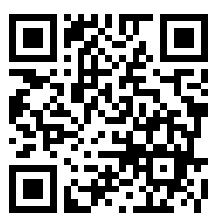

HOME BUILDING IN CALIFORNIA—CHARLES KELLER

The Architect and Engineer of California

VOL. II OCTOBER, 1905 No. 3

A REINFORCED CONCRETE WAREHOUSE—RALPH WARNER HART

The Architect and Engineer
Of California

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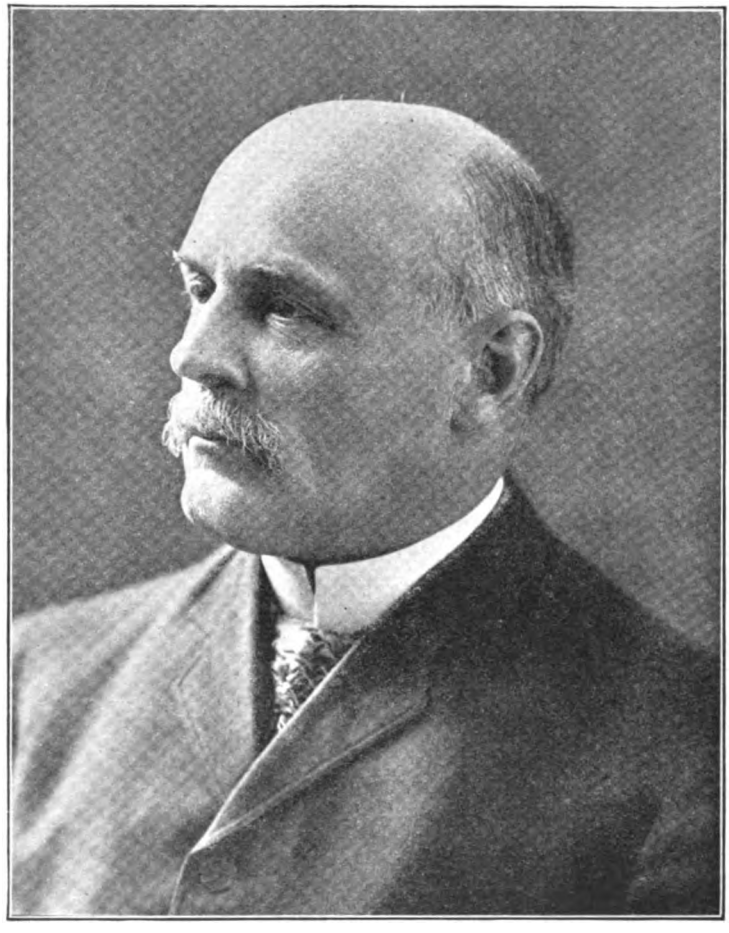
Contents for October



MR. HENRY A. SCHULZE.

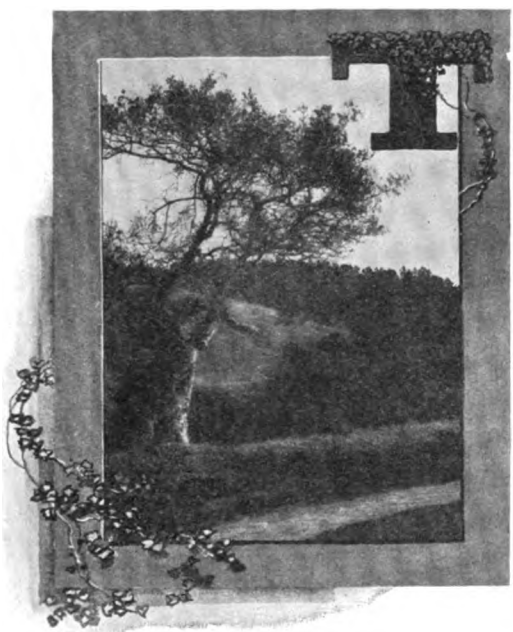
Mr. Schulze is the President of the State Board of Architecture, and on October 13th he was re-elected President of the San Francisco Chapter, American Institute of Architecture.

The Architect and Engineer
Of California

VOL. II OCTOBER, 1905 NO. 3

Thoughts on Home Building in California

By CHARLES KEELER
Author of "Idyls of El Dorado," "The Simple Home," Etc.



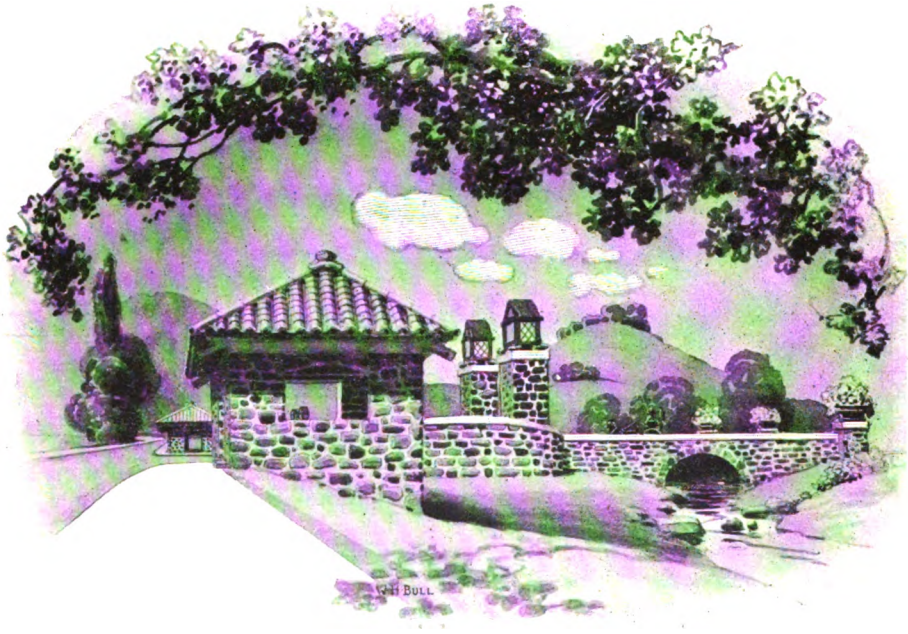
THE general level of art perception of a people can probably be more clearly gauged by the home than by any other phase of human handiwork. The home, whether consciously or unconsciously, is the artistic embodiment of its occupants. With the increase of culture in a community we find a corresponding elevation of taste in home building. The conventional types and crude elaborations of meaningless ornament no longer satisfy. More reserve, more subtlety, more sense of good form, of color harmonies, of refinement in ornamentation is exhibited. The design of the untrained builder or contractor is seen to be lacking in developed taste, and the home builder realizes the necessity of consulting an architect who has had a thorough art training.

During the last ten years this thought has been slowly gaining headway in California and in the larger centers and their suburbs. It is still painfully evident, however, that the bad traditions of the past have not been wholly outgrown, and that much missionary work still remains to be done. It is therefore well, from time to time, to call attention to those things which underlie good domestic architecture, and to urge upon prospective home-builders that they give full consideration to them. I have already hinted that the matter of prime importance is the selection of an architect who has been adequately schooled in taste as well as in the practical requirements of his art. Fortunately, San Francisco and Los Angeles are now well supplied with architects of the new school—men who look upon their profession not as a trade but as an art, and who have cultivated a proficiency in art expression.

In planning a home the thought should be uppermost that use and beauty are to be everywhere welded into the composition so that the two

Residence of Charles Blake, Berkeley
Edward Seely, Architect

Kidder & McCullough, Contractors. C-160



The Northerly Gateway of Claremont
John Galen Howard, Architect

Andrew T. Hunt, Masonry. C-161

points of view are created into a higher unity. It will be found that the simpler, the more rational the plan, the more beautiful it becomes. After due consideration of the life which is to be lived within its walls, that scheme which most naturally and inevitably serves the needs will prove to be most beautiful.

But, looking at the other side of the shield, good proportions in mass and detail will prove to be more useful and comfortable than bad proportions. Neither a perfect cube of a room nor an excessively long, narrow room will be as serviceable for family needs as one of graceful proportions. And so it is with the house as a whole. It should be as satisfying in mass as in detail. Nay, more than this; it should be satisfying in relation to its surroundings. Fortunate will it be for our architecture if we ever come to the point of considering nothing less than a block the architectural unit. If an architect of taste and ability has built one house on an unoccupied block, he should be called upon by the other owners of the block to design their homes, or at least some other architect who is a kindred spirit and who would consider what had already been done, should complete the square. In this way only can an effect of consistency and harmony be secured.

Another matter of prime importance is to use every building material with reference to its greatest strength and utility. Curving lines are generally without character in wood, because wood exhibits its greatest strength in straight lines. To imitate in wood the conventional ornaments of classic stone, trusting to a coat of white paint to produce the required effect, is one of those cheap expediencies which gives evidence of a lack of sincerity on the part of the designer. Wood is a beautiful building material when used frankly as wood, but is cheapened and vulgarized when given the form of stone.

Plaster is also an admirable material for the exterior of a house, so long as it is used over wood confessedly as stucco, and not as an imitation of masonry. Much of the so-called Spanish mission architecture of today is objectionable because it is a sham, imitating the form without having the substance of the real mission architecture. Like other shams, it will be found out and discarded when men come to think more seriously of their work. Open timber-work and plaster is more satisfying because it is just what it professes to be.

For the inexpensive home a covering of unpainted shingles has many advantages. Chief of these is the fact that it weathers to an unobtrusive tone which harmonizes with almost any surroundings. Where a whole neighborhood is built of unpainted shingled houses there is no jarring clash of colors in the landscape, such as we find where a hard, characterless oil paint has been applied in various hues to the different houses. Even the white trimmings take from the dignity of a shingled house, for the borders are thus brought into prominence out of all proportion to the unity of the composition.

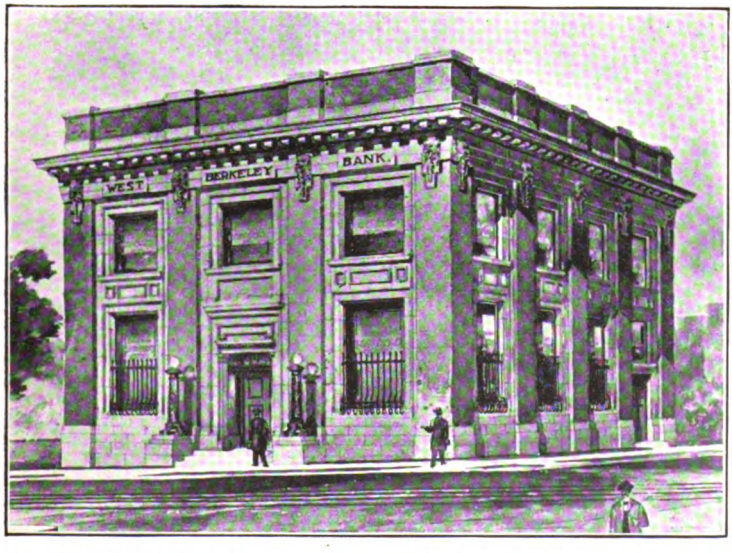
Ornament should be used with great caution because it has been so overdone by inartistic hands. It should grow out of the structural requirements and should be an individual creation. Even our best architects seem to me far too ready to borrow or adapt ornament instead of creating it. Vital art is always fresh and new, springing from nature as the spring from the living rock. Our ornament, and indeed all our architecture and all our art here in California, although an outgrowth of an historic life, should in the deepest sense be the product of our own nature, our own life, our own needs. Climate and scenery, birds and flowers should all play their part in stamping an individuality upon what we do.

