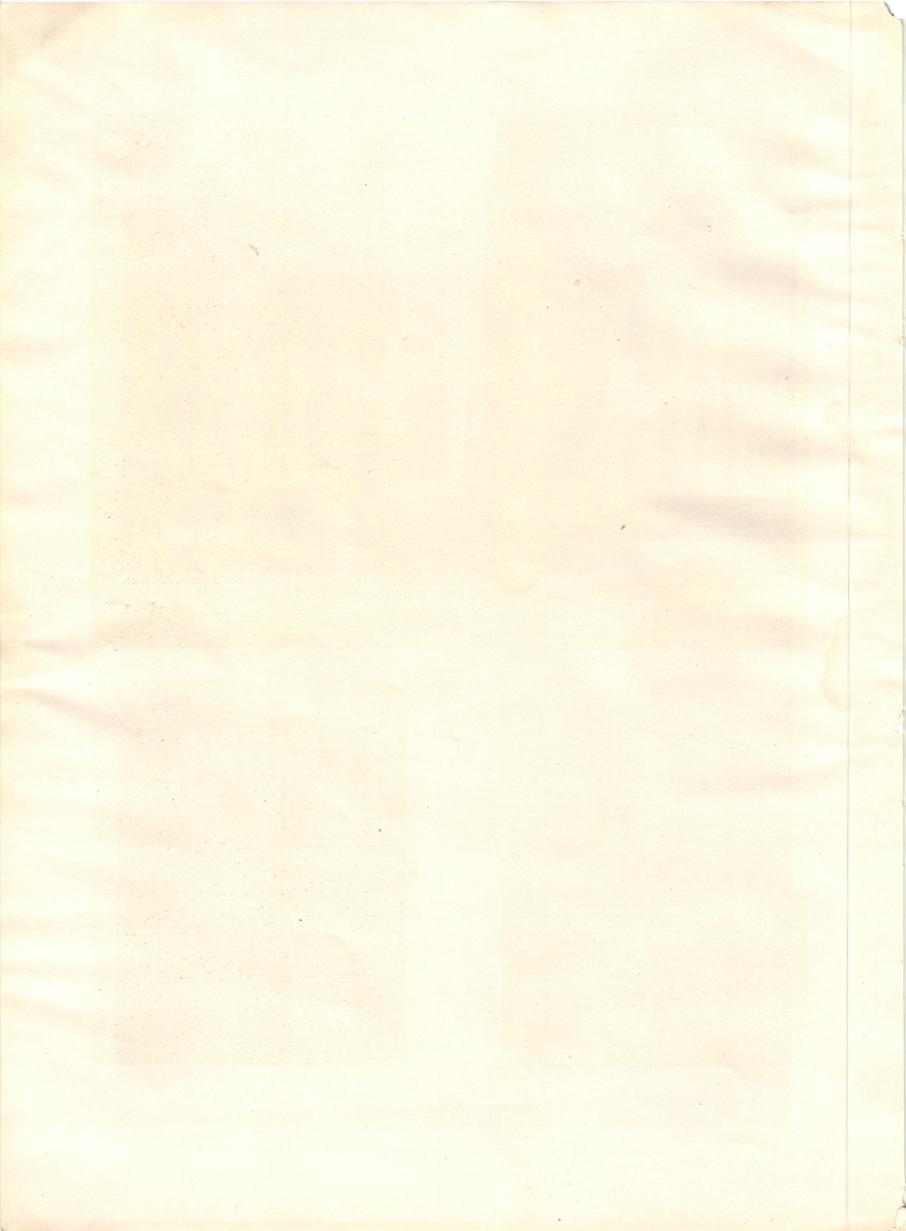




U. S. MORTGAGE AND TRUST BUILDING, 940 MADISON AVENUE, NEW YORK. Henry Otis Chapman, Architect. First Prize, New Building Class, Fifth Avenue Association Annual Medal Award.



NEW THIBAUT BUILDING, 269 MADISON AVENUE, NEW YORK. Trowbridge & Livingston, Architects. Second Prize, New Building Class, Fifth Avenue Association Annual Medal Award.





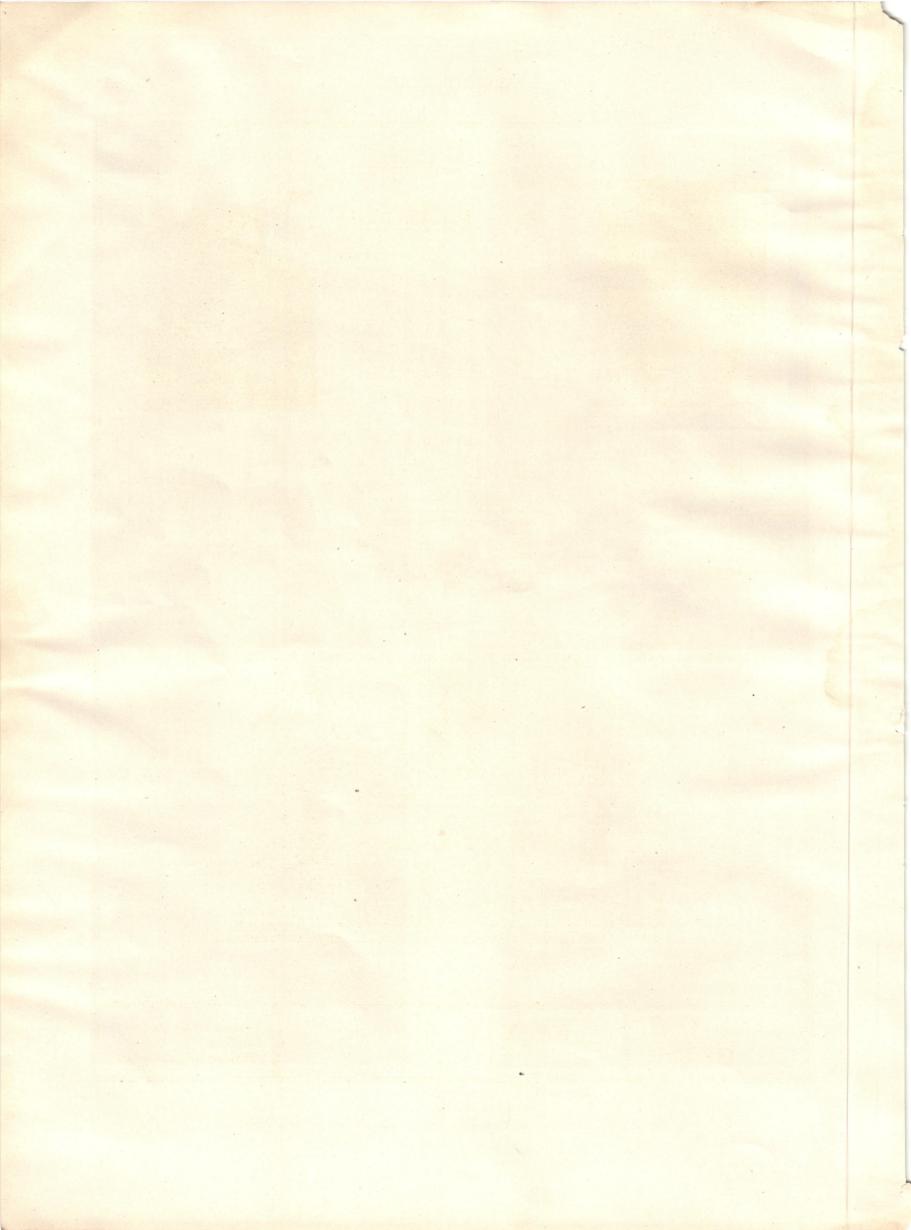
FRANKLIN SIMON & CO. STORE BUILDING, FIFTH AVENUE, NEW YORK (ALTERATION, 1922).



ORIGINAL BUILDING.



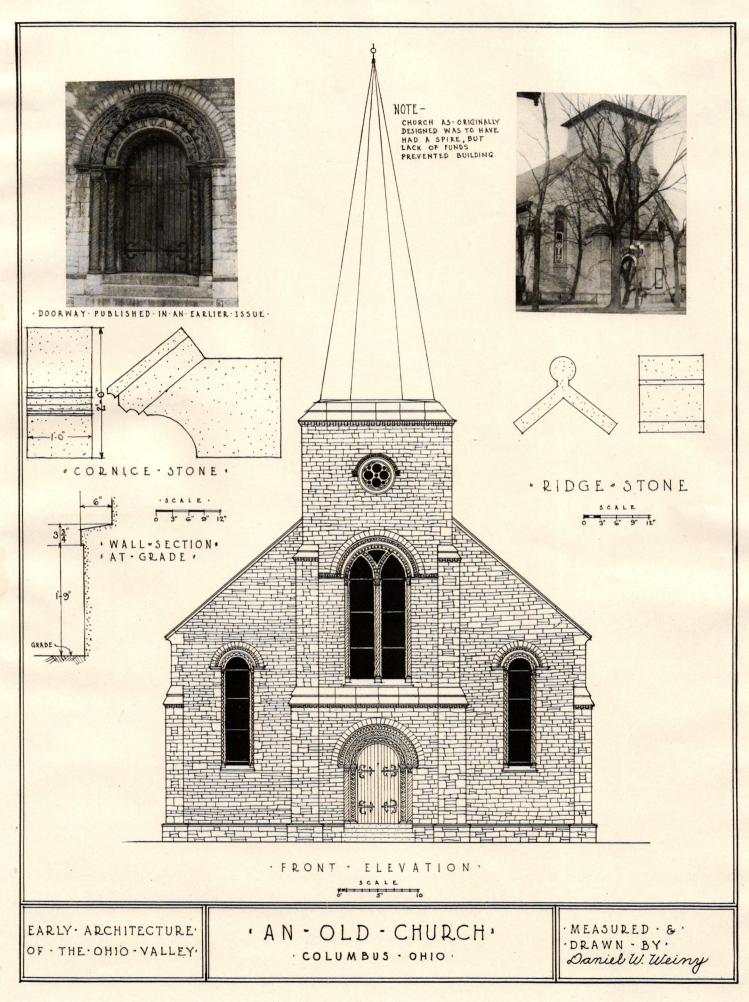
FRANKLIN SIMON & CO. STORE BUILDING Necarsulmer & Lehlbach, Architects. Second Prize, Altered Building Class, Fifth Avenue Association Annual Medal Award.



JANUARY, 1923.

ARCHITECTURE

PLATE XIV.