Such thoughts as I have endeavored to express have been more or less in the minds of a little group of men and women in the northern hill district

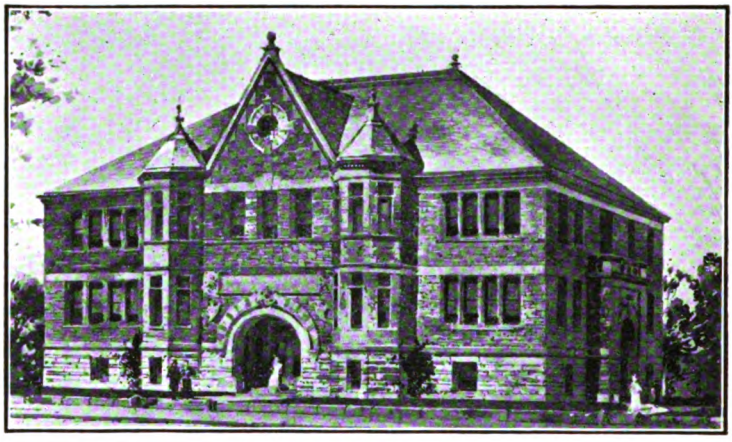
Residence of J. A. Marshall, Berkeley *C. M. Cook, Architect.* C-162

Picturesque Hillside Home in Berkeley C-163

Marshall Apartment House, Berkeley *John E. Bigelow, Contractor.* C-164
C. M. Cook, Architect



West Berkeley Bank Building *Ben O. Johnson, Contractor.* C-165
C. W. Dickey, Architect
Stone furnished by Colusa Sandstone Company



High School at Santa Rosa — *J. O. Kuykendall, Contractor.* C-166
Stone & Smith, Architects

Homestead Loan Association Building, Berkeley — *Andrew T. Hunt, Masonry.* C-167
C. W. Dickey, Architect — *S. W. Wilson & Son Interior Fittings*
Stone furnished by Colusa Sandstone Company

of Berkeley, who have banded themselves together under the name "Hillside Club" for the purpose of impressing these views upon the locality in which they live. They have not by any means completely realized their ideal, but they believe that under their influence a larger number of simple homes appropriate to their locality have been built than will be found assembled within a similar radius elsewhere in California.

In addition to the purely local work of the Club, which has aimed also to foster a wider interest in the handicrafts, in music and the other arts, an effort has been made to spread this thought more widely through the State. The following circular letter was sent to all improvement clubs in California:

"To the Improvement and Development Clubs of California:—

"The Hillside Club of Berkeley extends greetings and proposes herewith a plan of co-operation for the architectural improvement of the cities and towns of California.

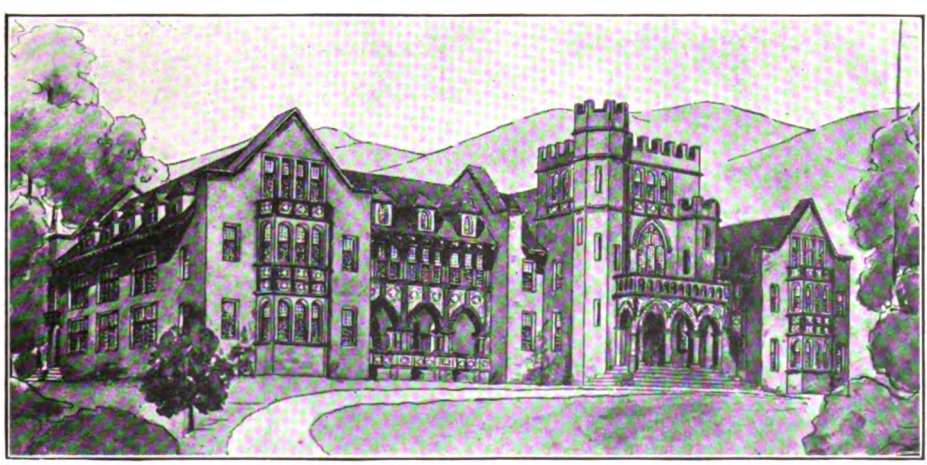
"The Hillside Club has met with encouraging success in developing a local appreciation of good, simple architecture. We suggest if this work does not come within the present field of activity of your association, that you appoint a committee to consider the matter.

"The plan of procedure is a simple one, namely, to form a section for studying the art of making homes beautiful, without and within, through natural simple means, and then aiding to carry out this idea in home building in your community.

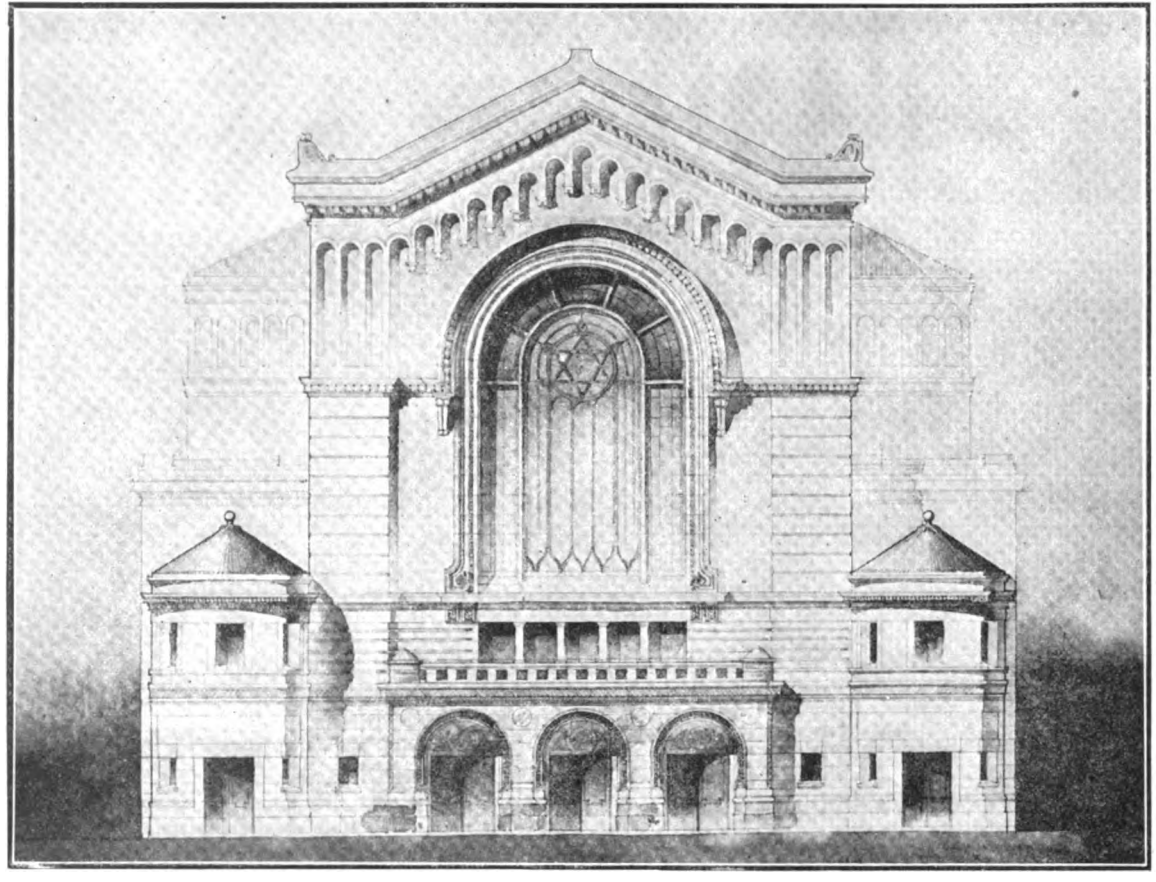
"The enclosed circular gives an outline of what we are striving to accomplish. We shall be pleased to send lists of books and magazines which may be helpful, and to assist in any way in our power to further this movement in your section."

With this letter was enclosed the following statement of what the Hillside Club stands for:

"The Hillside Club of Berkeley has for its object the beautifying of the district north of the University grounds. The following suggestions embody the thought of many of its members on the subject of streets, gardens and architecture:



Proposed Oriental Institute, Berkeley *C. W. Dickey, Architect* C-168



Temple Beth Israel, San Francisco *William Curlett, Architect.* C-169

"Streets winding up the hills on easy grades are preferable to streets laid out at right angles, regardless of natural contours. In laying out streets, the preservation of the natural beauties of stream beds and live-oaks is desirable, even at sacrifice of symmetry of the roadway.

"A uniformity in street tree planting is of great importance. No unit less than a block should be considered. Where foliage on the street obstructs the view from houses above, it is suggested that small trees such as hawthorns, birches or palms be planted fifty feet apart, and the intervening sidewalk space be uniformly planted in flowers, such as a block of geranium of one color, or of some flowering vine.

"The use of less than fifty feet by one hundred and twenty feet of land for a house is strongly deprecated. The placing of houses on a block of land may well be studied relatively, taking into consideration sunlight, view and general effect of grouping. Thus, if a block had six lots fronting a street, the houses on the two corners might be placed forward and the other four backward on the lot, making a hollow square in front, to be treated, in effect, like one garden.

"It is suggested that at least a portion of the garden be sequestered, giving the privacy of an open-air room. Japanese and Italian gardens are suggestive along these lines.

"The controlling thought in house-building should be simplicity and genuineness. Avoid meaningless and insincere ornament. Build of simple, natural materials, and strive for beauty in mass and proportion, in the concentration and distribution of windows, and in the lines of the roof. A low house can more easily be made picturesque than a high one. Wide eaves are especially to be prized for their shadows.

"Much safer than the oil paint which generally looks hard and characterless in tone, is the natural material left without coating. Clinker-brick, dull stone, or wood left untreated, will all harmonize with the colors of nature, and form a picturesque composition with the surrounding landscape. Shingles are probably the best and safest covering for an inexpensive home, and if left unstained will darken to a soft, unobtrusive color. The house may then be gaily adorned with flowering vines, which can be kept off the walls by screens of wire mesh on timber frames. If plaster is used it may be toned to some warm harmonizing shade by the application of water-color paint. White trimmings unduly emphasize portions of the house, and prevent the whole from toning with the hills and the gardens.

"A lower story southern porch, unroofed, or an eastern porch, sheltered with vines, and large enough to be used as an out-door sitting-room, is a great addition to the comfort of the home.

"The use of wood for interior walls, and especially of broad slabs of redwood treated only with a wax dressing, and with more or less of the constructive timbers exposed, is strongly recommended. A large open fireplace of simple material, and without ornament, unless this be especially designed and hand-wrought, is a good key-note for the large living room.

"For general types of architecture, the Swiss chalets, old English, old Nuremberg, old Italian and old Spanish houses may well be studied for suggestion and inspiration.

"In house planning it is well to consult a good architect, and the Hillside Club has a number of architects of taste and ability among its members. But for those who cannot afford an architect, or who wish to plan their own home, the club is collecting prints, pamphlets and books that will be helpful and suggestive. These may be seen by consulting Mrs. Potwin, principal of the Hillside School. The Club, both through its committees and through its individual members, will be glad to assist any one who may ap-

ply for co-operation in the matter of planning a home or a garden. The names of the chairmen of the various committees, or any other information, will be given to any one who may apply to the secretary."

Many replies to this letter and circular were received, although few of them were from the northern and central counties of the State. The more general response from the southern counties indicated a wider interest in art and civic improvement in the smaller towns of that section. The letters in many instances asked for advice in organizing such clubs, and the work to be accomplished. The correspondents were advised that the first object to be striven for was the cultivation of the taste of a small group of people and the establishment of an architectural standard for the community. To this end it was suggested that a small library of well-selected books and magazines relating to such work be secured and put in a place where it would be readily accessible to local architects, contractors and prospective home-builders. Having done this, the next point is to see that the library is intelligently used and that it bears fruit in the style of architecture, in the laying out of gardens and the planting of street trees.

The following list of books and magazines recommended by the Club may be of interest in this connection:

"Architectural Review" for January, 1904, $2.00.

"House and Garden," 1222 Chestnut street, Philadelphia, $5.00 a year.

"The House Beautiful," Herbert S. Stone, 11 Eldredge Court, Chicago, $2.00 a year.

"The Craftsman," Syracuse, New York, $3.00 a year.

"International Studio," John Lane, 67 Fifth Ave., New York, $3.50 a year.

"Modern British Domestic Architecture and Decoration," edited by Charles Holme. Paper, $2.00 net. (Supplement to the "International Studio.")

"Successful Homes," by Oliver Coleman. Herbert Stone & Co. $1.50.

"Book of a Hundred Houses." Herbert Stone, $3.20.

"Country Houses," by Ernest Newton, $7.00.

"Principles of Home Decoration," by Candace Wheeler, $2.40.

"The Furniture of Our Forefathers," by Esther Singleton; 400 illustrations; $20.00.

"European and Japanese Gardens." Henry T. Coates & Co., Philadelphia, $2.00.

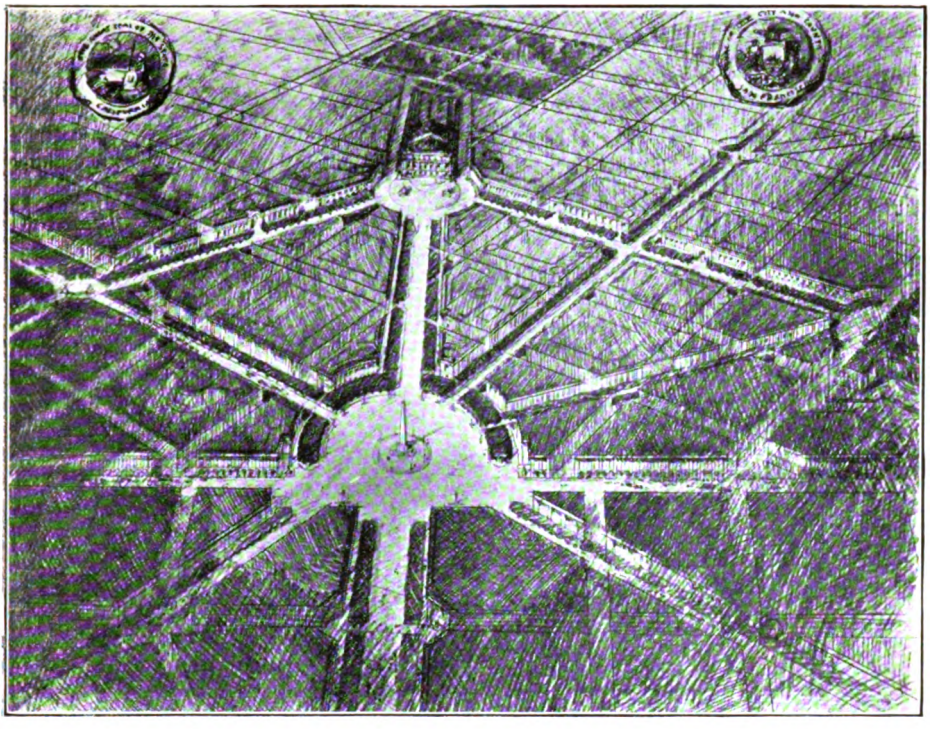
* * *

Holds Annual Meeting.

THE annual meeting of San Francisco Chapter, American Institute of Architecture, was held in the chapter's rooms, on the fifth floor of the Phelan building, October 13th. The following officers were elected: President, Henry A. Schulze; vice-president, William Mooser; secretary-treasurer, William Curlett; trustees, Messrs. Schulze, Mooser and Curlett, Clinton Day and James W. Reed.

Willis Polk and George Alexander Wright were elected members of the chapter. Speeches were made by the president and secretary, and the work of the chapter for the past year was reviewed.

At the last meeting of the State Board of Examiners, Louis C. Mullgardt, associated with Wright and Polk, was admitted to practice architecture in this State. Mr. Mullgardt is a fellow of the American Institute of Architecture. The State Board will hold its next examination for those desiring to become certificated architects, November 1st, continuing for several days.



a Civic Center and Its Various Elements *D. H. Burnham, Designer.* C-170

The Burnham Plan

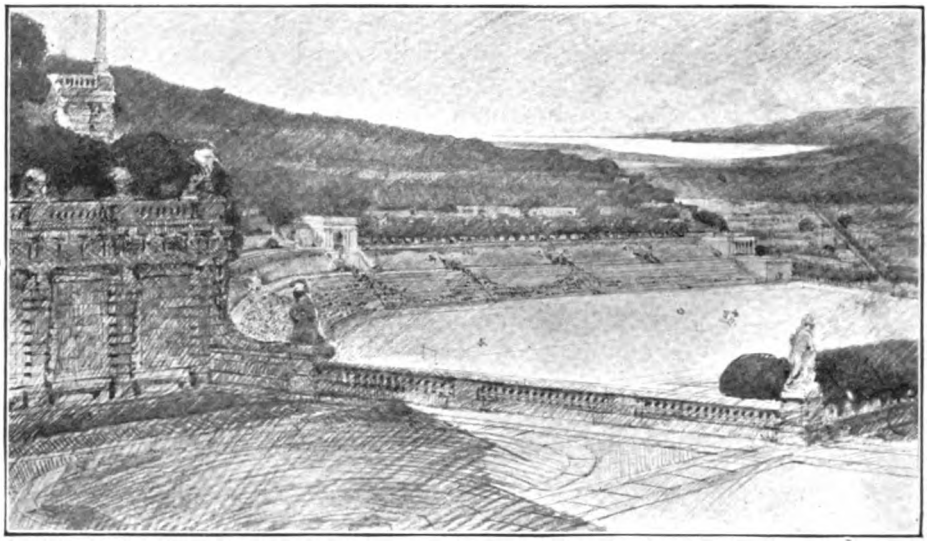
By ARCHITECT ARTHUR BROWN, Jr.

THE plan and report on the rebuilding and beautification of San Francisco by D. H. Burnham, having been presented to the city, it is quite proper for "The Architect and Engineer" to present at this time selections from a remarkable series of compositions used by Mr. Burnham to illustrate some of the principal features of his plan.

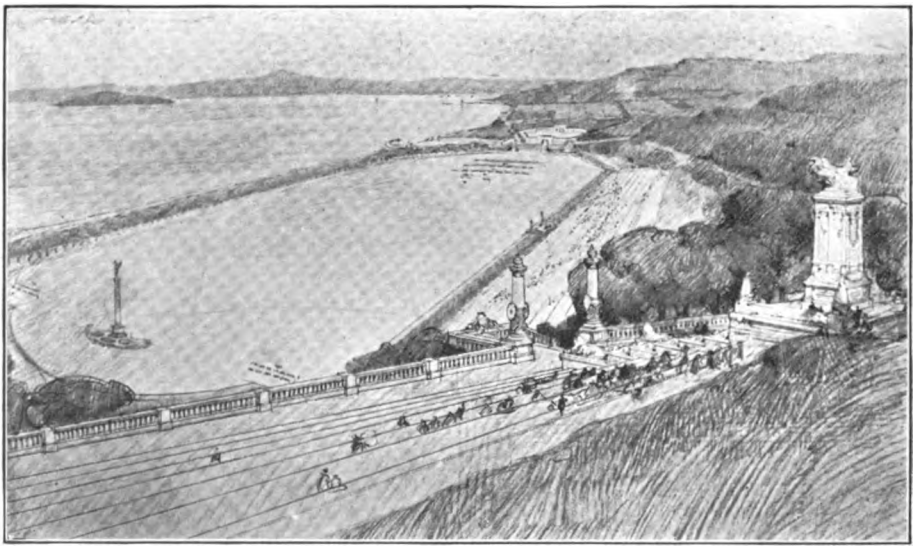
These beautiful drawings are exquisitely rendered in charcoal, and the talent of their author, Edward Bennett, is shown in the depth and breadth of their technique.

The first drawing (marked A) illustrates that part of Mr. Burnham's project in which he proposes to establish a civic center at the point where the prolonged Panhandle and Van Ness avenue come together at Market street. This center is connected with the City Hall group by a new avenue, and new avenues lead to a proposed Union Station (directly under the spectator), and to a proposed Opera House. The City Hall, Opera House and station, are mutually connected by a girdle formed, in part, by the widening of old streets and their transformation into boulevards, and partly by new avenues.

The splendid square or public place which forms the focal point of the drawing is a feature of which our American cites are sadly devoid, but which is an element with which European cities are plentifully supplied. Paris



(*b*) *Proposed Stadium near Twin Peaks* — *D. H. Burnham, Designer.* C-171



(*c*) *Proposed Military Parade Ground at the Presidio* — *D. H. Burnham, Designer.* C-172

abounds with monumental places; London, Vienna, Rome, in fact every town possesses its public place, which its inhabitants are in the habit of frequenting, for business or pleasure. What would Madrid be without its Puetra del Sol, or the Prado? Imagine Rome without the Piazza d'Espagna. Paris without the Place de la Concorde, or London without Trafalgar Square.

The suggestions of wide boulevards, with their masses of trees and borders of stately buildings, make a most pleasing impression on anyone for whom architecture and beautiful things have the slightest interest.

And, moreover, there is nothing proposed in this suggestion that is in any way visionary or impracticable or that has not been accomplished under much greater difficulties in the splendid rejuvenated cities of Vienna or Paris. The author has shown himself a man of imagination and not a mere empty dreamer.

The drawing marked B presents the possibilities possessed by the natural theater formed by the hills some distance to the northwest of Twin Peaks. What a charming and inspiring place to watch a football match or an exciting game of baseball! The perspective of the Golden Gate, Point Bonita and Tamalpais, relieved by the buildings of the city, is one which is unique, and one whose beauty is of the highest order. The fascination of statues and terraces is very strong, as the drawing shows, and as we know from our experiences in the Old World—St. Cloud and the terraces at Tivoli, Frascati and a hundred other places prove that no other architectural motif takes a more powerful grip on our imagination.

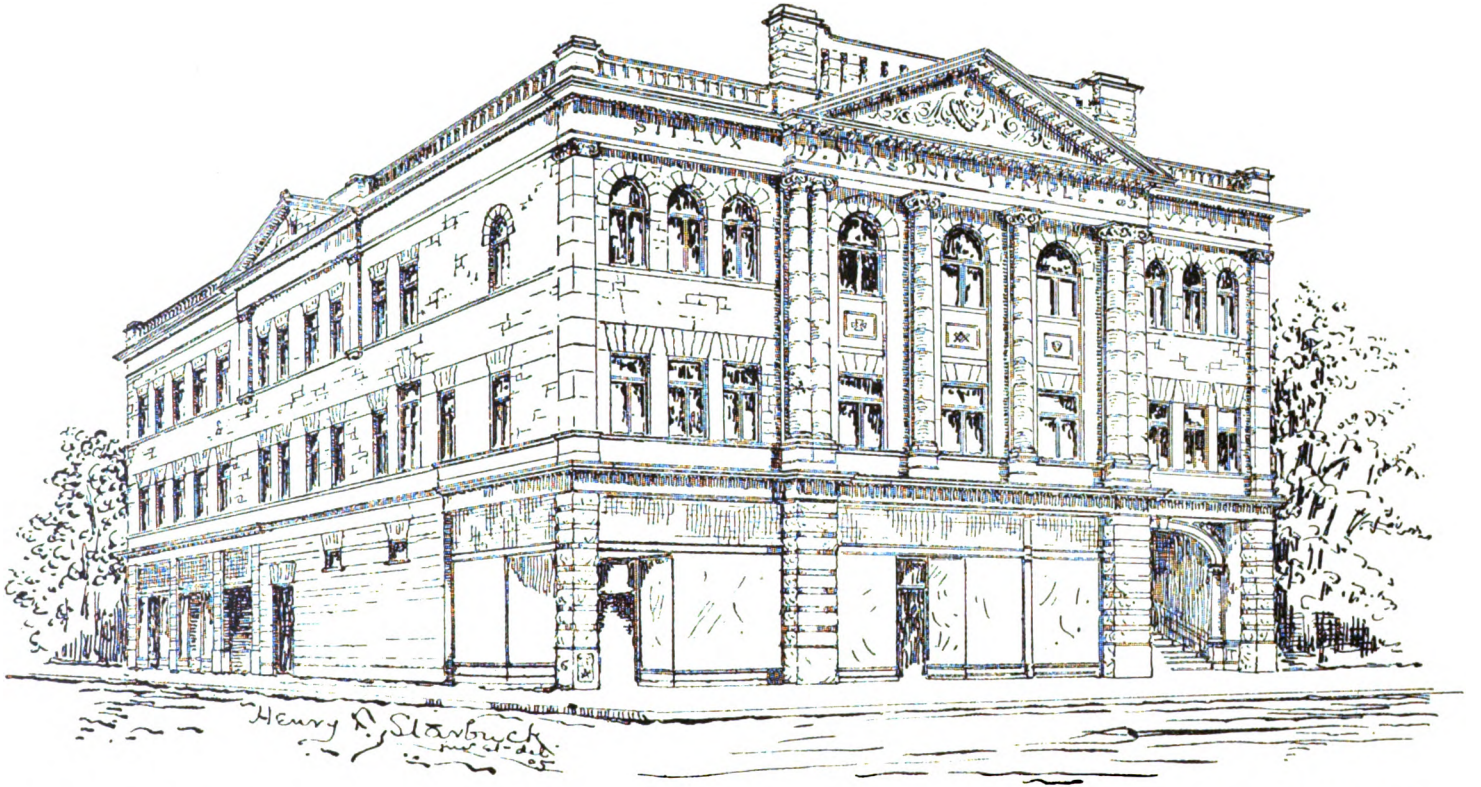
All this, too, comes within the realm of the easily realizable, for with modern methods of concrete construction, long rows of balusters do not look so formidable to construct as they used to, when they were hewn in stone. Nor does the stadium itself seem too visionary. Harvard College has its stadium, and Athens has hers of solid marble from Pentelikon. Why should not sport-loving San Francisco have hers? Really our Central Park is not up to the mark.