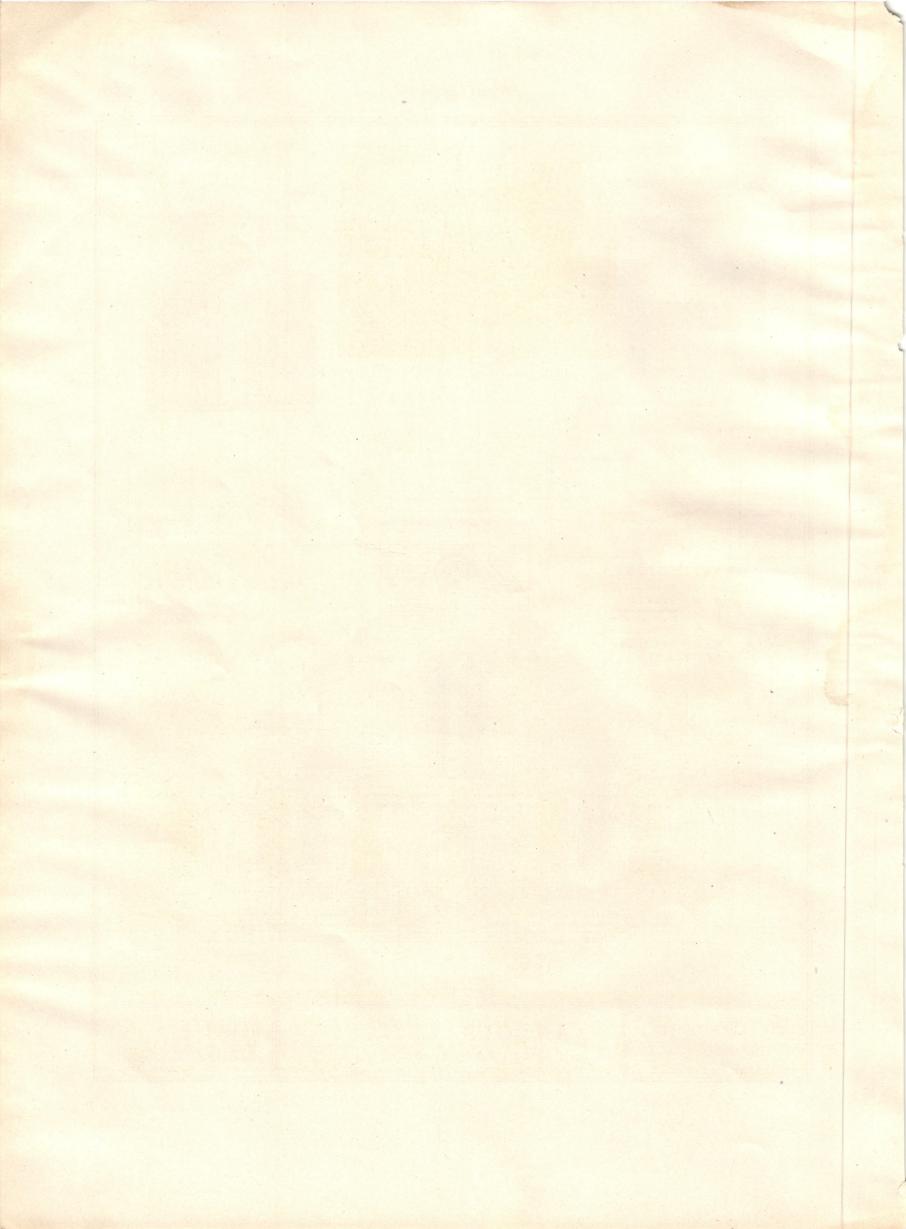
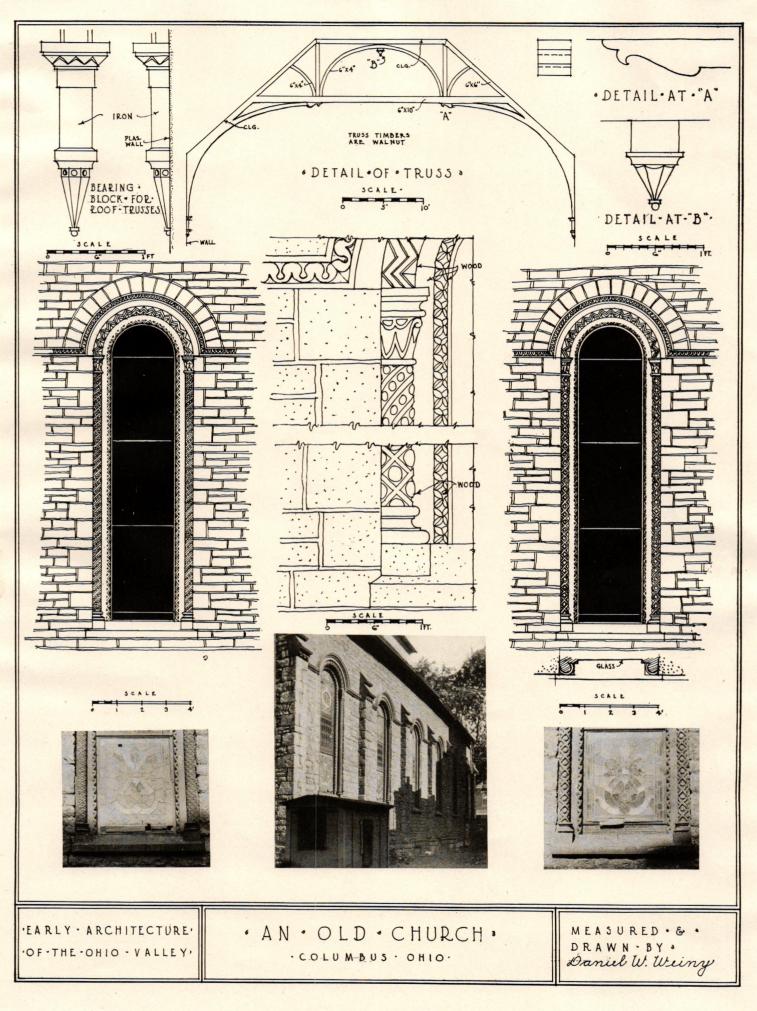
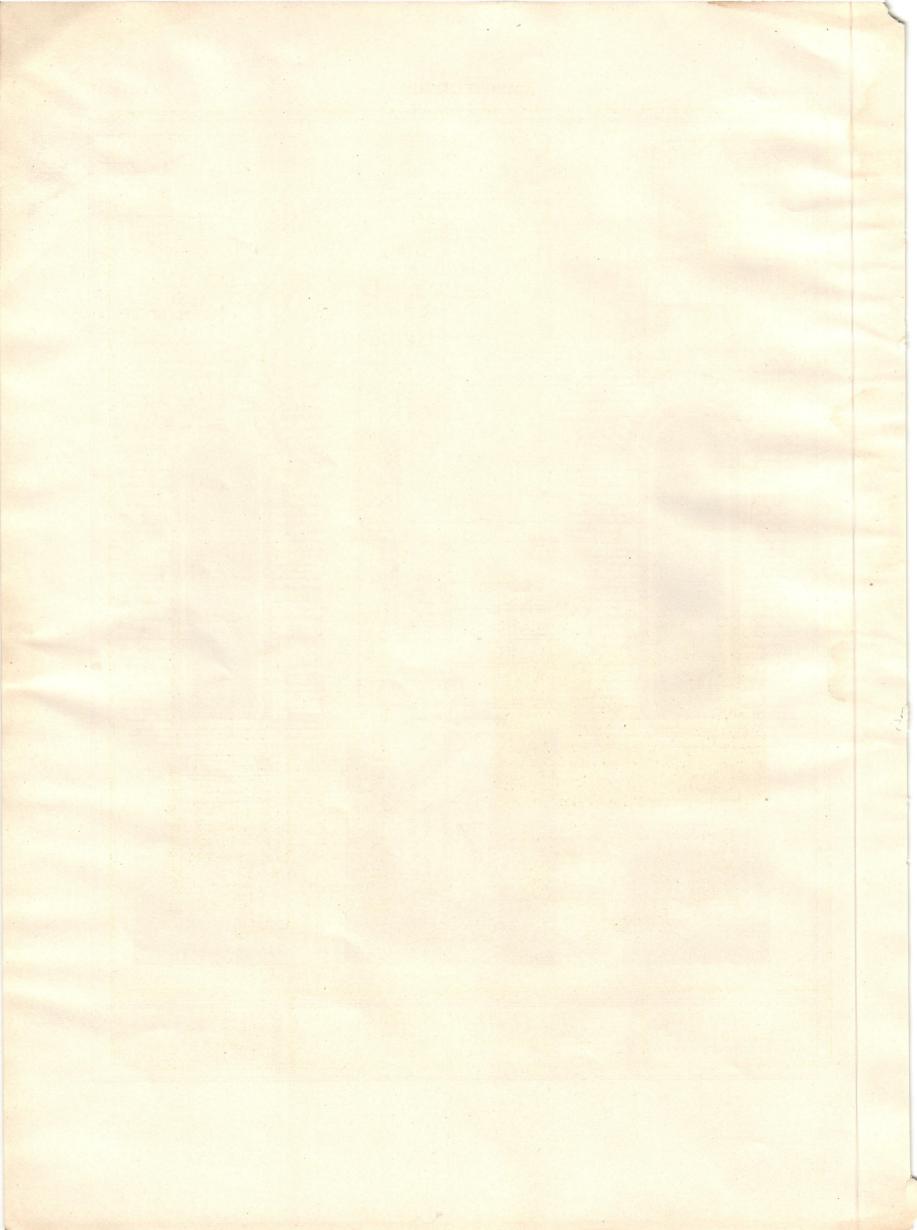
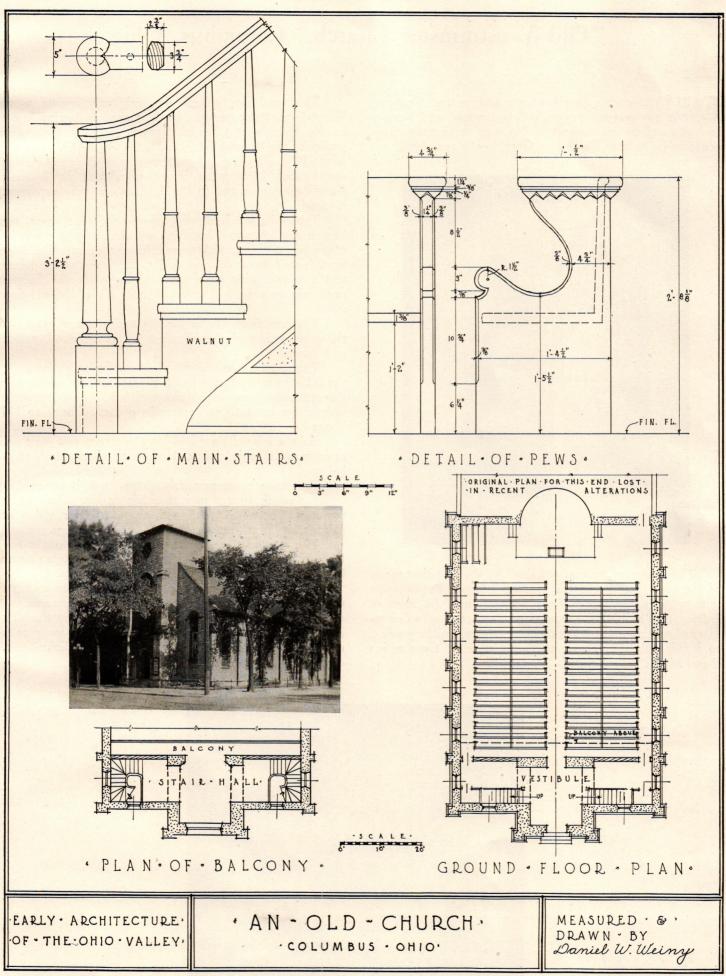


PLATE XVI.





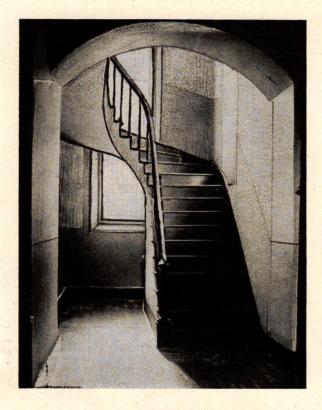


21

"Old Westminster Church," Columbus, Ohio

By Daniel W. Weiny

EARLY American churches executed in the Georgian style are not uncommon, but one might well wonder how so excellent an example of Norman architecture happened to be built in Columbus, Ohio, in the year 1857.



This, however, can be explained by the fact that many of the early settlers in the locality were of Presbyterian faith who had emigrated from Scotland and the north of Ireland, so that it is quite natural for them, coming to Columbus and finding an abundant supply of good building stone, to build their churches in the same style as those which they had left behind them. This particular church was originally known as the Westminster Presbyterian Church, though to-day it is known as the Spiritualist Church. It was built by the congregation of the Reverend Josiah D. Smith, in 1857, at a cost of \$16,000, and remained the property of the Presbyterians until about 1880, when it was purchased by Ebenezer Barcus and presented to the Spiritualists, whose property it remains to-day.

The walls are built of gray-colored ledge stone, now known as Columbus limestone and found along the banks of the Scioto River, which flows through the city. The stonework is rock-faced, coursed ashlar, the stones at the corners and windows being large angle-stones, while the buttress caps, window-sills, and cornice-stones are of dressed limestone.

The mouldings in the window arches are of stone, but the columns in each side of the openings are wood, painted and sanded.

The entrance to the church is particularly interesting, the columns on each side being of cast iron, the archivolt of stone, and the heavy walnut doors with their quaint wroughtiron hinges impart the impression of dating back to 1157 instead of 1857.

On the ground floor is a large entrance and stair hall, at each end of which a fine old walnut stairway leads to the balcony.

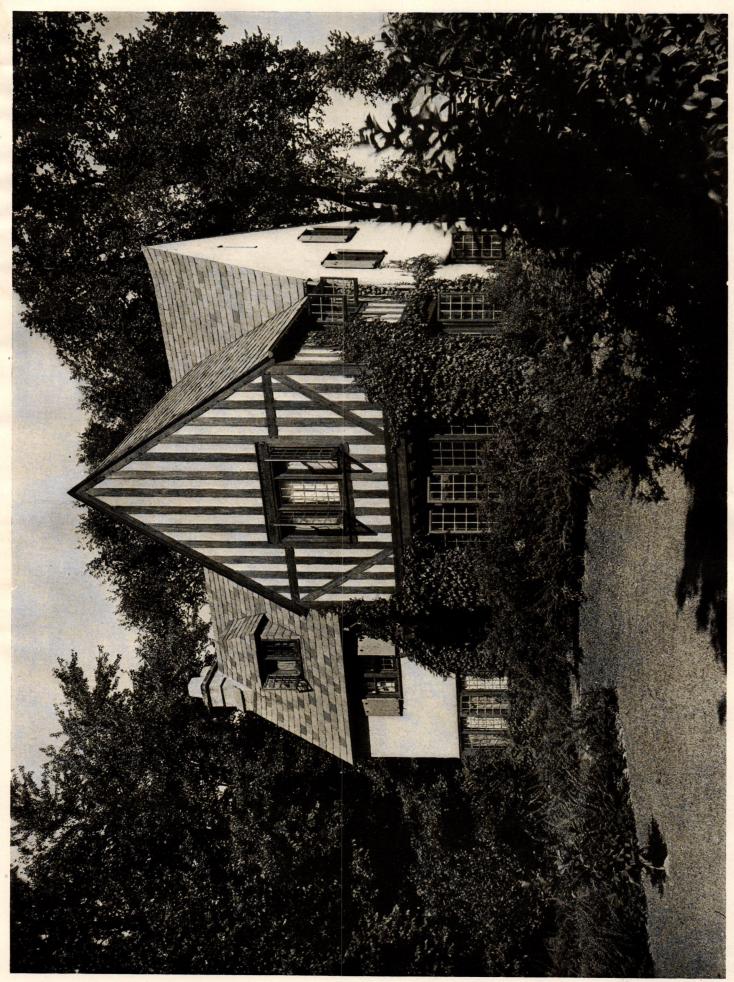
The nave is rectangularly shaped and is spanned by heavy wooden trusses of interesting design. Back of the pulpit is a semicircular apse with a ribbed ceiling, which, unfortunately, is at present obscured by organ-pipes.

The stained-glass windows, which were brought from Europe, are of exceptionally rich coloring, the glass patterns harmonizing with the architecture of the church.

One cannot help but notice the neat workmanship of the craftsmen of that time, and their painstaking care is in no small way responsible for the fact that to-day the building is excellently preserved and will continue to serve for many years as a mute reminder of the simple religious needs of a bygone generation.



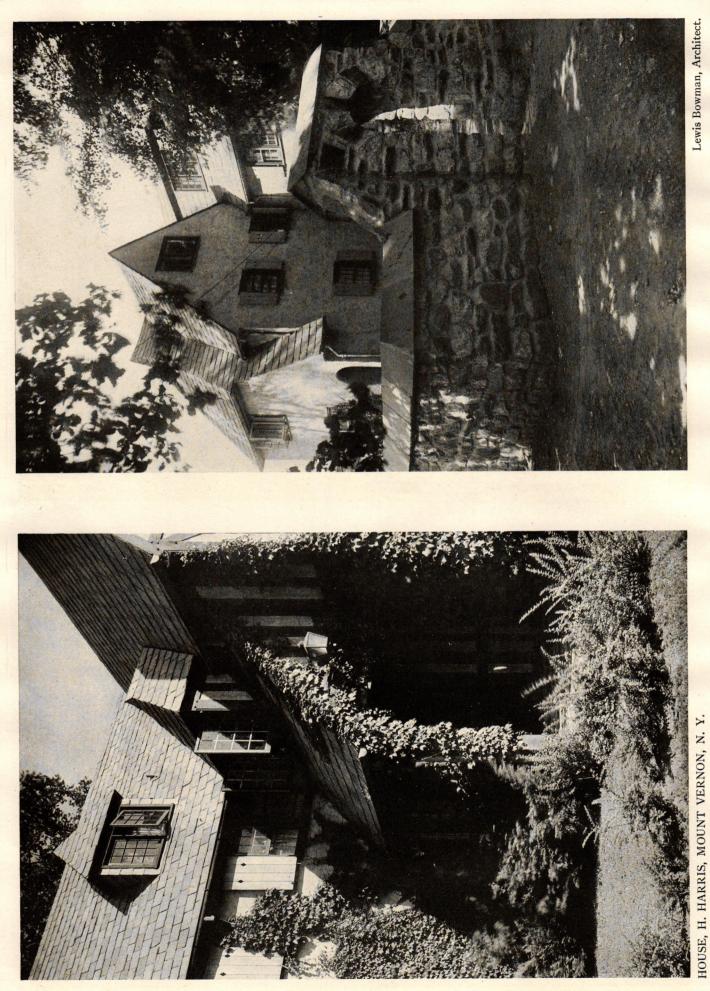
22



HOUSE, H. HARRIS, MOUNT VERNON, N. Y.

23

Lewis Bowman, Architect.



24



ENTRANCE GATEWAY, SWARTHMORE FIELD.



ENTRANCE GATEWAY, ALUMNI FIELD.

FIELD. Walter T. Karcher and Livingston Smith, Architects. SWARTHMORE COLLEGE, SWARTHMORE, PA.

The Cost of Daylight

By M. Luckiesh

Director of Applied Science, Nela Research Laboratories, Nela Park, Cleveland, Ohio

THE remark is often heard to the effect that daylight costs nothing. This is true outdoors, but obviously it costs considerably to enjoy daylight indoors. The writer has discussed this subject elsewhere* quite a number of years ago, with the hope that architects would give attention to this aspect of natural lighting. Inasmuch as no data on the subject have appeared, the writer undertook the task of computing the costs of natural lighting as at present practised, and to compare these costs with those of adequate electric lighting. The details of computation and estimation are so numerous that they are not presented here.

The initial net cost of equipment for natural lighting includes the difference in the cost of the building with and without windows and skylights, the cost of ground area occupied by light-courts, and the cost of extra heating system to supply the difference in heat losses from windows and skylights and from the wall replaced by the glass areas. The annual cost of natural lighting includes interest on the initial net cost, depreciation, cost of repairs, washing, and extra fuel. Wall space occupied by windows has not been charged to natural lighting, although this is an appreciable item in many cases. The cost of artificial lighting used in the daytime to reinforce daylight has not been charged to natural lighting in making the cost estimates. Deteriora-tion of interiors due to natural lighting and various items of minor importance have been omitted. In fact, computations were confined to the major factors which are quite tangible.

In the accompanying table the cost of natural lighting is compared in each of nine representative cases with the cost of electric lighting. The initial cost of equipment for electric lighting consists of the cost of wiring, fixtures, and portables, and its annual cost consists of interest upon the initial investment, depreciation, repairs, lamp renewals, and electric energy. Adequate and proper artificial lighting was assumed in all cases excepting the first dwelling. In fact, the electric lighting provided in all these cases is above the present average and in most cases considerably above. Owing to this and to the exclusion from daylight costs of a number of items which could justly be charged to daylight, the costs presented in the table are more than fair to daylight.

According to the estimates, the initial net cost of natural lighting for dwellings is from 110 to 225 per cent of the initial net cost of electric lighting; for apartments and hotels from 100 to 140 per cent; for offices about 160 per cent; and for art-galleries from 80 to 180 per cent. The annual cost of natural lighting was found for dwellings to be from 95 to 125 per cent of the annual cost of electric lighting; for apartments, hotels, and offices where artificial

* Lighting Journal, vol. 4, October, 1916, p. 229; Illum. Engr., London, November, 1916; "The Lighting Art," McGraw-Hill, 1917; "Artificial Light—Its Influence Upon Civilization," 1920. lighting is freely used during the daytime, from 50 to 100 per cent; and for art-galleries about 135 per cent. In general it is seen that the costs of daylight are at least of the same order of magnitude as those of electric lighting. This knowledge should make the consumer more considerate of his artificial-lighting bills. In fact, economic considerations indicate that there will be many cases in the future where artificial lighting will supplant natural lighting entirely.

INITIAL AND ANNUAL COSTS OF NATURAL AND OF ELECTRIC LIGHTING

	Description	Initia	l Cost	Annual Cost		
		Natural	Electric	Natural	Electric	
I.	Seven-room frame house, with hot-water heat and slightly above average present standard of elec-					
	tric lighting equipment	\$601	\$265	\$93	\$75	
II.	Same as I, excepting brick construction	505	265	86	75	
III.	Seven-room brick house, adequate windows and electric lighting equip- ment.	658	610	111	120	
IV.	Five-room brick apart- ment, usual windows, but adequate electric lighting	225	230	39	65	
V.	Modern hotel, room and bath	161	115	14	14	
VI.	A suite of office rooms— Without light-court With light-court	667 1,584	976 976	- <mark>86</mark> 141	290 290	
VII.	Top-lighted paintings' gal- lery, 33 x 115 feet; lou- vers for controlling day- light; adequate artificial lighting equipment above sub-skylight	8,017	4,550	942	720	
VIII.	Top-lighted paintings' gal- lery, 52 x 88 feet; with- out louvers, but with ad- equate artificial lighting equipment above sub- skylight	3,254	4,088	577	479	
IX.	Side-lighted art gallery, 33 x 88 feet; windows on one side and pendent ar- tificial lighting units	3,210	1,800	308	214	

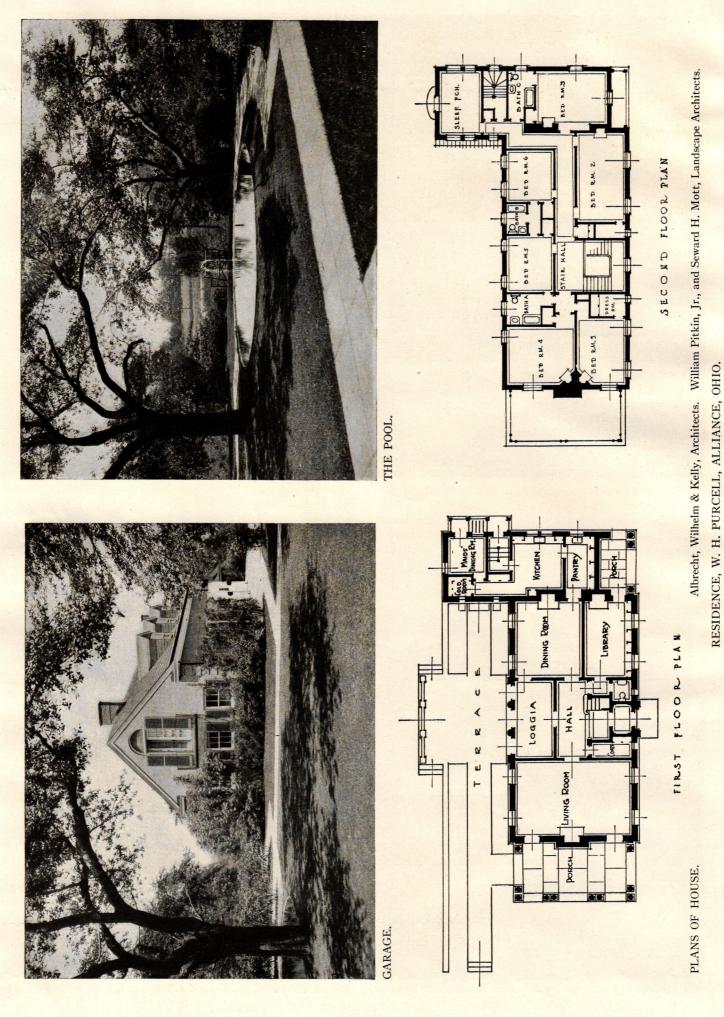


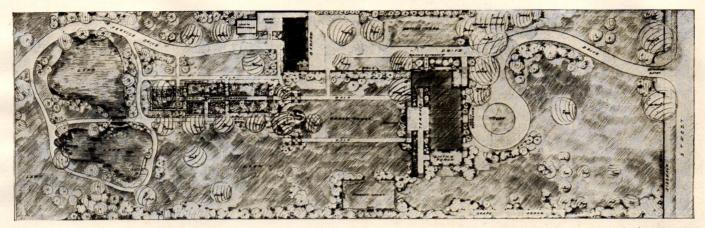
MAIN FRONT.



TERRACE.

Albrecht, Wilhelm & Kelly, Architects. William Pitkin, Jr., and Seward H. Mott, Landscape Architects. RESIDENCE, W. H. PURCELL, ALLIANCE, OHIO.





Landscape plan, W. H. Purcell Residence, Alliance, Ohio.

(Continued from page 18)

with which he couples his architectural ideal with The Tribune's journalistic ideal of battle and of service."

Speaking for himself and his colleague, Mr. Hood, Mr. Howells has said of his conception:

"The design is before everything else an expression of The Tribune. The structure is carried to its full height as a square on the Michigan Avenue front only, thus always giving the same impression from wherever seen, and showing from all points as *The Tribune* landmark. "We feel that in this design we have produced a unit. It is

not a tower or top, placed on a building-it is all one building.

'It climbs into the air naturally, carrying up its main structural lines, and binding them together with a high open parapet. Our disposition of the main structural piers on the exterior has been adopted to give the full utilization of the corner light in the offices, and the view up and down the avenue.

"Our desire has been not so much an archæological expression of any particular style as to express in the exterior the essentially American problem of skyscraper construc-

Building Costs

MANY have been waiting for the "inevitable" fall in building costs ever since the war ended, and many are waiting yet, with the ever-present indications that instead of going down costs are going up. One may read a lot about business cycles, about the influence of the amount of gold in the world, the shortages of labor, and what-not, but all these theories are worthless in the face of fact, and the fact is that waiting for a drop in building costs is like waiting for the core of the apple—"there ain't going to be none."

There is every indication of an immense amount of building to be done next year, and the architects are going to benefit thereby. No one would think of erecting a business building without the services of an experienced architect, and we hope that it will be soon made evident to the man in the street that he owes it to himself and his neighbor to have the new home he is thinking of building in the spring designed and directed by an architect. Our domestic architecture has been steadily improving; in fact, in its larger aspects, it is now the best in the world. But there is yet too little attention given to the design of the small house, though the various Small House Bureaus identified with the Institute are helping to make matters better.

The trouble with thousands of our small houses is that they are designed, if designed at all, with a notion of making

William Pitkin, Jr., and Seward H. Mott, Landscape Architects.

tion, with its continued vertical lines and its inserted horizontals. It is only carrying forward to a final expression what many of us architects have tried already under more or less hampering conditions in various cities. We have wished to make this landmark the study of a beautiful and vigorous form, not of an extraordinary form.

"The area of the cross-section of the central motif of the top, plus the area of its several supports, is 3,360 square feet, and thus within the 3,600 square feet allowed, the frontage of the top on the street being also within the building law.

"It is perhaps not necessary to call attention to the fact that the upper part of the building has been designed not only for its own outline and composition, but for the possibilities of illumination and reflected lighting at night.'

It may well be noted here that Mr. Howells has been recently appointed by Herbert Hoover as consulting architect to take charge of the rebuilding of the University of Brussels.

His work has been for many years notable for fine taste and individual distinction.

a splurge-tawdriness and pretension are more thought of than good taste and fitness.

American Academy in Rome Announces Its Prizes

HE American Academy in Rome announces its competitions for Fellowships in architecture, painting, sculpture, and landscape architecture. The stipend of each Fellowship is \$1,000 a year for three years, and residence and studio are provided free of charge at the academy, with board at cost. All Fellows will have opportunity for extensive travel.

The awards of the Fellowships will be made after competitions, which are open to unmarried men who are citizens of the United States. Special attention is called to the fact that in painting and sculpture there will be no formal com-petitions involving the execution of prescribed subjects as ĥeretofore, but these Fellowships will be awarded on the basis of a thorough investigation of the artistic ability and personal qualifications of the candidates. To this end, candidates are requested to submit examples of their work and such other evidence as will assist the jury in making the selection.

Entries will be received until March 1. Any one interested should write for circular of information and application blank to Roscoe Guernsey, Executive Secretary, American Academy in Rome, 101 Park Avenue, New York City.

Drafting-Room Mathematics

By DeWitt Clinton Pond, M.A.

THIRD ARTICLE

I N the second article of this series there was an explanation given of logarithms and their use. There is much in such an explantion which must seem involved to one who is not familiar with the use of such a system of calculation. The only method which will clarify such an explanation is one in which a reader practises the process of looking for the proper logarithms for certain numbers and carries through a number of simple calculations.

As has been stated in the previous article the reader should obtain a set of tables of logarithms and should follow the discussions by seeing if the results found in these articles will agree with his own calculations. For the purpose of practice it may be well to investigate a few examples. Let it be assumed that it will be necessary to determine the cubical contents of a building of which the floor plan measures 75 feet by 120 feet and which is 62 feet from the under side of the basement slab to a point one foot above the roof. In this example it will simply be necessary to multiply 75 by 120 and the result by 62. By looking in any table of logarithms of numbers, such as the one found in the back of Smoley's "Parallel Tables of Logarithms and Squares," the logarithm of 75 will be found to be 1.87506, of 120 the logarithm will be 2.07918, and of 62 the logarithm will be 1.79239.