What more inspiring setting could be conceived for the ceremonious reviews of our soldiers or the routine daily drills than Mr. Burnham has pictured in the drawing marked C. Alcatraz, Belvedere, and in the distance the Berkeley hills—that is not an ordinary background; the city hills mellowed by distance for the middle ground, and a splendidly designed parade ground—Campus Martius—in the foreground. The army would not think itself forgotten if presented with such a workshop, and the patriotic citizen's interest in the army would doubtless very much increase.

We may well congratulate ourselves on the possession of these masterly conceptions in our city. Let us not be indifferent by allowing them to wander into the City Hall garret, there to become brown with dust and age. On the contrary, let us give them a place of honor in our Public Library or the Art Institute.

* * *

To Architects: If you cannot find the name and address of the manufacturer and supply dealer of any article you may desire write to the Architect and Engineer of California and the required information will be furnished without charge.



Masonic Temple, Santa Rosa
Henry F. Starbuck, Architect

Haven Hardware Company, Plumbing. C-173
Sonoma Stone & Construction Co., Stone Work

Fire-Proof Construction

By M. V. SEAGRAVE

WE frequently hear persons remark after a fire has worked havoc with a big office building that there is no such thing as absolute fire-proof construction. With these asserters, I beg to differ. A building can be made fire-proof if the owner cares to invest money enough in the structure, using only such material as has been proved to be fire resisting or non-inflammable.

The trouble in building fire-proof structures in the past has not been lack of fire-proof material. Invariably the fault can be traced to the underwriter's regulations which permit this, that and the other thing and as a result, the owner goes no further in the use of fire-proof material than the regulations stipulate.

It is argued that if the underwriters did not permit this, that, and the other thing, there would be no occasion for insurance, as the building being absolutely non-destructible, the possibility of loss by fire would be reduced to a minimum. Because the insurance companies do not demand absolute fire-proof construction is no reason why the shrewd business man should not take advantage of every fire resisting material on the market and combine it in a building that will stand the flames. To the man who proposes to build a store for his goods, a factory, or a home, the question of fire-proof construction should appeal most forcibly. It is the fellow who builds to-day and sells to-morrow who can afford to ignore this advice. It is immaterial to him how long the building stands after he has sold it.

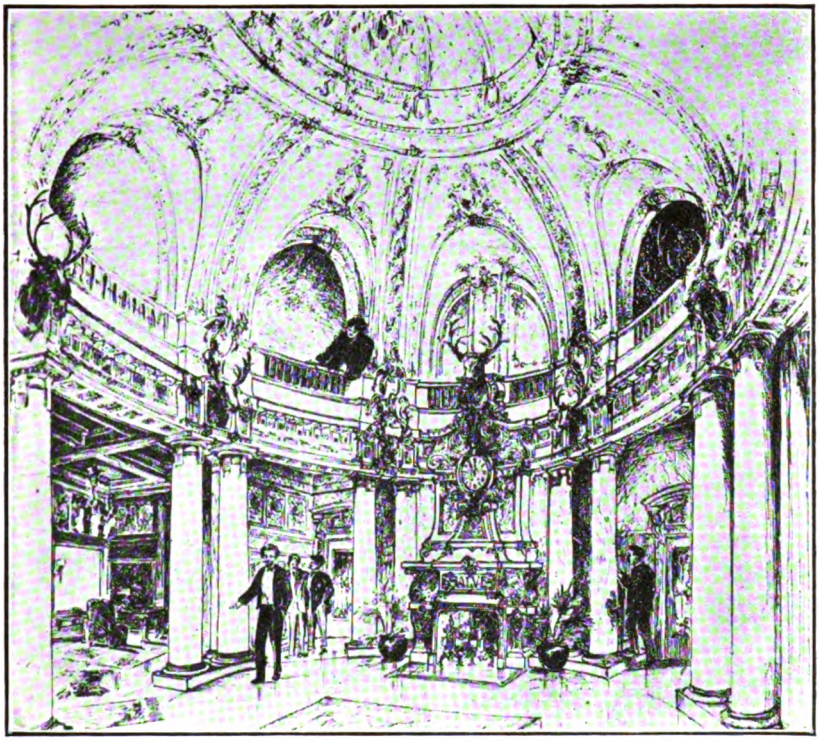
"If the insurance people really have the public weal at heart and were frankly in favor of perfect construction, what a tremendous power they might be," says F. W. Fitzpatrick in 'A Chat With Business Men,' published recently in Fire-proof Magazine. But the insurance companies, like the rest of us, are not in business for their health, so we cannot expect them to advocate the construction of buildings that will not burn at all—as we said before, there would be no occasion for insurance if there was nothing to burn.

Mr. Fitzpatrick has some very practical ideas in fire-proof construction which are so near to my own ideas and sentiments that I shall quote from him rather fully. He says:

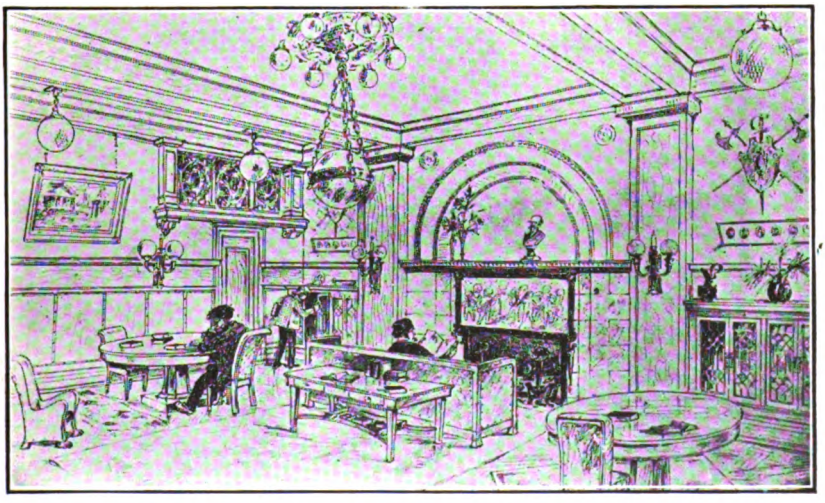
"We hear of 'fire-proof wood,' of 'slow-burning' this, that and the other, 'protected' this and 'protected' that; fakirs beset the unwary at every step and the word 'fire-proof' is glibly pronounced and with extreme unction used as the qualifying adjective of a thousand things and systems that have no more real claim to it than have the varnished paper and bamboo houses of China and Japan, though these may be under the special patronage and protection of the god Heyio!

"It is every man's duty to protect his own life and the lives of his family and others in his care to the utmost of his ability. Most men are quite willing to perform this duty, particularly the first part, without any insistence on the part of the law. Nevertheless, wise laws are constantly being enacted looking to the proper protection of life. Railroads are the source of a great deal of solicitude on the part of the legislators. People hold up their hands in horror at the terrible loss of life there is in railway accidents,