In finding the logarithms the reader will notice that for numbers up to 100, such as 75 and 62, in ordinary tables both the digit at the *left* of the decimal point—the characteristic—and the digits at the *right* of the decimal point—the mantissa—are given. For numbers over 100, such as 120 in the example above, only the mantissa is given.

When only the mantissa is given, which is the case of almost all the numbers which the reader will have to look up, it is necessary to supply the characteristic. In the case of such a number as 120 it will be seen that there are three figures at the left of the decimal point. In accordance with the rules given in the previous article the characteristic is one less than the number of digits at the left of the decimal point. In the present case there are three digits and the characteristic is 2. In the table the mantissa is given as .07918 and by combining with this the proper characteristic the whole logarithm is 2.07918 as given above.

It is now necessary to add the three logarithms in order to determine the product of the three dimensions.

log	75	=	1.87506					
log	120	=	2.07918					
			1.79239					
			5.74663	=	log	558	,00	0

If the reader should desire to multiply the three dimensions in the ordinary manner, he will see that the result obtained by simple multiplication corresponds with the one found above. He may experience some difficulty in determining that 5.74663 is the logarithm of 558,000. Once having found the sum of the three logarithms he may have difficulty in finding the corresponding number. In this case he should look for a logarithm which is equal to the mantissa as given above. The mantissa is 74663 and it will be found that there is a logarithm which exactly corresponds with this. It will also be found that the numerals which are given at the left in the number column are 5580. The only remaining problem is the determination of the proper location of the decimal point. As the characteristic is 5 there must be *six* digits at the left of the decimal point, so the answer given above is correct.

It may be thought that the use of logarithms in the last problem resulted in more work than would be found in the ordinary process of multiplication. It must be remembered that the examples in this article are chosen because they are not difficult and that later it will be seen that the use of logarithms will simplify more complicated calculations to a great extent.

It is not necessary to investigate many problems to prove this. The ordinary person does not remember, for any length of time after his school days, the methods of extracting the various roots of numbers. To some it is almost impossible to extract the square root of such a number as 367895, and the problem of extracting the cube root of 75640 would present insurmountable difficulties. The use of logarithms will make such problems comparatively simple.

The logarithm of 367,895 is 5.56571. To extract the square root of the number it is only necessary to divide the logarithm by 2 and find the corresponding number.

$$5.56571 \div 2 = 2.78286$$

The corresponding number to this logarithm is 606.55, which will be found to be correct. In like manner the logarithm of 75,640 can be found to be 4.87875, and in order to find the cube root of the number it will be necessary to divide this by 3, which will give a logarithm of 1.62625. By looking up the corresponding number it will be found that the cube root of 75,640 is 42.29.

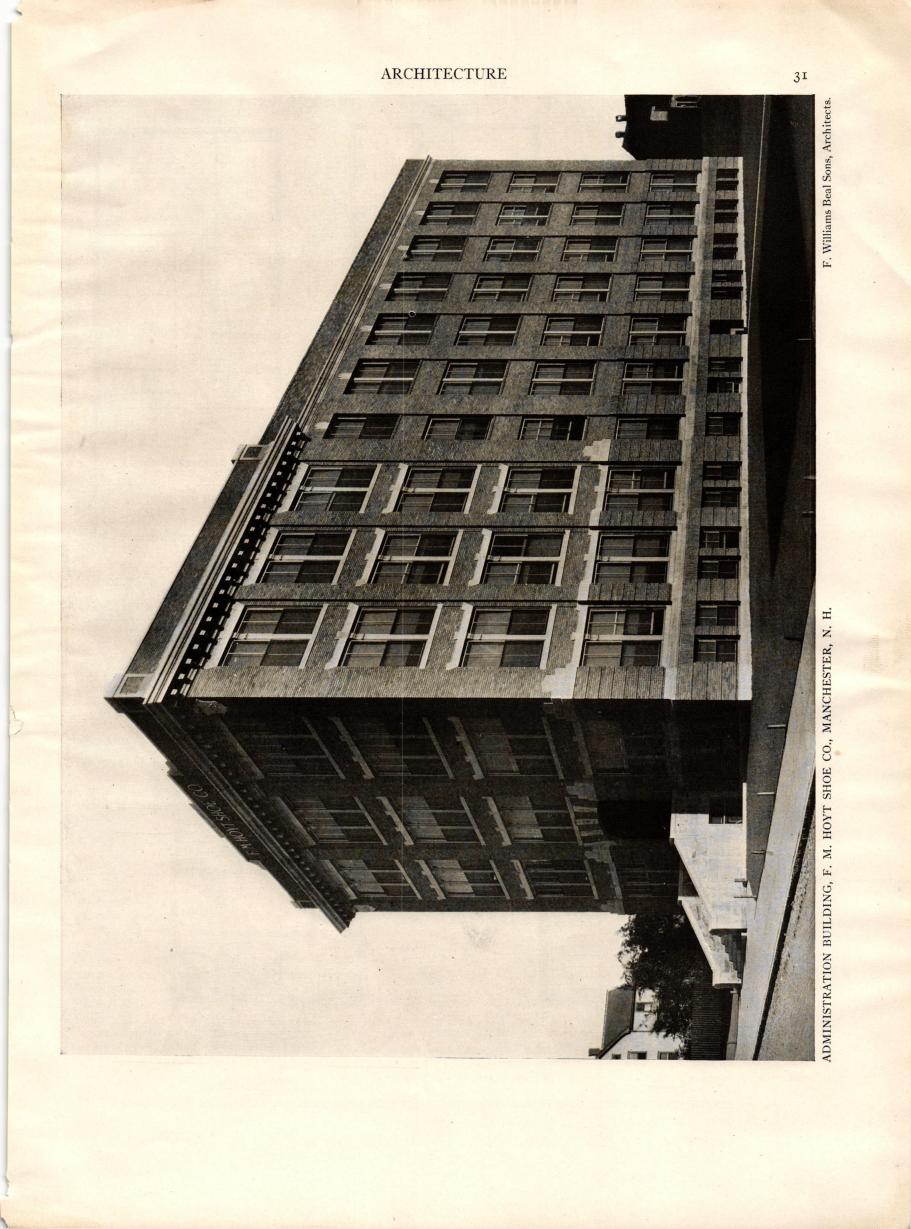
It is even more simple to determine the result if a number is raised to a certain power. If it is desired to find the cube of 56 it is only necessary to find the logarithm of 56 and multiply by 3, and then to find the corresponding number.

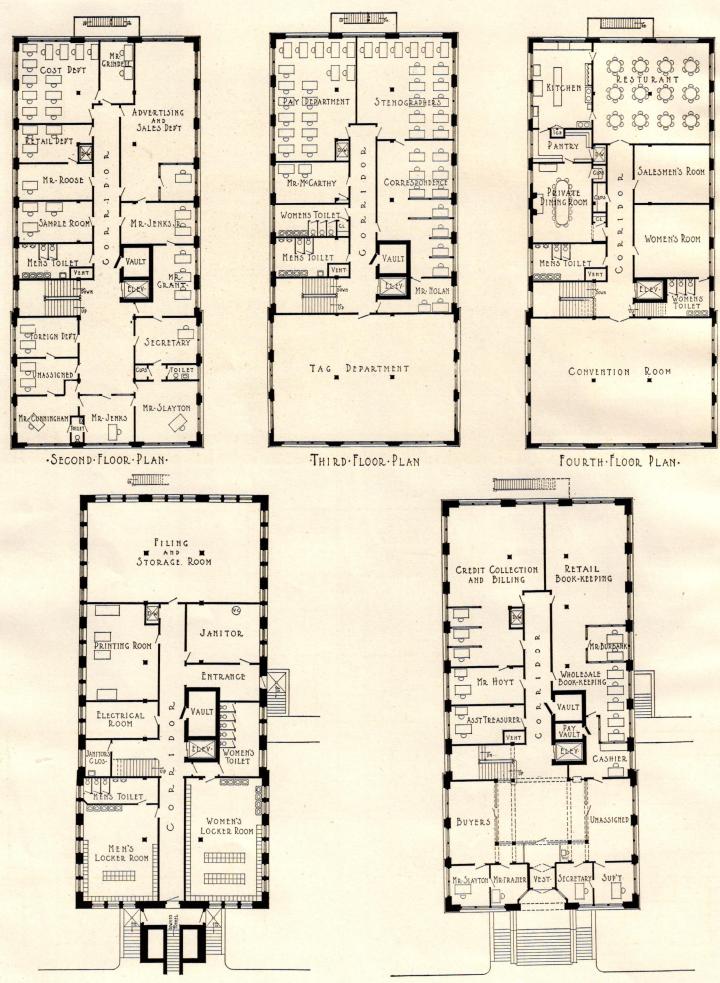
$$\log 56 = 1.74819$$
3
5.24457 = log 175,620

The actual cube of 56 is 175,616, so it will be seen that with a five-place table only the first four digits in an answer can be said to be absolutely accurate. There are six-place tables which give more accurate results.

In the case above the last two digits in the result had to be found by proportion. The nearest logarithm to the one found was 24452, which was the logarithm of a number having as its first four numbers 1756. The next logarithm was 24477, which was the one for a number having the first four digits 1757. The difference between these two logarithms is 25, and the difference between 24452 and 24457—found in the result above—is 5. In the table of proportional parts

(Continued on page 34)

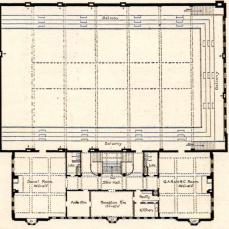




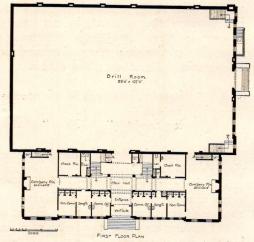
BASEMENT · PLAN · FIRST · FLOOR · PLAN · FIRST · FLOOR · PLAN · PLANS, ADMINISTRATION BUILDING, F. M. HOYT SHOE CO., MANCHESTER, N. H. F. Williams Beal Sons, Architects.

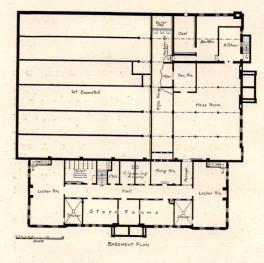
32





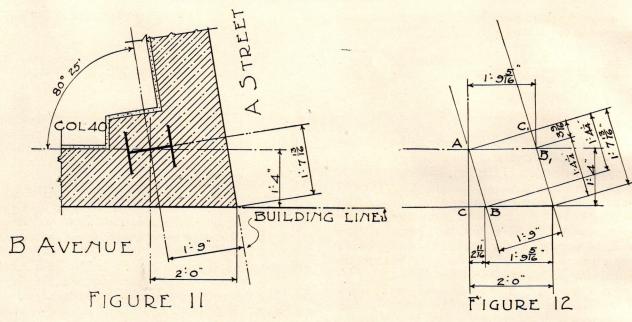
SECOND FLOOR





ARMORY, YAKIMA, WASHINGTON.

W. W. de Veaux, Architect.



(Continued from page 30)

in the table of logar thms the number 25 is given and among the numbers under this heading it was necessary to find 5. By looking to the left the corresponding number was found to be 2, which was added to the first four digits giving a result of 17562. As the characteristic was 5 there must be sixdigits in the result at the left of the decimal point to the final answer which was found to be 175,620, as given above.

The examples already given were presented for the purpose of showing how logarithms are used and how it is possible to simplify certain calculations by means of their use.

One of the problems with which an architect is often confronted is one in which it is necessary to locate column centres on irregular lots. Let it be assumed that a condition exists similar to the one shown in Fig. 11. Here two streets intersect at an angle of 80 degrees and 25 minutes. The two streets will be denoted as A Street and B Avenue. The column centre line parallel to the avenue is 1 foot 4 inches back from the building line. Column 40, which is a corner column, is set back 1 foot and 9 inches from the building line parallel to B Avenue. The problem is to determine the dimensions along the street front which will be correct for this condition.

The complement of the angle 80 degrees 25 minutes is 9 degrees 35 minutes. As will be seen this is the angle which will be used in the calculations. If an engineer were carrying through the calculations his first step would be to determine three logarithmic functions of the angle—the logarithm of the sine, the cosine, and tangent of 9 degrees 35 minutes. These are given below.

log sin	9	degrees	35	minutes	=	9.22137
log cos	9	ĩ	35	"	=	9.99390
log tan			35	"	=	9.22747

These functions wou'd be placed at the top of the engineer's sheet of calculations. Theoretically, of course, there should be a minus 10 placed after each of the logarithms given above, but ordinarily engineers are so accustomed to the use of such figures that they do not do this.

The next step is the drawing of a rough diagram showing the conditions governing the problem. Such a diagram is shown in Fig. 12, in which the angles are exaggerated in order to make the presentation of the problem more graphic.

Lines are drawn through the centre of the column at right angles to A Street and B Avenue, and, for the purpose of explanation, the points of intersection with the two building lines are denoted as C and C_1 . Where the centre lines, parallel to the streets, intersect the building lines these points of intersection are marked B and B_1 . The centre of the column is noted as A. There are two triangles-ABC and AB_1C_1 . In the first it will be necessary to find the side opposite the angle A, and in the second it will be necessary to determine the length of the hypothenuse. In the triangle ABC the side adjacent to the angle A is known. Its length is 1 foot 4 inches. As was stated in the first article of this series, the tangent of an angle is found by dividing the opposite side of a right triangle by the adjacent side. In like manner, if it is desired to find the length of the opposite side when the adjacent side is known it is only necessary to multiply the tangent by the adjacent side. This can be done in the following manner:

 $\log \tan 9 \text{ degrees } 35 \text{ minutes} = 9.22747$ $\log 1 \text{ foot } 4 \text{ inches} = 0.12494$ $\overline{9.35241}$

$$9.35241 = \log 2\frac{11}{16}$$
 inches

It will be found that the logarithm of 9.35241 does not exactly correspond with the logarithm of $2\frac{11}{16}$ inches. There is a difference of about $\frac{1}{64}$ of an inch. Of course, a fraction as small as this could never be measured in the length of a building. It is permissible to use figures given above. It might be well to note, however, that in lengthy calculations such as will be explained later differences of this type, which give a variation between theoretical dimensions and such dimensions as can be measured in feet and inches, may cause a certain amount of error, and it is sometimes necessary to keep all dimensions as stated in decimals of a foot until the final answer is found. It can be seen that, as far as determining dimensions from trigonometric functions is concerned, the metric system is far superior to the English system.

In the triangle AB_1C_1 it is necessary to find the hypothenuse, having given the side and adjacent side. This side measures 1 foot 9 inches. The cosine of an angle is determined by dividing the hypothenuse by the adjacent side, so if it is necessary to find the longer side, as in the present case, it is necessary to *divide* the shorter side by the cosine of the angle. This can be done in the following manner:

$$\log 1 \text{ foot 9 inches} = 0.24304 - \log \cos 9 \text{ degrees 35 minutes} = 9.99390 0.24914 - 0.24914 = \log 1 \text{ foot 9}_{16}^{-5} \text{ inches}$$

Here again it is difficult to find a figure in feet and inches which will exactly correspond with the logarithm.

It is only necessary to add the two dimensions already found to determine the dimensions from the intersection of the two building lines to the centre of the column. This distance is found to be 2 feet, as shown in the figures.

A similar method is used to find the dimension from the corner of the building to the centre line of the column measured in a direction parallel to B Avenue. The first dimension which must be found is the length of the side C_1B_1 which is opposite the angle \mathcal{A} . This distance can be found by multiplying the tangent of 9 degrees 35 minutes by 1 foot 9 inches.

 $\begin{array}{l} \log \ \text{tan 9 degrees 35 minutes} \\ = 9.22747 \\ \log 1 \ \text{foot 9 inches} \\ \end{array} = \begin{array}{l} 0.24304 \\ \hline 9.47051 \end{array}$

$$9.47051 = \log 3_{16}^{9}$$
 inches

The second dimension to be determined is the length of the hypothenuse of the triangle ACB—or AB. This dimen-

sion can be found by dividing the length of the side AC by the cosine of the angle.

$$\begin{array}{rl} \log 1 \text{ foot 4 inches} &= 0.12494\\ \log \cos 9 \text{ degrees 35 minutes} &= 9.99390\\ \hline 0.13104 &= \log 1 \text{ foot 4}\frac{1}{4} \text{ inches} \end{array}$$

The only remaining calculation is the addition of the two lengths already found which will give a total distance of 1 foot $7\frac{13}{16}$ inches.

The advantage of using logarithms in order to determine lengths when it is a matter of multiplying or dividing by trigonometric functions is plainly shown in the example just given. It would have been possible to use the natural functions and to have carried out the calculations in accordance with the rules of simple arithmetic, but it is much more simple to add or subtract logarithms, and, if it is required that the figures be checked, it takes less time to carry through all the calculations a second time by means of logarithms than to do the necessary arithmetic once.

If a table is used similar to Smoley's it will be found that there is very little difficulty about determining the proper characteristic as for the angles given above and the distances the characteristics are given. The only trouble with such a table is that the table of natural functions is only a four-place table, and the table of logarithms is only a five-place table. For calculations more complicated than the ones given above this is sometimes a disadvantage.

Announcements

Jos. Van G. Hoffecker, architect, registered New Jersey, wishes to announce that he is now located at 803 Eighth Street (and Atlantic Avenue), Ocean City, N. J., for the general practice of architecture, and will be glad to receive catalogues.

Carl C. Ade, architect, announces the removal of his offices from 344 East Avenue to 104 East Avenue, opposite "The Sagamore," Rochester, N. Y.

Leigh French, Jr., architect, announces that he has moved his office from 597 Fifth Avenue to 17 East 49th Street, New York City.

H. P. Knowles, architect, announces the removal of his offices to 9 East 46th Street, New York.

Frederick Meisler, architect, has moved to new offices and showroom on Bergen Pike, Little Ferry, N. J., and wishes to receive manufacturers' samples and catalogues.

James R. and Edward J. Law, architects, announce the removal of their offices to the First Central Building, Madison, Wis.

The Standard Turbine Corporation of Wellsville, N. Y., announces the appointment of Mr. E. E. Maher as district sales manager in Chicago, with offices at 2237 Insurance Exchange Building. The Chicago office will handle business for the greater part of Indiana, Illinois, and Iowa. Mr. Maher is well known to the trade and a member of the Western Society of Engineers and American Society of Mechanical Engineers. The Standard Turbine Corporation is a company incorporated under the State laws of New York, and is manufacturing steam turbines exclusively. Mr. J. Y. Dahlstrand, formerly associated in engineering capacities with Allis-Chalmers Manufacturing Company, Westinghouse Electric and Manufacturing Company, and Kerr Turbine Company, is chief engineer and manager of the corporation.

Jenkins Bros., 80 White Street, New York, announce the appointment of Mr. William Le Compte as sales manager in charge of their New York territory. Mr. Le Compte has been a member of the sales organization of this company for a quarter of a century, and his wide experience and knowledge of the engineering, contracting, and jobbing field will merit your confidence and co-operation.

The firm of Capelle & Troutman, architects, has dissolved partnership, and Mr. Charles L. Troutman has taken over the interest of this firm and will continue business as formerly in the suite of offices 409 and 410 American Trust Building, Evansville, Ind.

Mr. Wilbur S. Sample, formerly manager of the Montreal, Canada, office of the George A. Fuller Co., Ltd., has recently left for Dairen, Manchuria (North China), to assume the duties of district manager of the George A. Fuller Co. of the Orient, Ltd., for that and other Chinese territory. Mr. Sample will direct the construction of a general hospital for the South Manchurian Railway Company at Dairen, together with additional construction work which is to follow both in that section and in Shanghai, China. Mr. William Oehrle is New York manager of the George A. Fuller Co. of the Orient, Ltd.

I. V. Van Duzer, architect, announces that he has removed from Cazenovia, N. Y., to 202 O. C. S. Bank Building, Syracuse, N. Y.

All Is Not Brass That Glitters

GEORGE C. ST. JOHN, vice-president of the U. T. Hungerford Brass and Copper Company, has the following to say on "Substitution" in the *Bulletin* of the Copper and Brass Research Association:

"Substitution the fraud of the day"—an expression coined years ago—is seldom heard now, probably because pure-food laws and educational campaigns have somewhat minimized this evil.

There is still, however, imperative need of it, or some equally forceful slogan, in order to focus public attention on the fact that many articles in every-day use (such as locks, bolts, door-knobs, padlocks, screw-eyes, letter-boxes, etc.) sold as solid brass all too frequently prove to be merely iron or steel, plated or dipped with brass. This is an evil that has assumed large proportions, and drastic corrective measures are urgently needed.

In the absence of legislation which should and doubtless will be enacted to stamp out this practice as just as great a fraud as offering counterfeit sterling silver, the remedy lies in the force of education and public opinion.

It is but fair to say that the average hardware store has absolutely no thought of deception, but is probably the victim of a custom born of war-time necessity, when copper and its alloys were conserved by government control and which forced the use of iron and steel in a field which they were not intended to cover permanently.

Undoubtedly, if the subject is properly presented, dealers will be quick to lend their influence in favor of straightforward dealing and will frankly tell the buyer exactly what he is getting. Salesmen who have not been properly instructed are partly responsible for an incorrect impression in the purchaser's mind, probably because they do not themselves understand the difference between solid brass and iron or steel which is plated or dipped to resemble brass or copper.

Buyers, if they want solid brass, should specifically demand it, and make it clear that unless brass is supplied, the article will be returned and a claim made for credit, even though months may elapse before deterioration is apparent. They should also insist that invoices or cash sale slips specify exactly what is being sold—that is, solid brass, brass plated, or dipped brass, otherwise it would be difficult to obtain a refund or other redress.

Each metal has its own field. Iron and steel are the very bulwarks of engineering and building development, and no non-ferrous proponent would attempt to substitute brass and copper for bridge girders or rails! Conversely, an iron and steel man would not argue against the use of copper and brass for the purposes mentioned in this article.

Copper and brass are now being sold at prices which are about those of a twenty-year pre-war average. There is accordingly no valid reason for substitution, as the difference between the cost of producing the average household hardware article, such as door-knobs, letter-boxes, bolts and chains, etc., is represented only by the value of the metal itself, manufacturing and installation costs being substantially the same.

The Government's Conferences on Housing Have Proved of Great Value

From the Forthcoming Annual Report of the Secretary of Commerce for the Fiscal Year 1921-22

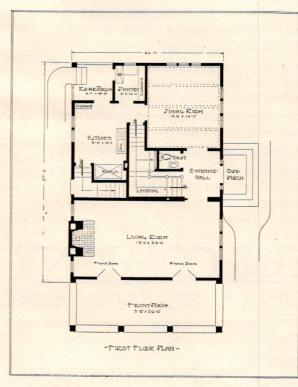
THE shortage of some 1,000,000 dwellings as a result of suspended construction during the war led to wide-spread demand for federal legislation and assistance. Under an appropriation from Congress an investigation of the situation and possible remedies was made by this department. During the process of the inquiry numerous conferences were held with the various branches of the building industry and with representatives of municipal and civic bodies. It appeared that the retardation was due to (a) the acute credit situation; (b) high prices of material and labor; (c) unsavory business ethics in certain localities; (d) wasteful practices in their contribution to costs.

It was concluded that the first two causes would in the main cure themselves by the general fall in prices then in progress. The third could only be cured by vigorous action of the federal and state authorities, a large measure of which has been accomplished. It was concluded that emergency legislation or government finance was not desirable, and that except for a vigorous support of the purely cooperative service indicated below, the government should keep out of the housing business.

It was considered on all sides that real service could be accomplished in a general aid by the department to the creation of, and assistance to, the already existing voluntary bodies permanently engaged in developing home ownership. A small division was created in the department, the purpose of which was to stimulate such local activity by acting as a clearing-house of ideas and information. One result has been the creation of voluntary bureaus in many municipalities for advancement of home ownership and where advice on finance and aid by furnishing designs and specifications of small houses could be obtained at a nominal charge.

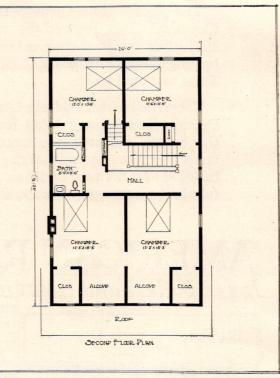
Systematic measures of co-operation were set in motion in trade and civic bodies for the eliminating of waste in various directions, and thus a reduction of construction costs. Typical among the latter activities was the appointment of a committee from representatives of the important professional and civic associations to formulate a standard building code, as it was the general consensus of opinion that the varying regulations in force in hundreds of different municipalities, founded as they were without scientific study, had imposed an unnecessary cost upon building of from 10 to 20 per cent. Before the drafting of the recommended code for small houses, a large amount of experimental work was carried on in the Bureau of Standards, and suggestions obtained from over 100 different municipalities. A tentative draft was then submitted to some 975 engineers, architects, municipal officials, and representatives of the building industry, whose useful criticisms were incorporated in the final draft. The code is already being adopted in some municipalities. Work in elimination of waste, in advancing voluntary standardization and inspection of qualities and grades, in elimination of unnecessary variation of dimensions of building material, and in the simplification of specifications have been undertaken by experts from the department at the request of and acting in co-operation with build-ing material, contractors' and consumers' associations, with gratifying results.





14

HOUSE, J. F. DE COUDRES, SYRACUSE, N. Y.



H. D. Phœnix, Architect.

XXXV



The Glenville Hospital, Cleveland, O., where again has been proved that a low pressure, sectional boiler can furnish better warmth for less. This T-79-10 IDEAL Water Tube Boiler is connected with 8300 feet of radiation. Architect, Harlen E. Shimmin; Heating Engineers, Phegley & Szekely; Heating Contractors, Becker Heating & Ventilating Co.

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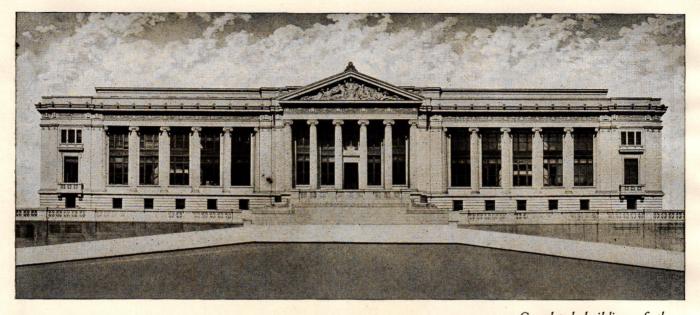
There are so many interesting points of construction about the IDEAL 79" Water Tube Boiler that a booklet is necessary to present them fully. Your name on your letterhead sent to either address below will bring it.



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xxxvii





COLOR and PRECEDENT

 G^{REEK} architecture in its finest period drew lavishly upon the resources of color for the enhancement of formal style.

The Metropolitan Life Insurance Company Building illustrates an effective adaptation of this chromatic precedent. Its pure white Terra Cotta facade is enriched by the brilliant polychrome frieze in which detail is developed in white, green and yellow glazes upon a luminous blue field.

Literature on color and the principles of its application will be sent free to recognized architects, draftsmen and professional schools. Address: **National Terra Cotta Society**, 19 West 44th Street, New York City. Completed building of the Metropolitan Life Insurance Company, San Francisco, Cal. J. R. Miller, Architect. Executed in white matt glazed Terra Cotta with polychrome frieze. (The original building designed by N. Le Brun & Sons is incorporated as one wing of the complete structure shown.)