Elks' New Hall at Sacramento *Seadler & Hoen, Architects.* C-174

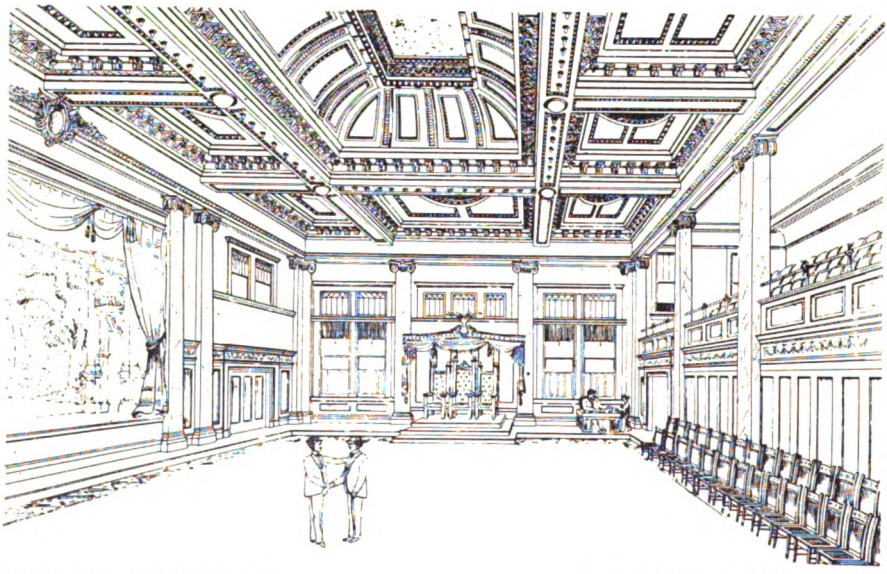


Design for Hall, Elks' Building, Sacramento. *Seadler & Hoen, Architects.* C-175



Library in Elks' Hall, Sacramento *Seadler & Hoen, Architects.* C-176

Design for Public Library — *Seadler & Hoen, Architects.* C-177



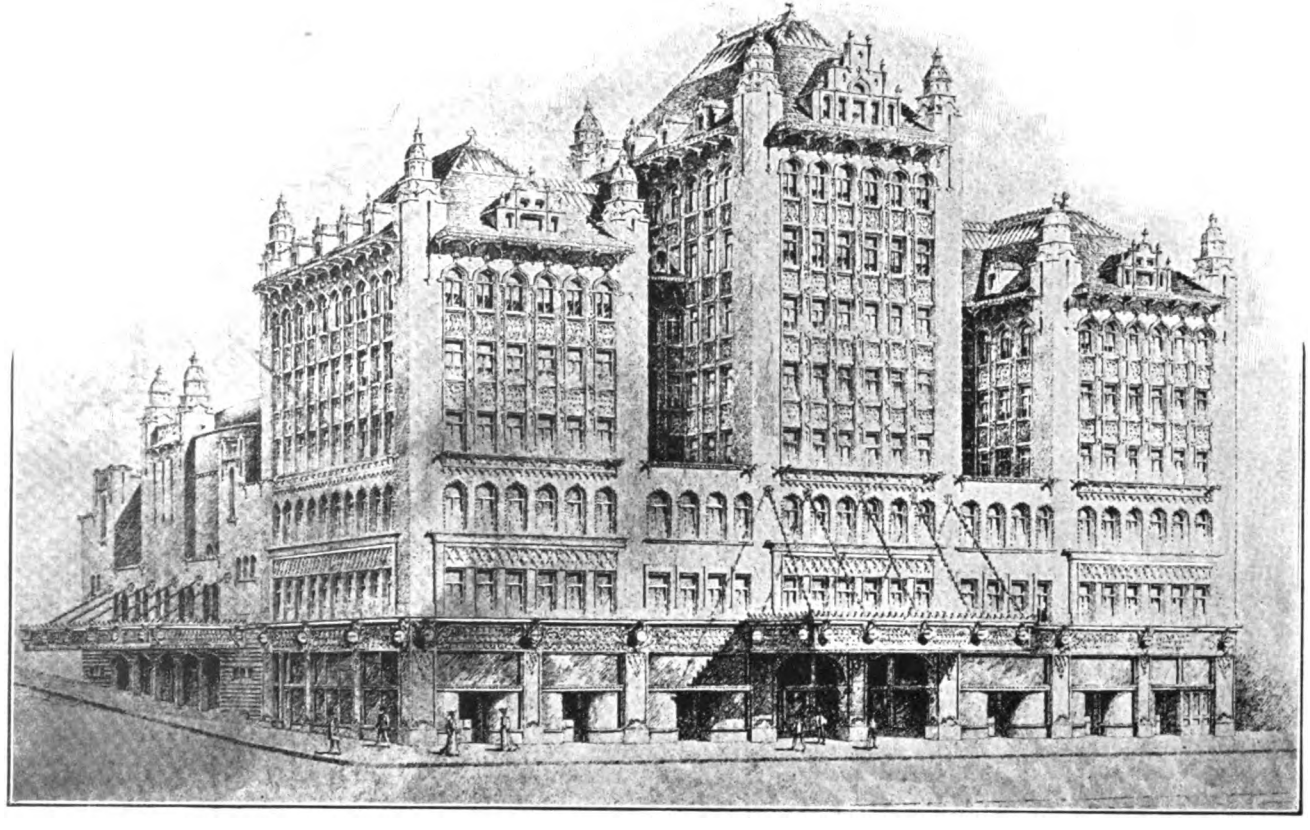
Interior Elks Hall, Sacramento — *Seadler & Hoen, Architects.* C-178

and new regulations and new devices are being brought forth at frequent intervals for the proper safeguarding of passengers. Yet during the year 1904 our American railroads only killed 168 more passengers than there were lives destroyed by fire, or to be more specific, during that year 6672 people were burned to death!

"From the pecuniary viewpoint fire-proof construction is a real economy. Eliminating the question of insurance altogether, the depreciation of an ordinarily constructed building, office, store or other business house, amounts to at least one and one-half per cent a year, that is, apart from the cost of refurnishing and maintaining the building in presentable appearance; the materials used in its construction are decreasing in structural value to that extent. In houses used for dwelling purposes, apartments and so forth, the ratio is even greater, amounting to even as much as three per cent. These figures represent the average of all the materials incorporated in the building. The depreciation of the essentially structural parts of timber is even greater. It is pretty nearly four per cent per year, while the average lessening of value of a fire-proof structure as a whole is scant one-ninth of one per cent and the depreciation of the structural parts, when once properly built, is virtually nil. The constant shrinking and 'movement' of wood framing necessitates frequent repair of exterior and interior finish, papering, painting, plastering, etc., even when those parts of the work would otherwise be perfectly presentable, undamaged by mere age.

"In a fire-proof building such things as shrinkage and movement do not occur, I mean in a properly built fire-proof structure. In ordinary buildings—a thing few people figure upon—vermin cause quite an additional item of expense. A certain amount of damage is actually done to the building and its contents. The renting value of a vermin-infested house or flat, or store, is soon appreciably decreased. The cost of fighting these pests of various kinds is a tax. Fire-proof buildings eliminate this. Figure up these comparisons and then note that a thoroughly fire-proof building, in its first cost, will rarely exceed the outlay made for ordinary construction by more than ten per cent. In stores and warehouses that difference is reduced to five and six per cent. In some localities there is barely any appreciable difference in cost, while in at least three recent cases bids taken both ways have developed an actually lower figure for fire-proof construction than for wood. Of course, there is always an element of chance in taking bids and there is wide room for such differences. For example, on a $200,000 building, with all contractors figuring on absolutely the same basis, there will frequently be as much as $20,000 difference between the highest and lowest bids.

"The term fire-proof has been grossly misapplied to many things. As far as construction goes it should be borne in mind that many materials though incombustible, are very seriously damaged by fire. Granite, all kinds of stones, marbles, slate, concrete, glass, iron, steel, while they will not burn nor communicate fire are, when subjected to severe heat, not only ruined, but contribute gravely to the danger of collapse and the destruction of life, sometimes to even a greater extent than does wood, which is inflammable. If a structure is built entirely of these non-inflammable, but nevertheless destructible materials, and is surrounded by similarly constructed buildings, and if there is no, or at least very little, inflammable material in the way of furniture or goods within those buildings, the possibility of damage by fire is very remote indeed. But if a building, which you want to keep immune from damage by fire, is located in a district composed of highly inflammable structures containing great quantities of similarly burnable goods, then the risk you are exposed to is great, ever-present, and imminent, and to secure immunity you must use none of the materials that in



Proposed Auditorium of Reinforced Concrete, Los Angeles. *Charles F. Whittlesey, Architect.* C-179

themselves are damageable by fire, as before enumerated, or, if you use them, then they must be protected, too. As a matter of fact modern science, which after all but supports the discoveries of aeons ago in many things, proves to us that as far as construction goes the most fire-resisting materials are those which, in their process of manufacture, have passed through a greater heat than they can ever be subjected to, even in a great conflagration.

"Brick is one of the most thoroughly fire-proof materials we know of. It has passed through fire in its manufacture and will withstand, without damage, intense heat and flame. The other clay product, fire-proofing tile, is subjected to still greater heat in the kilns in which it is baked, and if properly made no fire that has ever raged can destroy its efficiency. Why, in Baltimore, in that most severe test to which the work of man has ever been subjected, and where much of this fire-proofing tile work has been done years ago, when the science was in the infant stage of its development and had been erected by incompetent hands, it protected the great steel frames of the skyscrapers so that in most cases but one or two per cent of damage was sustained by that framing, and where the tile itself, poor as much of it was, was damaged but seven or eight per cent, where all else was swept out of existence.

"Unless your proposed building is located in the ideal surroundings we have mentioned—and I am sorry to say that they do not exist in this country—it is not wise to use granite or stone or marble on the exterior. If you do you lay yourself open to having much of it to do over again some day or another. Brick and terra cotta trimmings will stand you in much better stead. For structural parts, all things considered, had best be of steel, thoroughly coated and rendered invulnerable to atmospheric influences and resultant oxidation with Portland cement, and lots of it, then encased in well-burned, well-laid, porous, fire-proofing tile. Solid porous tile is the best. Or the supporting members may be concrete, or of stone, or of a combination of concrete and steel, but they, too, should be protected with fire-proofing tile. The floor construction should be of narrow spans of fire-proof tile arches between steel beams. These beams, as well as everything else metal about the structure, should be made rust-proof with cement and amply protected by proper forms of fire-proofing tile. The partitions should preferably be of fire-proof tile, though there again any other form which is incombustible may be used with proper discretion, though there is always the possibility of having much repair to do in case of even an incipient fire, so why not use the perfect thing in the first place, and why dally with substitutes?

"Wood floors are to be avoided. Use some form of cement or tile. Where the windows are exposed to fire in adjacent buildings, or on narrow streets, use metal sash and wired glass. You may have to repair even these after a hot fire in the neighborhood, but they will have saved the interior of your building from certain damage. Cut off your stairs and elevators with fire-proof partitions forming invulnerable shafts, closed at every story with fire-proof automatically working doors. Opening a door may be a little troublesome, but it is far better to do that every time you go from one story to another than it is to risk the spread of fire up through your building, and even if fire didn't so spread, if once started in your goods the smoke and gases rising to other stories might create a panic among your tenants. Every story absolutely isolated by this cutting off of openings in the floor means, too, that fire started in amongst furniture or goods can be quickly and easily controlled.

"Pretty and stylish as heavy wood wainscoting, wood ceilings and other elaborate decorations may be, don't use them. If from necessity or economy

you must have wooden doors and trimmings, reduce them to the veriest minimum. Make your decorations plastic and trust to the decorator's art in painting and relief work for decorative effect. Cut out the wood. See that you have plenty of water, and always handy, and that there are sufficient appliances always within reach to fight fire wherever that monster may show its head. If you have many employes, or if yours is an institution where many people daily congregate, inaugurate and keep up some sort of a system of fire drill so that those in charge may know what to do in case there is a little fire. Use good sense."

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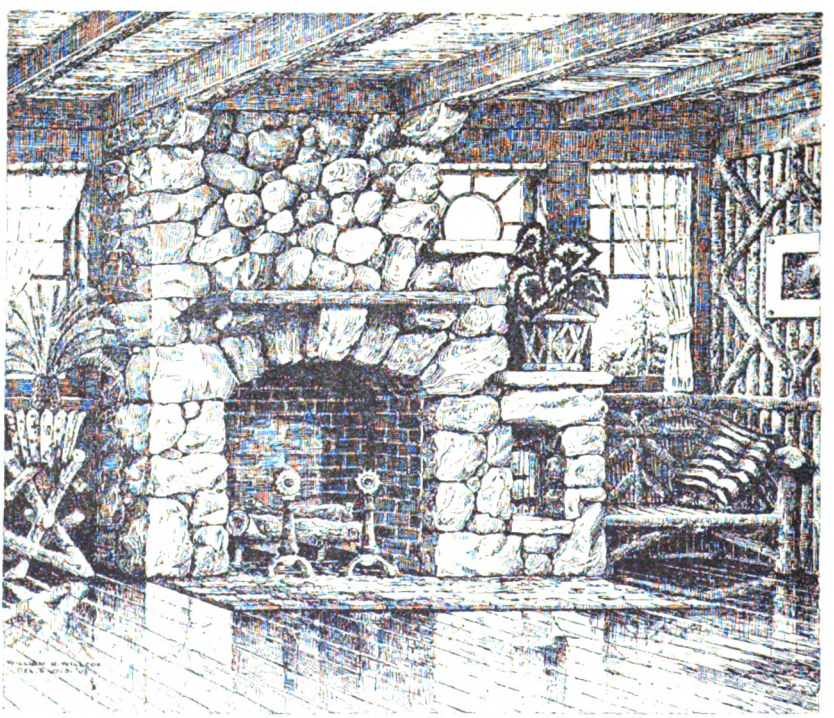
Water-Proofing Concrete Structures

ONE of the very interesting papers read at the recent meeting of the Cement Users' Association was that by W. H. Finley on the water-proofing of concrete structures. Ever since concrete has entered so largely into the field of construction as a substitute for stone masonry, there has been much discussion as to its permeability, and various expedients have been tried in order to prevent dampness working through the material. Concrete as usually built in many engineering structures is not impervious to moisture, and some method of water-proofing is, in the opinion of the author, vitally necessary. That this is appreciated by engineers is clearly evidenced by the amount of water-proofing that is now being done on concrete arches, retaining walls, abutments, etc.

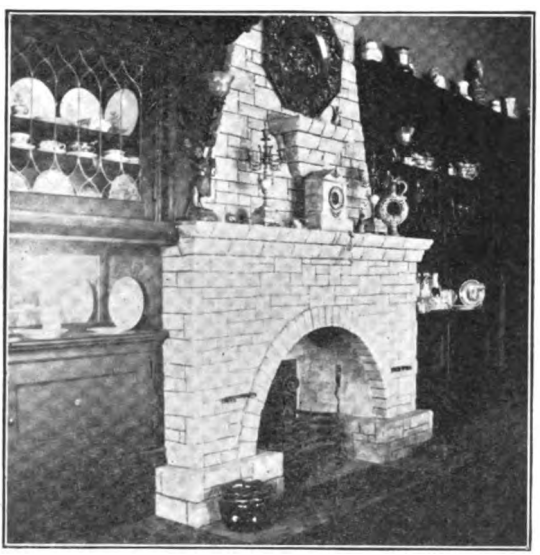


Fireplace in Living Room, Residence of Judge Semme, Los Angeles C-180
William H. Wilcox, Architect

Terra Cotta and Brick

Chimney Building—Is it a Lost Art?