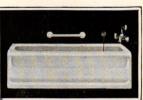
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If there were only one page in the new Kohler Catalog F and that page described and listed the Kohler "Viceroy" Built-in Bath in its various patterns and sizes, Catalog F would be an indispensable part of your working library.



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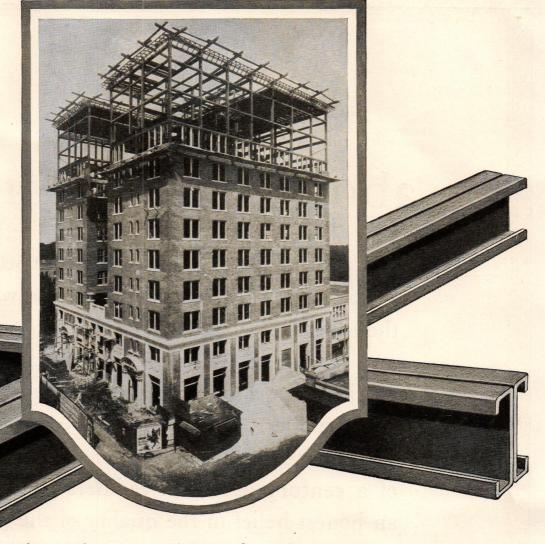
To Architects:

The continual employment of newer and more efficient methods in the working of Indiana Limestone has resulted in the rapid advancement of this industry. Believing that you will find interest in these methods, we shall show in subsequent issues of this publication the progress that has been made in the past few years in the production of our stone for building purposes, which enables you today to specify it with the assurance of economy and *permanent* satisfaction to your clients.

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No architect's files are complete without a copy of the standardized steel joist safe loading tables. Shall we mail you a copy?

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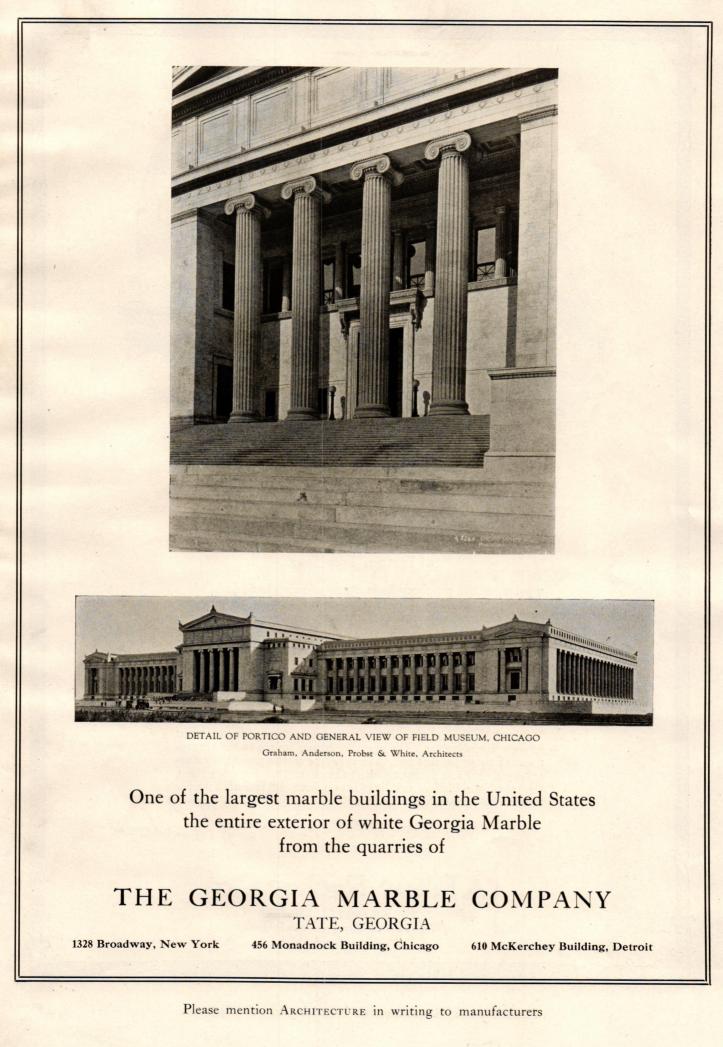
You are not often called upon to specify a pipe organ, but when you are, you want the fullest information obtainable.

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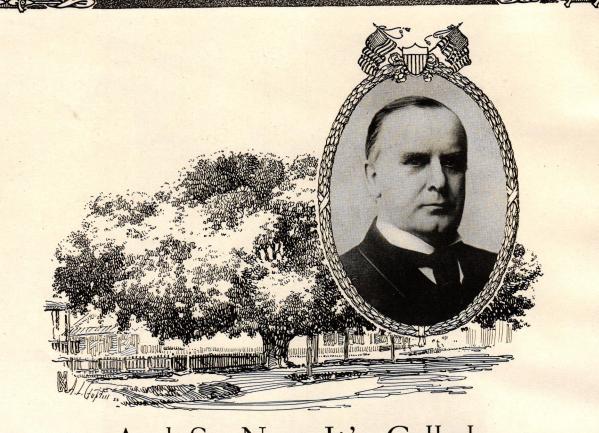
That our experience of three quarters of a century as organ builders gives us an honest belief in the quality of the pipe organs we make; and

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THE ESTEY ORGAN COMPANY, Brattleboro, Vermont



xliii



And So Now It's Called The McKinley Oak

Being Number 34 of Famous Tree Tales

P^{OLITICS} and prophecy have a way of going hand in hand. A prophecy frequently makes the prophesied happen—for such is the power of implanted thought.

To the casual, Mark Hanna simply typified the political leader, the man whom Davenport, the famed cartoonist, so amusingly pictured in dollar-mark clothes.

One of his qualifications, however, as such a leader, was his power to judge men and unerringly select the right ones.

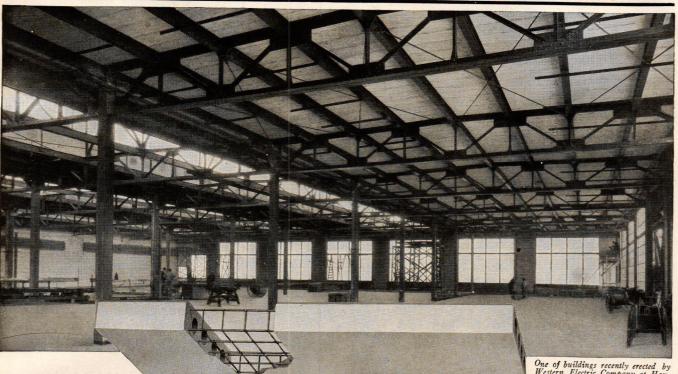
In his winter home, at Tompkinsville, Georgia, he entertained William McKinley when he was a Congressman. It was then he introduced him as "The next President," much to the amusement of those present and the qualifying of the press the country over. What a fitting tribute to the martyred President that the wonderful old live oak, just across from the Hanna home, is now called "The McKinley Oak!"

AN APOLOGY Through an oversight, in our last Tree Talk, about the restoration of Fort Ticonderoga, we neglected to give credit to Alfred C. Bossom, the architect.

R. Rachers

Julius Rochrs Co <u>At The Sign of The Tree</u> Where Choice Nursery Stock Is Grown Rutherford N.J.

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One of buildings recently erected by Western Electric Company at Haw-thorne, Ill., 179,000 sq. ft. of Long Span Hollow Type Pyrobar Roof Tile will be used in their new building program

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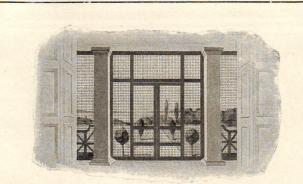
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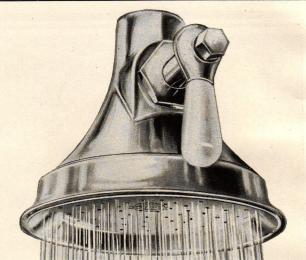
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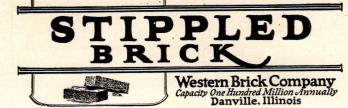


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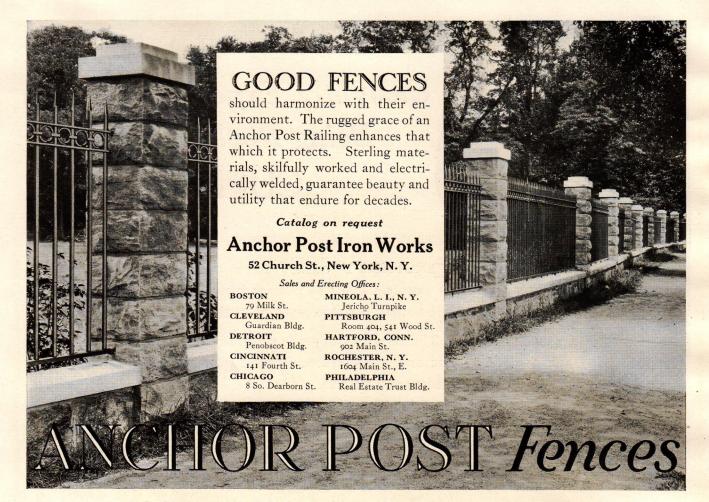
The new Jackson Heights apartments near Long Island City typify the way in which Copper is being used, not only to obtain permanent protection from the weather, but also for its pleasing appearance.

Copper lasts as long as the building itself. Substitutes soon rot and hasten depreciation of property values.

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The box-like blocks on the Jackson Heights roofs are Copper and will have a Copper balustrade joining them as shown in the small sketch. 16 to 24 ounce Copper is being used.





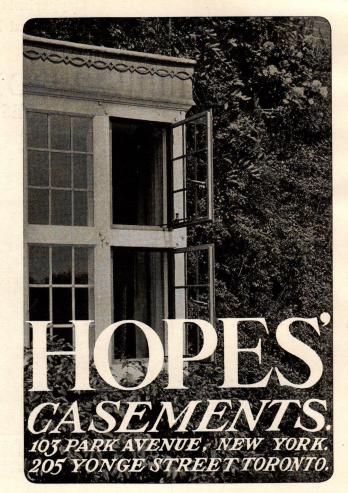
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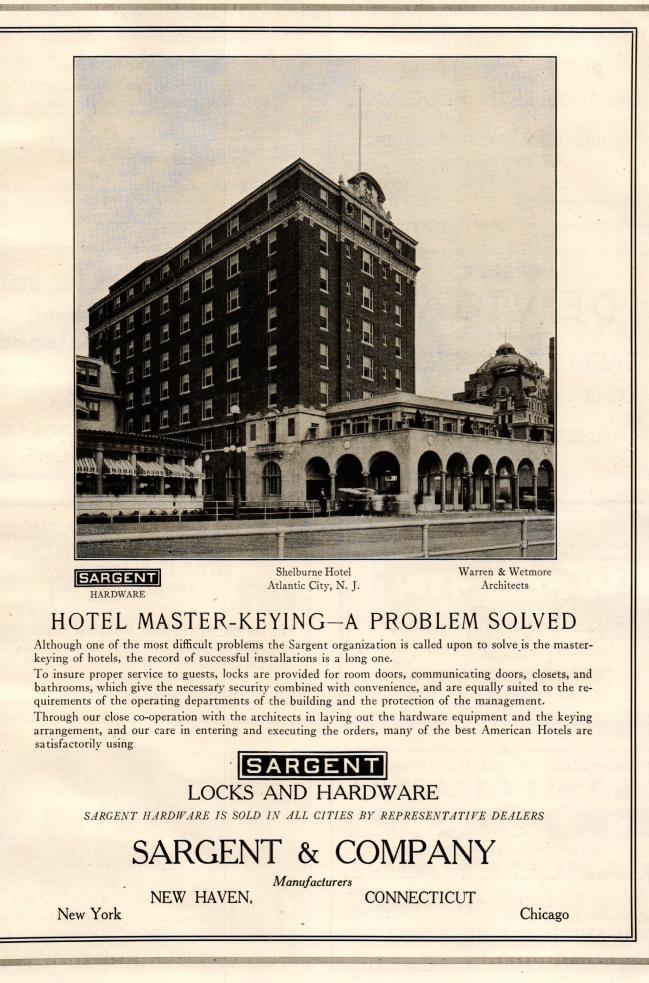
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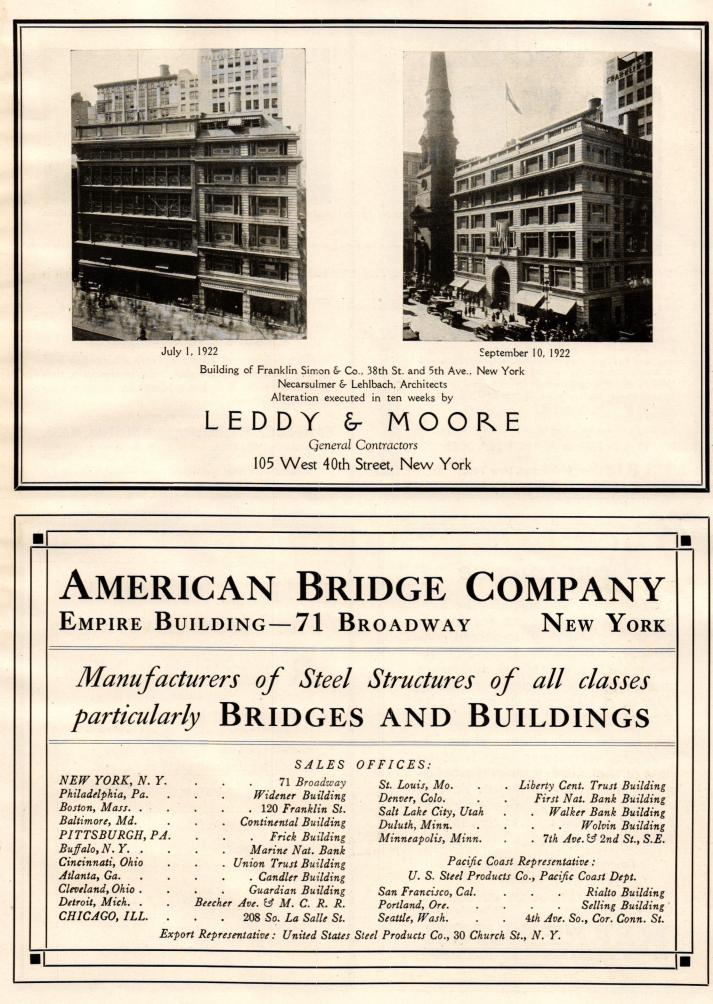
VOLUME II, published last spring, gives a second series of thirty-six houses by the ablest architects of the day. Like Volume I, it is written in a clear, lively fashion and treats the whole subject of house building in a large spirit. The opening chapter is a lucid discus-sion of the relationship between an architect and his client.

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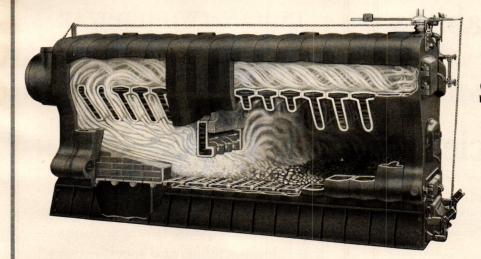


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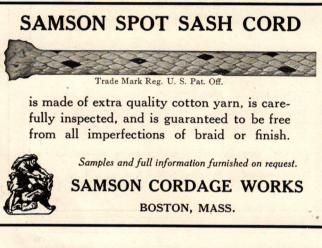
OVER MANTEL PAINTINGS AND EASEL PICTURES

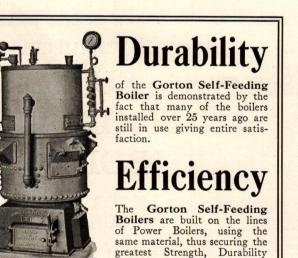
SCULPTURE

FOR INDOORS AND OUT-OF-DOORS

CORRESPONDENCE WITH ARCHITECTS INVITED

CAROLYN GRAVES CONSULTING DECORATOR JOHN E. D. TRASK, INC. 52 EAST 53RD STREET NEW YORK CITY





and highest Efficiency.

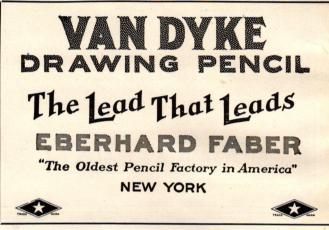
The Gorton Self-Feeding Boiler gives a steady heat with attention only morning and night—its construction insures complete combustion of the gases and prevents the waste of coal.

See pages 2, 3, 4, 6, 8, 10, 11 and 13 of Catalog No. 88.

Our New No. 88 Catalog is ready—will be sent upon request

Gorton & Lidgerwood Co. 96 Liberty St., New York All Gorton Self-Feeding Boilers Built to the "A. S. M. E. Standard"





INDIANA WORLD WAR MEMORIAL

Notice to Architects

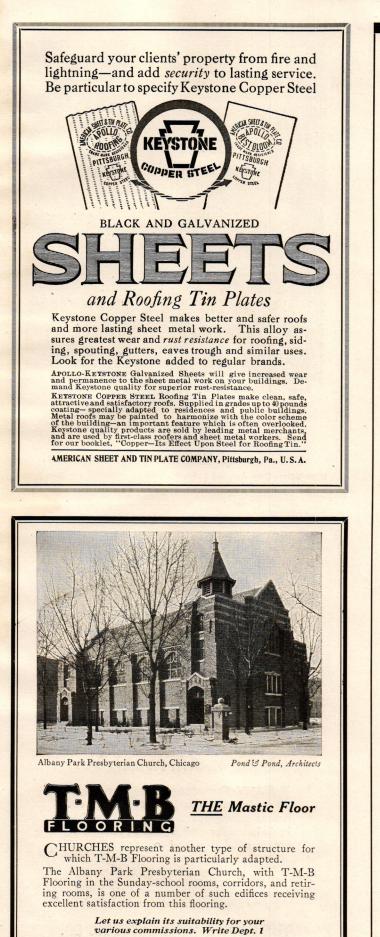
Not later than March 15, 1923, the Board of Trustees of the Indiana World War Memorial will receive at its offices in the Chalfant, N. W. Corner of Pennsylvania and Michigan Streets, in the city of Indianapolis, Indiana, competitive "designs, plans and specifications" for a World War Memorial to be erected in the city of Indianapolis at an approximate cost of \$2,000,000.00.

Full information in regard to the competition may be had by addressing

> PAUL COMSTOCK, Secretary THE CHALFANT, Indianapolis, Indiana

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THOS. MOULDING BRICK CO.

133 W. Washington Street

The Reason Why for For Street Tolker Street Tolkers

have, by the most practical means within their power-(that of repeated specification)—given the seal of their approval to STEEL as the logical material for toilet partitions and to HYGEA STEEL PARTI-TIONS as leaders in their line. Made of 16 to 18 gauge steel, remarkably simple in construction and neat in appearance, HYGEA Partitions unite great structural strength and rigidity with low first and final cost. The formation and joining of stile, moulding, hinges, etc., are such that no cracks or crevices are left for the lodgment of dust and dirt.

We are pleased to supply complete information and layouts, also to send samples upon request.

Represented in Sweet's Catalogue, pages 1402 and 1403.

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The Perfect Bathroom

B^{UILT-IN} china bathroom accessories not only add greatly to the convenience of a modern bathroom but provide a distinctive note of refinement.

Fairfacts Fixtures are now used in many of the finest residences, hospitals, apartment buildings and hotels in America.

Write for descriptive booklet.

Architects' Service Department

WE ARE glad to cooperate with architects in furnishing construction details as well as in suggesting the most convenient arrangement for installing built-in bathroom accessories.

Fairfacts Fixtures are sold through the tile contractors and installed by them, and not by the plumbing trade.

We are originators and patentees of this type of bathroom accessories and have the largest facilities.

THE FAIRFACTS COMPANY, Inc.

Manufacturers

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MANY Prometheus Plate Warmers, installed in a majority of the finer residences throughout the country, have been in daily use for over eighteen years. They are clean, odorless, and convenient.

> MADE TO ORDER TO MEET ANY REQUIREMENTS

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Our Stock is rich in Fountain Designs and special features for Fountain use.

BATCHELDER - WILSON COMPANY 2633 Artesian Street, Los Angeles, California

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The Triumph Line of Standardized Panel Boards



From the User's Viewpoint

To successfully design a series of panel boards from the user's viewpoint of what a panel board should be, including in them the architect's requirements of satisfactory service and the contractor's need of low cost installation, is an achievement possible only to a manufacturer who, by experience, knows all angles of panel board construction.

Type T-P Plug fused; tumbler switch controlled branches; safety, with one door opening.

Type P Plug fused branches. An extremely narrow panel board safety type.

Type R

Safety type Residence panel board, to meet two and three wire requirements, with or without main switch. The @ Triumph Line of Safety Type Panel Boards is the present day perfection for this form of equipment. Obtaining safety by the simplest construction, and highly standardized even to the individual units, they contain all of the thought and study of Frank Adam Electric Company who long ago achieved leadership in the panel board field.

As the panel board is the most important unit of any wiring installation, and the only one

that is in view when the job is finished, special consideration should be given it.

The three bulletins illustrated above explain in detail the present types of Triumph Panel Boards. They will be gladly sent upon request.

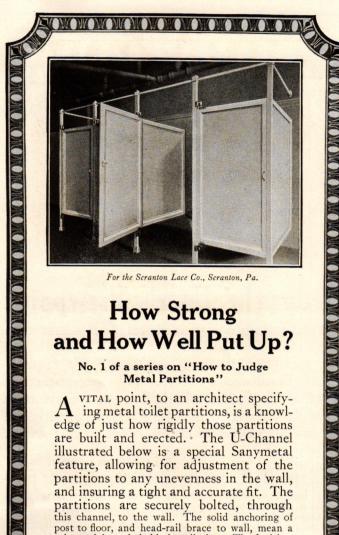
ELECTRIC COMPANY

Branch Offices: Detroit, Dallas, Minneapolis, Kansas City, Cincinnati, Cleveland, New Orleans, Chicago, San Francisco, Los Angeles, Seattle. Other Products: Major System of Theater Lighting Control; knife switches; safety switches; hanger outlets; reversiblecover floor boxes; A. C. and D. C. Distribution Switchboards.

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ARCHITECTURE

MONOMONO



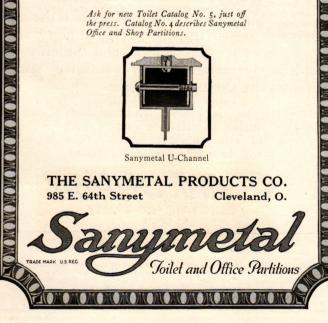
For the Scranton Lace Co., Scranton, Pa.

How Strong and How Well Put Up?

No. 1 of a series on "How to Judge Metal Partitions"

VITAL point, to an architect specify-A ing metal toilet partitions, is a knowl-edge of just how rigidly those partitions are built and erected. The U-Channel feature, allowing for adjustment of the partitions to any unevenness in the wall, and insuring a tight and accurate fit. The partitions are securely bolted, through this channel, to the wall. The solid anchoring of post to floor, and head-rail brace to wall, mean a substantial, unshakable installation. The faultless the perfect mitres, thorough electric welding, and absence of cracks and crevices, together with the uniform heavy gauge metal used, are additional reasons for the strength and ruggedness of all Sany-metal work. metal work.

Other quality features are: Sanymetal Gravity Roller Hinges, sanitary water-shedding base shoe, slant-lip partition mold, improved door design with new molded stile, exclusive use of Armco Iron, electro-zinc rust-proofing of all hardware, fine baked enamel finish, unit sections adaptable to any arrangement.





PROTECTION

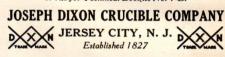
Surfaces to be concealed in erection need very careful painting before assembly-an original painting that will protect the steel members as long as the building lasts.

DIXON'S SILICA-GRAPHITE PAINT

because of its better protective properties meets this requirement perfectly.

It is a natural combination of flake graphite and silica, as mined only by ourselves. It will not peel, crack or flake off because of the natural elasticity of the graphite, while the silica is an anchor that withstands wear.

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CINCINNATI, OHIO. U.S.A The World's Greatest Iron Fence Builders'

Crown the job with **BAYONNE ROOF**



One contractor writes us that, "Bayonne Roof and Deck Cloth will last at least 4° years, and we think longer." This is

but one of the many reports we have received substantiating our statements on the durability of BOYLE'S BAYONNE ROOF AND DECK CLOTH.

Durability is above all the necessary quality for a roofing. Bayonne Cloth is wearproof and weather-proof. Once on the roof and floor of the piazza, sleeping-porch, etc., it becomes almost a permanent and indestructible part of the house.

Write to the Manufacturers for Sample Book "L"

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Fresh heated air from the

Your Ideal of **Ventilation Realized**

Your ideal of perfect ventilation is all the fresh air you want, when you want it, where you want it.

Your ideal is realized perfectly in the Univent —because in principle it is as simple and more positive than opening a window—but without the cold and dangerous draft.

The Univent system is designed on a unit basis. Each separate room is heated and ventilated by its own individual Univent.

There are no uncleanable ducts or flues. Each Univent draws fresh air directly from outdoors, heats it and thoroughly diffuses it throughout the room. Wind or weather makes no difference in the operation of the noiseless Univent sys-tem. It is positive.

Tests have proven that good ventilation in schools increases mental alertness of pupils and teachers 331/3% and decreases sick leave 50%.

Univent installation cuts down building costs and saves space because no ducts or flues are necessary. For the same reason Univent air is purer than air traveling through long, dust-laden ducts. The Univent is designed for schools and all buildings where mechanical ventilation is necessary.

Having determined upon a Univent System the Architect can prepare his preliminary sketches without further thought to heating and venti-lating, knowing that he will not have to tear down his building to install it, or be handicapped in meeting his estimate cost by addition of space or expression construction or expensive construction.

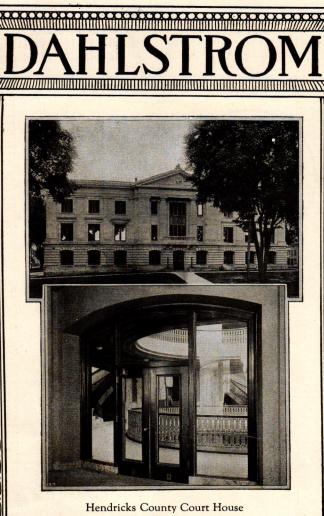
Send for a copy of our 72-page Architects' and Engi-neers' edition "Univent Ventilation" or, better still if you have a ventilation problem, send us sketches or blue prints and let us make specific recommenda-tions and estimate of cost. No obligations.

THE HERMAN NELSON CORPORATION Dept. C. Moline. Illinois



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ARCHITECTURE



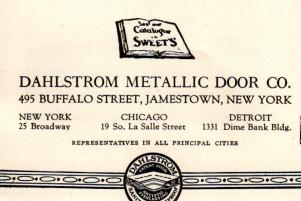
Danville, Indiana Clarence Martindale, Architect

ATTRACTIVE AND FIRESAFE

Dahlstrom Hollow Metal Doors and Trim accentuate the pleasing appearance of the building.

They are not only attractive but are absolutely firesafe as there is nothing in their construction that will burn.

In the otherwise fireproof building they will confine a fire to the room where it originates.



A lean-to, conservatory or small greenhouse will add to the attractiveness of the town or country home.