By ROBERT HOWDEN



THE reader can answer the above query very much in the affirmative by climbing some lofty peak overlooking the residence portion of any city and taking note of the various unsightly devices on the tops of chimneys. These devices are often found on the very best houses, and the one excuse for their existence is to make the chimney "draw." Man's cup of misery is said to be full with a "smoky fireplace and a scolding wife."

As far back as history will take us, the open fireplace has been, and always will be, the favorite means of heating a room. All family ties are associated with it and more poetry has been written over it than over all the stoves and heaters in "Christendom," and yet in the construction of a house, the chimney receives, as a rule, but little consideration, the supposition being that any good brick mason can build a chimney.

On the contrary, it has been my experience as a mantel setter for over twenty years, that very few chimney builders understand it, and the ideal chimney, from a practical mantel setter's point of view, is a very rare sight indeed, and only when it has been thoroughly detailed by the architect does it occur. It is when the mantel is being set, and more often after the house is occupied, that its defects are discovered.

Seldom is the chimney blamed upon this discovery. The last work done being the putting in of the mantel and grate, the mantel man is immediately informed that the "grate doesn't draw." Of course not. It is the chimney that "draws," and if it fails to do so the mantel dealer, in most cases, must remedy its defects. It is a common occurrence for the mantel setter, upon looking up the flue, to find it choked with mortar and brick chips that have dropped as the chimney raised; but should there be a turn in the flue, this may not be visible from the fireplace.

Seldom does a chimney builder think of cleaning out a flue when once he has finished at the top. This is one reason why we see "hoods" on tops of chimneys. The principal cause, however, of the "hood" on the top and the "grate doesn't draw," and one which almost every chimney builder makes, is in forming the throat over the fireplace. After the fireplace has been formed, the opening or throat is gradually gathered over until six or seven feet above the floor he has formed the flue. He has then made the mistake so common to most of chimney builders. This "gradual gathering over" is responsible for more smoking fireplaces than all other causes combined.

Immediately over the fireplace is a space from three to four times the size of the flue above. The smoke leaves the fireplace in jerks; it is lazy and uncertain till the flue above gets a hold of it. Then it roars, and the contention is that there is plenty of draft. Consequently the fault is in the fireplace. Had the brick mason gathered over the back of the fireplace and so narrowed the throat that it contained the same number of square inches that the flue above was to contain, the draft would have been equalized to the fireplace, and the same sharp draft would be there as exists higher up the flue. It is this unequal draft over the fireplace, caused by the "gradually gathering over" by the mason, that is the cause of the jerky, puffing, smoking fireplace.

Smoke in a chimney is like water in the bay of San Francisco. The water is in a greater hurry at the Golden Gate than at the Ferry Building; but if the Golden Gate extended to the Ferry Building, the same current would be there. Smoke must be in a hurry going through the throat of a fireplace, otherwise it will come out in the room. For the regular coal grate, with a two-foot fireplace, we should have a flue 8x8, throat 23x3; 2-foot 6-inch open fireplace, flue 8x12, throat 30x3; three-foot open fireplace, flue 8x16, throat 36x3½; 3-foot 6-inch open fireplace, flue 12x12, throat 42x3½, the same square inches to be maintained until flue is formed, which should be as low down as possible.

The carpenter should frame the joists for regular coal grates five feet by two feet from studding (inside measurement). No wood floor should be put in unless eight inches deep in front of fireplace. Too much care cannot be exercised right here, especially if an open fireplace where wood may be burned on the hearth. That hundreds of houses in every city need only a steady fire in the grate for twenty-four hours to set them on fire, is proven nearly every time an old mantel is taken down where the wood floor exists. Every hearth should have a brick arch under it, turned by the chimney builder as part of his work. The top or crown of the arch should be two inches below the level of finished floor.

The next mistake the masons make at this stage is in forming the ash hole or chute at the back of fireplace, instead of six inches back from the face of the plaster. If an open fireplace, it can be in the center, but never at the back. As brick and mortar do not burn, the carpenter who persists in putting floors in hearths only four inches deep, and studding close up to the fireplace, should be the responsible party in case of fire. But as a rule it is the mantel man who is blamed. My experience as a mantel setter is that contractors have very hazy ideas as to what is safe around a fireplace, and if requested to make changes, are apt to think they are being imposed upon.

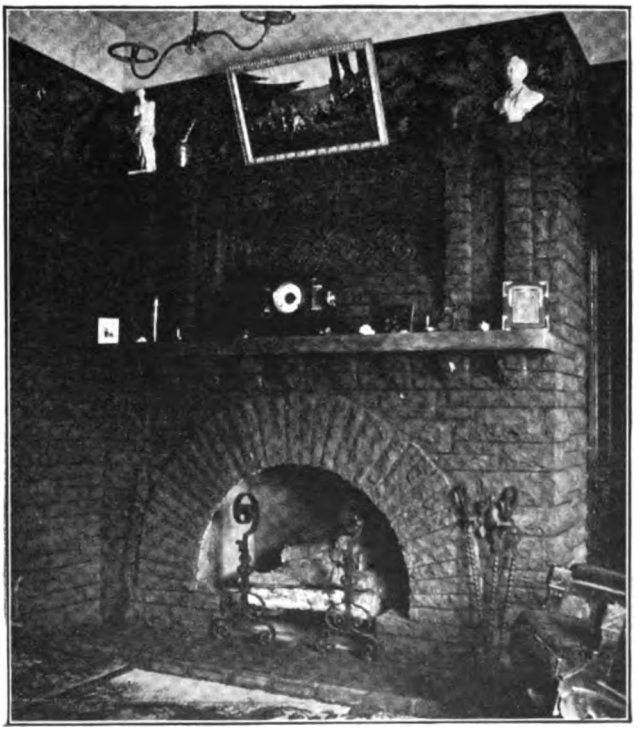
I have pointed out to them the great advantage of framing the hearth 5x2 inside and allowing the flooring to run over this. A pencil mark gives him the size of the hearth, and he runs a saw over it in ten minutes, cutting joists, ruining tools and wasting time in preparing for the tile setter. The framing around the fireplace should be three feet six inches wide and four feet high (inside), for regular wood mantels, and four feet in every other case.

The brick mason makes the next mistake of keeping the brick back of the studding instead of keeping the face of the rough brick fireplace on a line with the face of the plaster, as it should be in every case, unless otherwise specified. This prevents the studding from ever catching fire, and forms the fireplace proper.

For regular coal grates the fireplace should be two feet wide and two feet nine inches to arch bar from floor level. The arch should be three feet high for open fireplaces. This allows the man who builds the fireplace to make the proper throat from his arch at two feet six inches high. There is no excuse for chimneys not drawing if properly built and run above the roof. Allowances must be made for trees and other high peaks which cause down drafts. No stove hole should enter the grate flue, as it will require an exceptionally good draft to run both at the same time. If this is necessary, the grate should have a damper to completely shut off the draft which is continually passing the stove hole and partly shutting off the draft from the stove.

Terra cotta flue lining has improved chimneys immensely, and is being used extensively, but the same trouble in the throat occurs by the manner in which the mason starts it too high, and the usual gathering-over process which would necessitate the man who builds the fireplace having an arm six feet long to make a proper throat to it. If the back of the fireplace is gathered over as shown, and the terra cotta lining started three feet six inches from the floor, there is no question about draft.

Vents for gas grates should be of galvanized iron, thoroughly wrapped with asbestos paper of two layers, and 10x2 in size, so that the same can be run between the studding without coming in contact with the wood. The vent should start two feet six inches from the finished floor. The brick receptacle for the grate should in every case be left to the tile setter, who builds



to suit the mantel and the grate at the same time, and who is best qualified to see to its safety. In order for a brick mason to get this right and prevent it being done over, he must of necessity have the size of the tile opening and the projection of the mantel.

Terra cotta flues and boiler plates under hearths are an unnecessary expense. The floor should be two inches deep, with a layer of asbestos paper on the floor. The gas grate is not yet on the market that will set fire through two inches of cement and tile on the floor. The trouble in the past was that some people have been foolish enough to treat gas grates as toys. They are for heating a room, and when they do that the grate itself must necessarily get hot. Most of the trouble from gas grates is lack of a proper vent, one that really has some suction to it. It should in every case be run through the roof. Those projecting through the side of the building are a failure with the wind blowing against them. The 10x2 vent, if clear of all wood, is perfectly safe and large enough to insure draft. Sharp angles should be avoided, and the joints and ells for the first four feet should be riveted. Tar paper should be kept well away from any part of a grate or chimney. Failure so to do has, in my opinion, started many a "mysterious fire," and for which many an innocent "defective flue" has been blamed.

The only way to secure better chimneys is for architects to thoroughly detail this work and compel its being carried out.

* * *

The Local Brick Market

THE California brick market is reported to be good, despite the fact that prices are being cut seriously from the association rate of $10, with 5 per cent off. Brick are being sold in San Francisco as low as $7 Class C, about $2 of that amount covering freight. Twenty-two yards are in position to ship brick to this market, and an inferior article is sometimes received. There is much idle capital here that is invested from time to time in new brickyards, resulting in an overproduction. The published reports that there is a scarcity of brick in San Francisco are denied by brick men.

The Steiger Terra Cotta and Pottery Company reports business quiet just now with regard to new contracts. The yard at Eighteenth and Division streets is well stocked with sewer and chimney pipe.

Among the terra cotta jobs on which bids have been turned in are a $200,000 public school and a six-story building in San Francisco; the $200,000 Realty Syndicate building, in Oakland, and the seven-story Garden City Bank building, in San Jose.

The Carnegie Brick and Pottery Company's plant at Carnegie, near Tesla, Cal., is rushed with orders in its numerous lines. Fire brick and special blocks for locomotive fireboxes are in good demand.

Within a short time it is expected that the plant of the American Magnasite Company will be in full operation. This particular plant is to manufacture brick, and is one of several industries which this company will eventually established in Oakland.

The buildings are located on the water front, directly opposite Clinton station, which is the second stop on the Southern Pacific broad-gauge going east from the depot at Broadway and Seventh streets, Oakland.

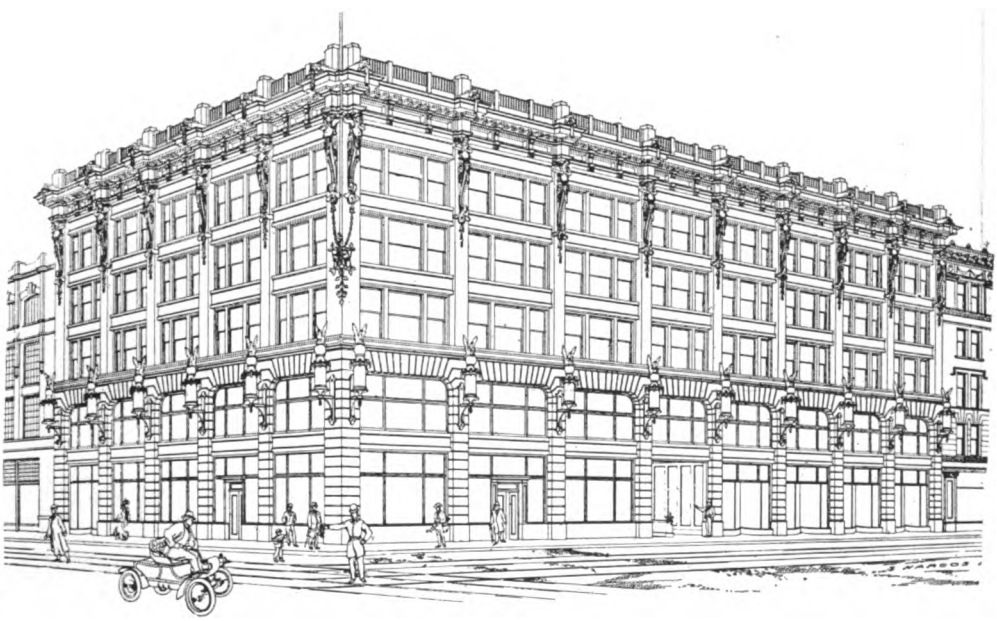
The company expects to employ from thirty to fifty hands at the outset, and later on as many as a hundred men will be given employment.

Clay Products in the United States in 1904

THE value of the clay products of the United States in 1904, as reported to the United States Geological Survey, amounted to the enormous total of $131,023,248. This was somewhat less than the value of the country's clay products in 1903, which was $131,062,421. A chart which shows, in tabulated form, the quantity and value of the various kinds of clay products has recently been prepared by Jefferson Middleton, statistician, and may be obtained, free of charge, from the director of the Geological Survey, Washington, D. C.

Of common brick 8,665,171,000, valued at $51,768,558, were produced. This shows that the average price per M. was $5.97. The quantity of vitrified paving brick produced was 735,489,000, worth $7,557,425, or $10.28 per M. Front brick to the amount of 434,351,000 was produced at a value of $5,560,131, or $12.80 per M. The value of the fancy or ornamental brick produced was $845,630, of drain tile $5,348,555, of sewer pipe $9,187,423, of architectural terra-cotta $4,107,473, of fireproofing $2,502,603, of hollow building tile or blocks $1,126,498, of tile (not drain) $3,023,428. The fire-brick products amounted to 597,760,000, valued at $11,167,972, or $18.68 per M. The value of the miscellaneous clay products is given as $3,669,282. Under this head are included adobes, aquarium ornaments, assayers' furnaces, boiler and locomotive tile and tank blocks, brick for chemical purposes, burnt-clay ballast, carboy stoppers, chimney radial brick, pipes, tops and thimbles, clay furnaces, retorts and settings, conduit work, crucibles, flue linings, foundation blocks, gas logs, glasshouse supplies, grave and lot markers, hollow chimney locks, insulators, muffles, oven tiles, paving blocks, runner brick, sleeves and nozzles, rustic stumps, saggers, scorifiers, sewer brick, stone pumps, tunnel blocks and wall coping.

The total value of all brick and tile produced in the United States in 1904 amounted to $105,864,978, or 80.80 per cent of the value of all the clay products. The value of the pottery was $25,158,270, or 19.20 per cent.



Citizens' National Bank Building, Los Angeles. *Harrison Albright, Architect.* C-181

Polytechnic Business College, Oakland
A. W. Smith, Architect

Ben O. Johnson, Contractor. C-182

Heating, Lighting and Electrical Work

Man, and His Sources of Energy

Electricity the Final Development

By SAM P. HAMILTON

THE first intelligence of man concerned itself with the effort to use such sources of energy as wind power, fire, flowing water, etc. The wind and streams carried him on floating logs and rafts before he made the great discovery that a log, hollowed out by the aid of fire and fashioned like a boat, would float many more men and be much more manageable than when not so fashioned. Probably the sail was invented before the boat was, in the form of a rude square sail, used for running before the wind.

So slow was the progress of improvement, however, that ages went by before man began to comprehend the enormous advantage to be gained by applying nature's forces to his daily work, other than navigation. Until the first great inventors upset all sides of power production, not two centuries ago, he thought he was doing wonderfully well.

ADVENT OF STEAM POWER.

Then Stephenson, and Watt, and Franklin woke us up.

Stephenson found how to utilize the power of fire through the expansive force of water turned to steam. Watt made a machine to use the power, and called it a steam engine.

Franklin discovered that the terrific force of lightning was nothing else than electricity on a large scale.

Up to this time the world had used only the windmill and the water wheel, both applied to the grinding of grain, principally, although water power was stable enough to be used in various factories favorably situated near a stream usuable for this purpose.

But the advent of the steam engine changed everything. The value of coal as a fuel was well known, and coal made the steam engine's triumphant conquest of the world a possibility. The water wheel and wind motor were left way behind at once.

But coal cost money. So, the spirit of invention being rampant in the wake of steam power, many minds were turned toward the other forces of nature in the effort to find a free substitute for fuel. Engineering grew to be a very fine science, and large improvements were made in water-powers. Adventurous spirits looked longingly on the inexhaustible rise and fall of the tide.

ECOMOMY THE PRIME OBJECT.

In all this development there is one prime object, and that is economy. Cheap power is what has been sought. Now, electricity is responsible for

all the progress in this direction beyond a certain point. We are able to generate, or convert to our use, enormous quantities of power at one place cheaply, either with fuel or water power. But we cannot use it to advantage without being able to transmit it, and to very great distances at that. Electricity is the most easily transmitted form of energy known. Therefore, electricity is generated in enormous quantities and sent out for miles in all directions, over copper wires, and delivered to those who wish to use power more cheaply than they can generate the same amount of energy in a small power plant of their own. The larger the amount of power generated in any single plant, up to hundreds of thousands of horse-power, the cheaper each horse-power is secured, and the cheaper it can be sold.

*Gas Arcs

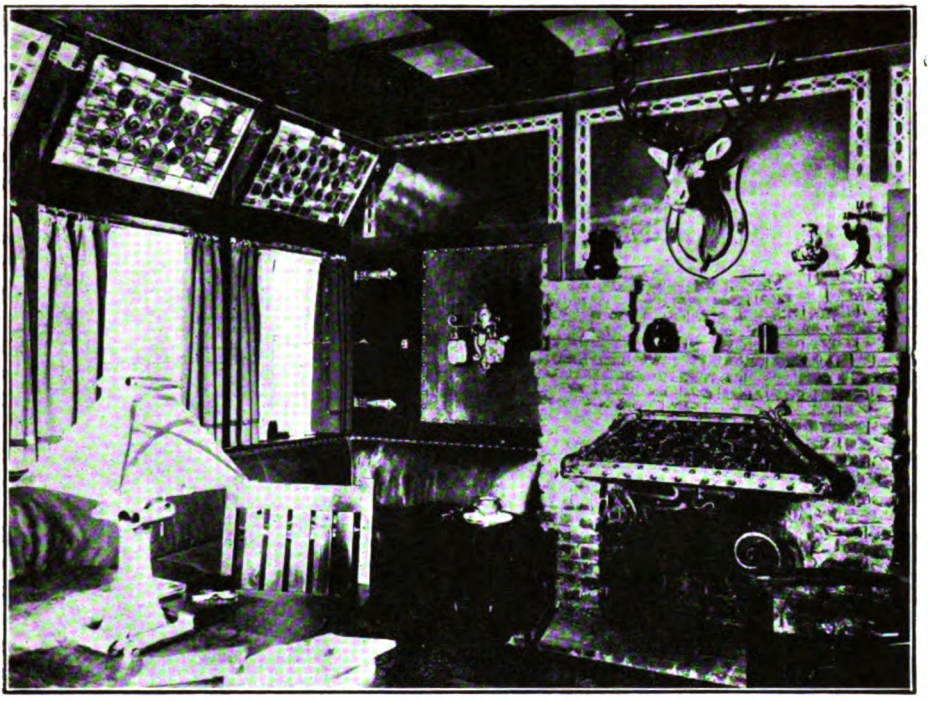
By W. M. KAMPUS

WITH the gas arc the present gas company has great possibilities by which it can largely increase its output, and also to obtain a certain class of commercial lighting which would otherwise be impossible to obtain. The gas arc is to the lighting output what the gas range is for the fuel. The sale of the gas arc, when considering lighting companies, is chiefly advocated by those companies dealing exclusively in the sale of gas, while companies who operate combined gas and electric plants do not take as kindly to the gas arc. It has always been my opinion that gas arcs, or, in fact, any gas appliance, can be best handled by the gas company direct rather than by outside agents, plumbers or gasfitters, whose chief object is the profit they would derive from the sale and which is quite natural, for what further interest would the average dealer have in a gas arc after the same is installed and paid for, as compared to the gas company who expects a regular monthly consummation, and who should thus be interested that the arc at all times is working properly and giving entire satisfaction to warrant this consummation.

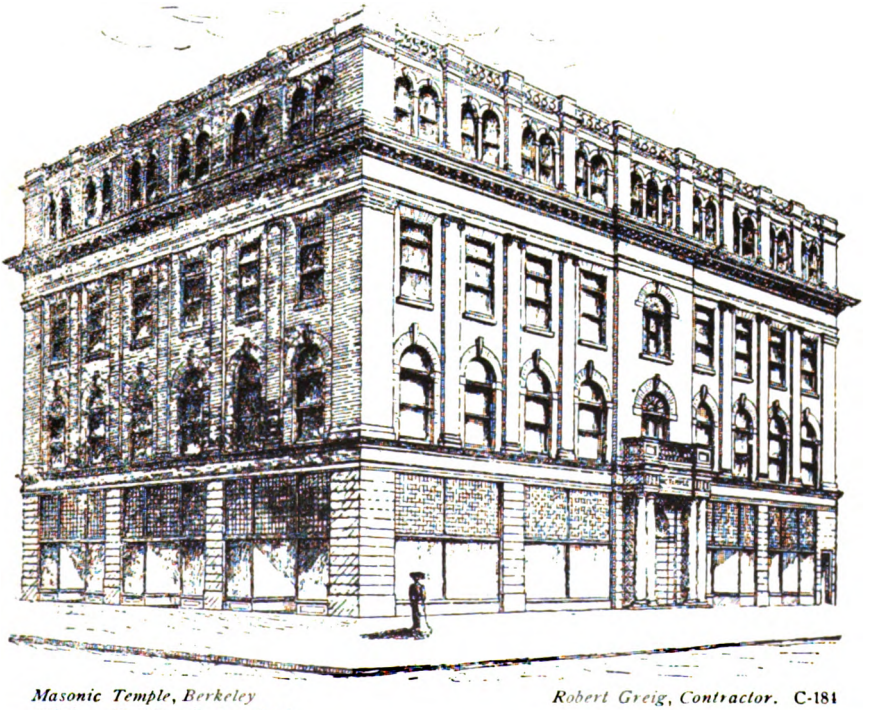
The main success in advocating gas arcs has been due to the fact that the different gas companies have followed a system of free installing and maintenance. Much could be said on this subject, for there is a varied opinion as to which system is the best. I have studied them all and am firmly of the belief that installing an arc free, when the building is properly piped, making no extra charge for the necesary pipe and labor to install the arc the proper height, and even if necessary, to do a small amount of extra piping to satisfy a consumer, together with maintenance free of all expense, furnishing new mantles when necessary, also globes and shades, it being, of course, understood that all breakage be from ordinary wear and tear, will, in the end, produce the best results. Upon first consideration this may seem to the average gas man as offering too great an inducement to obtain business, but on second thought, it is our output that we desire to increase, and to successfully succeed some reasonable inducement must be offered.

The cost of a regular four-burner arc complete, with No. 1 grade of mantles, is not over seven fifty ($7.50. Say you install this arc for the state price of twelve dollars ($12.00), and if paid for at date of purchase, or within thirty days, allow 10% reduction, would you not still have a margin between the net cost and net selling price to cover the expense of installing, and a small profit besides, for it is not the profit, in my judgment, derived from the sale of gas appliances, upon which a gas company depends. It is the daily increase of this output, which cannot be successfully obtained without gas appliances, that is within the reach of all.

*Read at Annual Convention of Pacific Coast Gas Association, San Francisco, 1905.