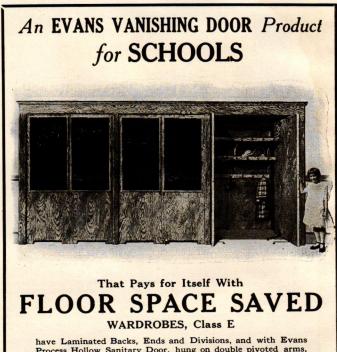
King greenhouses

are of the design, size and construction suitable for town or country use. Our engineering department will be pleased to assist you with your plans and a catalogue showing various greenhouse arrangements will be sent at your request. If you prefer, our representative will call.

Pages 2164-2167 of the seventeenth edition of Sweet's Architectural Catalogue give the necessary data for a preliminary plan.

When you think of good greenhouses, think of KING

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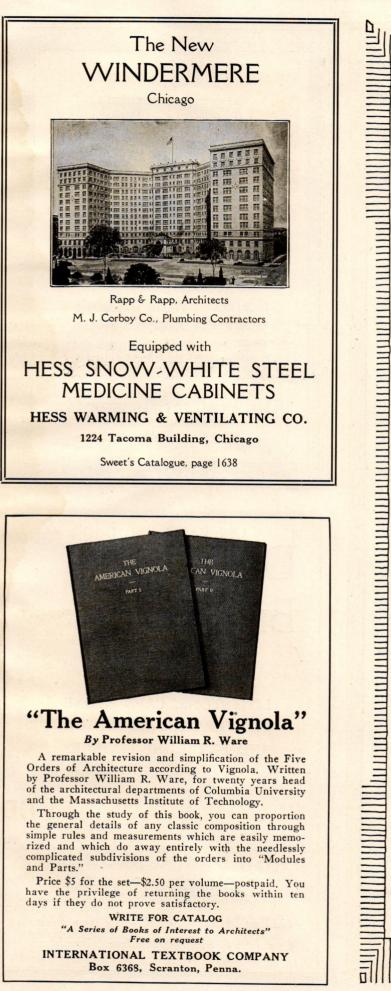


have Laminated Backs, Ends and Divisions, and with Evans Process Hollow Sanitary Door, hung on double pivoted arms, without guides, tracks or rollers, swing easily and silently. They cannot stick or bind. Made with or without Blackboards. Hardware can also be purchased separately. More than a Million hang their Wraps in Evans Vanishing Door Wardrobes Trade Mark VANISHING DOOR U. S. Reg. Catalog "PICTURES THAT TALK" Sent on Request W. L. EVANS

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700 Block C



Another Hockenbury Success! The New Hotel Santa Barbara. Cal. Marion & Paupelt, Architects Pasadena, Calif.

Our Co-operation With Architects

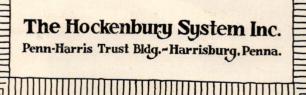
Here's a typical example of our co-operation with the architect who has a client with a financial problem.

Santa Barbara, Calif., needed a new hotel. They had their architect but they hadn't the money.

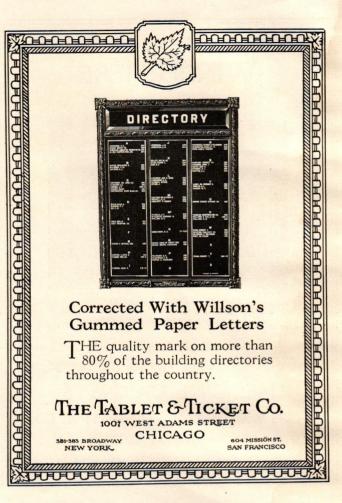
This corporation was consulted, a survey of the hotel situation was made and after the preliminary work a sales program was inaugurated. As a result, the architect can now proceed with his plans.

Within the past 20 months 24 similar community hotel projects have been completed, the story of which is told in "Turning Prospects Into Contracts," written especially for architects.

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THE well-known VENUS pencil with the watermark finish—there is an individuality, a luxury, a satisfying quality, about its smooth, firm,

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gritless leads, that makes the architect always say: "Here, indeed, is Pencil Perfection."

17 Black Degrees 3 Copying

For bold, heavy lines 6B-5B-4B-3B For writing, sketching 2B-B-HB-F-H

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Plain Ends, per doz. \$1.00 Rubber Ends, per doz. 1.20

> At Stationers and Stores throughout the World

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ARCHITECTS SHOULD HAVE IN THEIR FILES OUR COMPLETE CATALOGUE, ILLUSTRATING OVER 200 ATTRACTIVE DESIGNS OF LAMP STANDARDS, LAN-TERNS AND BRACKETS, SUITABLE FOR LARGE PUBLIC BUILDINGS, SCHOOLS, HOTELS, APARTMENT HOUSES, BANKS AND LARGE RESIDENCES

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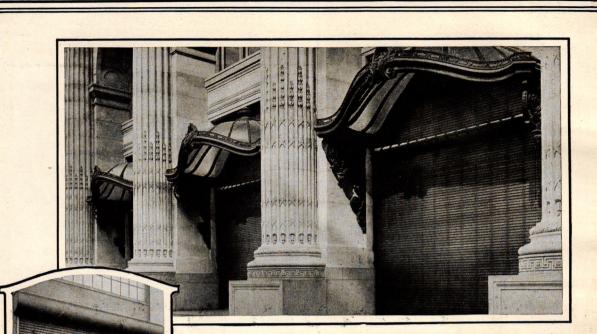
THE CUTLER, MAIL CHUTE

Should be specified by name. Use Model F Standard Equipment for best value. Estimates can always be had in advance when desired.

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Wilson Motor operated bronze rolling doors on the Altman Building, Fifth Avenue, New York City. Trowbridge & Livingston, Architects.

Wilson hand-operated steel door in Pusey & Jones Plant, Wilmington, Delaware. Note application of hinged wicket door.

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Other Wilson Products:

Section Fold and Rolling Partitions.
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Doors.

Wardrobes

You Too Can Capitalize On Our Half Century Experience With Rolling Steel and Wood Doors

PRACTICALLY every one of the 39,000 contracts that we have executed in our 47 years of experience has been different.

Practically every part of every contract has had to be made to order. Made in our self-contained shops. Made from the experience of a lifetime of specialization. Ours is a hand-tailored business. In it experience counts

To-day there is hardly a problem that you can bring to us that we have not already solved successfully for some one else.

Nearly every conceivable condition has been met and overcome.

To you we offer this 47 years of experience. Either through our representatives in the principal cities or direct from this office.

Our new rolling steel door catalog that has been in course of preparation for the past six months is now ready. May we send you a copy?

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Offices in Principal Cities

Established 1876 WILSON ROLLING STEEL DOORS PATENTED THE JG.WILSON CORPORATION NEW YORK GTY

ALL ANT AND

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Granite - The Noblest of Building Stone The tallest building in New England.

The Cost of Granite And Its Vital Relation To Other Factors

the stand of the

Haven't you found that the real worth of a building material is usually proportionate to its money-worth?

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Granite, for instance, is the most expensive structural stone you can buy, yet in modern building practice its many advantages so far outweigh its cost that it is really an economical stone to use.

Besides its everlasting lastingness and its imperviousness to moisture and stain, there is its unequalled opportunity for architectural treatments and its abiding dignity that reflects its intrinsic worth.

Granite is the noblest of building stone. No other material is so expressive of its inherent qualities as Granite.

Yet, when details are being drawn a working knowledge of the stone will often result in material saving.

It is for this purpose that we are here to cooperate with you.

We would be pleased to hear from you at any time or to send you a copy of our booklet "Architectural Granite." It contains information that you might care to file.



Stucco Is Permanent

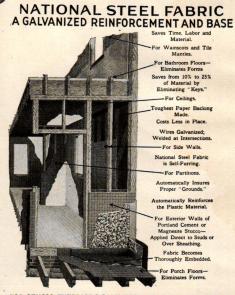
Reinforced

THE galvanized [non-rusting] welded National Steel Fabric takes up strains and stresses and prevents cracking, besides holding the plastic material to the wall. Stucco so applied is permanent, for it has the added strength of welded steel wires which develop 60,000 lbs. tensile strength per square inch of steel.

The time, labor and material saved through using National Steel Fabric reinforcement make it not only the best, but also the most economical method of applying stucco.

Those who build for permanency will insist on the use of National Steel Fabric aside from its reinforcing value, it is cheaper, in place. Carried in stock by local dealers.

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FOR STUCCO EXTERIORS, SOLID PARTITIONS, WALLS, CEILINGS AND FOR PORCH AND BATHROOM FLOOR CONSTRUCTION

> Note: The manufacturers recommend respectively minimum thickness (over the face of the lath) of $\frac{1}{2}$ " of magnesite and $\frac{7}{8}$ " of cement stucco—a permanent job cannot be assured if less is used.



Westinghouse Products for the Lumber Mill

Turbines Condensers Switchboards **Electric Locomotives** Line Material All Accessory Equip-ment

Motors and Control of all sizes and types for all mill operations

Pacific LumberCo. InstallsWestinghouse Safety Switches

The Pacific Lumber Company is one of the largest loggers and dis-tributors of Redwood lumber in the West. Every modern mechanical device is employed here in logging operations, sawmills, planing mills, storage yards and shipping plants. It is a compliment for such a company to call on Westinghouse to furnish the "safety-first" features in their installation. The Auto-Lock Safety Panels shown above are installed in "Mill A" at Scotia, California, controlling approximately one hundred alternat-ing current squirrel cage induction motors in capacities of from three to one hundred horsepower. We manufacture everything electrical for the lumber industry. In-vestigate the advantages of Westinghouse equipment. It has estab-lished an enviable operating record for itself.

Westinghouse Electric & Manufacturing Co. East Pittsburgh, Pa.

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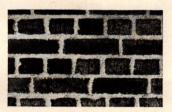


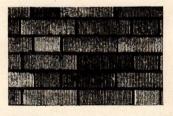
WESTINGHOUSE ELECTRIC

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Brixment possesses greater architectural advantages, greater strength, greater economy. Requires less mor-tar color and will not fade it. Repels moisture; less likely to freeze.

If it took two hours to prepare the flour before biscuit could be served

-how many cooks would have the patience to make them?

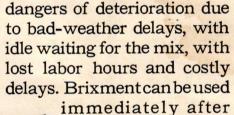
And yet this imaginary condition is no more far-fetched

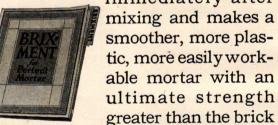
than the actual practice many masons still follow of using mortar that has to be prepared the night before.

Brixment has done away with this old-

suming method. It

has done away with wasteful, messy mortar beds, with





fashioned, time-con-suming method It Send for this descriptive handbook, 8½" x 11", with handy tab for filing

logical choice for endurance-andeconomy. Sold through dealers.

itself. Brixment is the

LOUISVILLE CEMENT COMPANY, Incorporated, LOUISVILLE, KY.



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Think of the tremendous advantage, to the man who buys the coal, in having his building equipped with a Kewanee Smokeless Boiler which burns any coal.

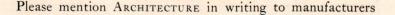
KEWANEE BOILER COMPANY

KEWANEE, ILLINOIS

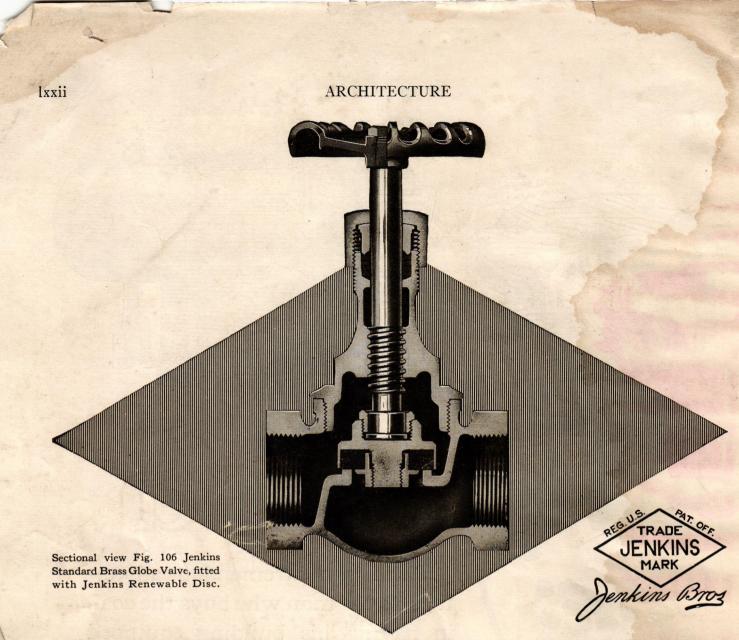
Steel Heating Boilers, Radiators, Tanks, Water Heating Garbage Burners

BRANCHES:

CANADIAN REPRESENTATIVES-The Dominion Radiator Co., Ltd. Toronto, Ont., Montreal Que., Winnipeg, Man. Hamilton, Ont., St. John, N. B., Calgary, Alta.



KEWANEE



They afford the PERMANENCE you desire



Fig. 310. This is a brass globe valve with a brass wheel and can be supplied in polished and nickel-plated finish. Jenkins Valves have strength ample strength to stand the strains of expansion and contraction and lifting and settling of the piping. In every respect, Jenkins Valves are designed, made, tested, and guaranteed for the severest service to which they may be subjected.

They are valves that can be opened easily and closed tight — valves that do not leak. Briefly, they are valves of permanence, that go into service and stay — and for those reasons they prove the most economical.

The sectional view shown above, of a Jenkins Standard Brass Globe Valve, will give you a good idea of the thorough and uniform distribution of metal. There is no weakness at any point. Note the powerful and accurately threaded spindle; the follower that compresses the bonnet packing; the perfect contact which the Jenkins disc makes on the seat; the ventilated non-heat malleable iron hand wheel; and the true threading at openings.

Jenkins Valves are made for all requirements. And they afford the permanence you desire. Specify the genuine with the Jenkins Diamond and signature.

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