A Cosy Corner — *Seadler & Hoen, Architects.* C-183

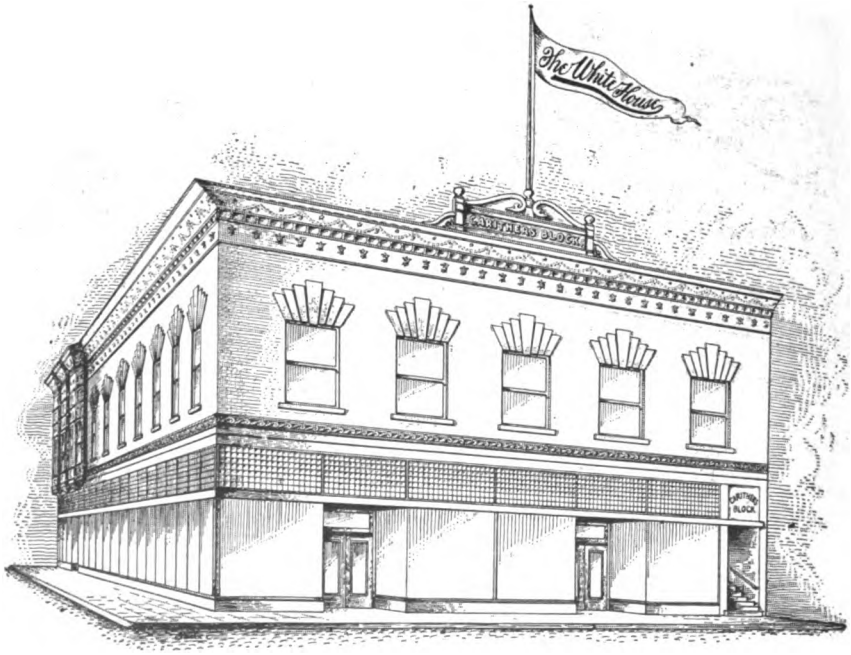


Masonic Temple, Berkeley
William H. Wharff, Architect

Robert Greig, Contractor. C-184

Discussion Very Valuable

WE were talking to an old gentleman the other day who had always been approachable for a little chat by almost any one at any time. He never seemed to be too busy to listen. This gentleman is not only well liked by everybody, but has gone along in a smooth business way and has acquired a goodly share of worldly goods, and it seems as if no matter what enterprise he has hold of, it is sure to be a success. With this in mind, we asked him "Why is it, Uncle John, that with all your big interests and all your responsibilities, you always seem to have time to talk for a few minutes with any one who comes along, having patience with those who, through lack of education and training, are unable to express themselves well?" He said, "Well, I will tell you. I started out rather early as a boy. When I left home to take my first position, my father said to me, 'Just bear this in mind at all times, my boy, that there is no man in this world so ignorant that he cannot tell you something which you do not know.' I have never forgotten that, and in almost every case where I have given time for conversation or discussion with anybody, that they have left me, or I have left them, I have known that I have added something to my knowledge of things in general. On several occasions, with men very ignorant on general subjects, I have picked up points and suggestions which these men have learned to apply in a small way to things entirely foreign to anything which I was doing, that, in the end, when applied to large operations, was the means of bringing into our firm large sums of money." Going a little farther, he said, "If some of these gentlemen who are always too busy to get beyond their own thoughts, with reference to their own business, would break away and give some thought and attention to those in other fields of life like theirs, they would not only be broader men and do their work easier, but they would have more friends. I consider every friend and acquaintance an asset to any man's business capacity."—Rock Products.



Carithers' Building, Santa Rosa *J. O. Kuykendal, Contractor* C-185

Experience—Comment and Suggestions

Advantages of Using Damp-Proof Compound

*By W. E. MORTON

DAMP-PROOF paints have been successfully used on this Coast for the purpose of resisting moisture in foundation work for the last twenty-one years.

We have, however, learned of late that it is equally important to protect the brick walls above the foundation from moisture in damp climates subject to heavy fog and rain.

Contrary to the old method of applying hot asphaltum to the outside of a brick wall in order to resist moisture from penetrating through into the plaster, we now apply a damp-proof compound in liquid form to the inside of all exposed brick or concrete walls for the purpose of protecting the plaster against dampness.

In order to insure against dampness and obtain the best results, the inside of all exterior walls should be coated from the foundation to the roof. The application should be flowed on and thoroughly daubed in so that the whole surface of the brick is completely coated, in order to allow the brick, which is very absorbent, to take up all the compound possible—absorption being the secret of a permanent damp-proof surface.

It is equally important to coat the space between floor joists and behind all floor construction next to walls before floor space is filled up; also all walls that are cut in to take water pipe before such pipe is placed in position; also space between top floor ceiling and roof, inasmuch as dampness in an attic will affect and often ruin the roof.

Fire walls should always be coated on top, as moisture collects thereon and seeps down through the walls.

Brick walls treated with an application of Damp-Proof Compound are not so apt to crack the plaster, inasmuch as the elasticity of the compound is sufficient to take care of the small contraction or expansion that might take place.

Damp-Proof Compound is also a destroyer of alkali, which is quite noticeable in brick and mortar, and which is the cause in a number of cases of tinted walls becoming discolored. This fact has been proved in a number of cases where only a portion of the brick walls were treated to a coating of compound. On examination the portion of the brick wall not coated with

*Mr. Morton is manager of the Pabco damp-proof department of the Paraffine Paint Company, and he has prepared this article especially for the readers of "The Architect and Engineer."

a damp-resisting paint, and where the plaster was applied direct to the brick wall, there was found to be a thin coating of alkali, while the damp-proofed portion of the brick wall showed no sign of discoloring the plaster.

There are a great many instances where Damp-Proof Compound is applied to the outside of brick walls above the ground level, and insures first-class results.

There are a number of brick buildings which have been built for several years that are troubled more or less with dampness. The brick walls of a great many have had the plaster applied direct to the brick, and of course are troubled with moisture penetrating the wall on account of no damp-resisting compound. In such cases if the outside of the wall is given a heavy coating of the compound it will guarantee equally as good satisfaction as if applied on the inside of the brick wall, and render such wall absolutely damp proof.

Knickerbocker Building, San Francisco C-186

This picture shows a practical application of damp-proof compound. Man is at work on second floor.

Brick walls ordinarily contain a rough surface, and the brick being full of pores naturally forms a suction which allows the plaster to cling more tenaciously. Damp-resisting compound penetrates these pores, but of course does not overcome the rough surface of the brick wall. In view of this rough condition of the surface of the brick wall, together with the extraordinary adhesive power of the compound, the plaster is enabled to secure a firm hold and form a permanent bond.

Damp-proof compound will not stop a water pressure unless used in conjunction with the regular Damp Course Process.

The time to apply the brown coat of plaster after the damp-proof compound has been applied depends largely on the conditions, etc. There are a number of instances where the brown coat has not been applied for several months after the application of the damp-proof compound, and still accomplish good results.

The coating, being composed of mineral rubber and non-drying gums, is very elastic and will remain adhesive for a long time.

Ordinarily the coating will set sufficiently inside of twenty-four hours to take the brown coat. In some cases much less time is required. How-

ever, it is always best whenever attempting to plaster in less time to first make a test by applying a scratch coat. If after three or four hours' time you are able to rub the plaster from the wall and on examination find that the particles of sand in the plaster which were next to the compound show signs of penetration by discoloring the brown coat, and a portion of the coating still remains on the brick surface, it is sufficient evidence that the damp-proof compound has set firm enough to allow the brown coat to be applied.

It is not best to apply too thick a coat of plaster on the start. However, if a heavy brown coat is desired on the start, it is best to wait for at least twenty-four hours until the compound has thoroughly set so that there will be no possibility of the brown coat sliding, as might happen.

The brown coat of plaster is mixed the same as for ordinary furring and lath. Hard plaster will, of course, set much quicker than soft plaster. While Damp-Proof Compound renders your building moisture proof, there are other advantages to be considered.

By eliminating the use of furring and lath you gain considerable space in a building, and which, when considering the high prices at which real estate is sold, every inch of space saved means additional revenue to its owners.

Take, for instance, an ordinary brick building. The actual space sacrificed for furring and lath on the brick walls would make an extra room on each floor, and if the building was intended for offices, this feature alone would be sufficient reason to justify the use of Damp-Proof Compound in place of furring and lath.

Basement floors should in every case be treated with the regular Damp Course Process, which has been in use for a number of years.

Care must be exercised in the application of damp-proof compounds over the surface of a new brick wall of only a few hours' standing. Walls should be carefully examined to see that there are no holes on the surface, which sometimes occur from lack of sufficient mortar between the brick. Moisture from wet mortar will collect in these crevices, and, having no other outlet, it will seep through and cause moist spots to appear on the surface of the plaster.

A new brick wall naturally

Alto Building, San Francisco C 187

Damp-proof coating has been applied to the exterior on this structure.

contains more moisture than an old one, which has had an opportunity to dry out. Hence, a coating of Damp-Proof Compound applied over a new brick wall will show up a heavier coating on the surface than when applied over old brick walls, and the question might arise as to the quality of the compound. The quality of the compound, however, remains the same, for the coating has simply disappeared into the brick by absorption, owing to its dry condition, and that feature is just what is desired.

The heavy coating on the surface of the brick is not absolutely necessary in order to affect a bond between the brick and brown coat plaster. If the brick surface is heavily coated the extraordinary adhesive power of the damp-proof compound will take the place of the suction ordinarily contained in brick and which helps very materially in forming the bond.

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A Picturesque Home

AMONG the picturesque homes overlooking the bay in Alameda probably none is more attractive than the palatial residence of Alexander Baum.

The house is an adaptation of the Colonial, having two stories and a large attic, and an exterior of natural cedar shingles. A beautiful lawn and a profusion of blooms add to the attractiveness of this ideal home.

Beam ceilings with Oregon pine wainscoting are features of the reception hall, living room and dining room. From the living room several French windows lead to a spacious terrace and to the porte cocherie. From this room access is also had to the library, which is in a secluded spot overlooking the two streets on the corner of which the building stands. There are handsome tile and brick mantels in each of the down-stairs rooms. One of the features of the dining room is a beautiful combination china closet and side board as seen in one of the interior views.

The other rooms comprising the first floor include a breakfast room, nursery, nurse's bedroom, and large hall with exits to the terrace, which emphasizes the fact that the house is built with the idea of living outdoors as well as indoors. Connected with the dining room by a butler's pantry is a good sized kitchen, and in the rear of the latter is a servant's room for a Chinese, who has been in the employ of the family for more than thirty years.

The second floor is reached by a winding stairway of Oregon pine with a dias platform overlooking the living room, reception hall and dining room and appointed with seats, hall closets, etc. There are five bedrooms on this floor besides a sitting room, dressing room and bathroom. The plans for this house were prepared by Architect H. Barth.

Proposed Reinforced Concrete Bridge at Santa Rosa *William H. Wilcox, Architect.* C-188

Cement and Concrete

Fireproof Reinforced Concrete Storage Warehouse

First Structure of the Kind to be Built in California

By Architect RALPH WARNER HART

A FIREPROOF warehouse which shall be really fireproof must have no materials whatever used in its construction which will burn or be destroyed by the burning of its contents. The building under discussion will be the first reinforced concrete building erected in San Francisco. In this building the whole work, with the exception of the outside walls, is to be of reinforced concrete. This material has been adopted for columns, beams, floors, stairs and all partition walls. The outside walls are to be of brick. There will not be a stick of wood or any other inflammable material used in the whole building. All window frames and sash, door frames and doors will be of iron and all sash glazed with wire glass.

Without entering into a discussion of the merits of various methods of fireproofing, it will be sufficient to state that reinforced concrete has demonstrated its fire-resisting qualities and established for itself a high place among fireproof constructive materials.

Although as yet the use of reinforced concrete has not come into general use for the construction of buildings, still, this material has been slowly developing for a period of nearly forty years in Europe and in this country, and in the last few years it has come to be recognized as one of the great improvements in construction of modern times.

The present building ordinances of San Francisco do not contemplate the use of reinforced concrete, and recent efforts to amend the ordinances and provide for the use of this construction have not met with success. In the light of the history of the development of reinforced concrete, it seems the irony of fate that this city should be one of the last to recognize officially a construction which San Francisco men had been the first in this country to take up and develop. It is unlikely, however, that the adoption of the proposed amendment will be long delayed, and it is to be hoped this delay will result in an ordinance more fully appreciating the possibilities of reinforced concrete than has been the case in many cities.

In this building the wire-wound column is to be used. This form of column might be called after its inventor, the "Considere" column, and it has been proved by its inventor, and other experimenters to possess many advantages over all other forms. Experimental wire-wound columns have developed ultimate compressive strength as high as 12,000 pounds per square inch, and even at these high stresses the failure was gradual and never sudden.

Reinforced Concrete Storage Warehouse for Bekins Company, San Francisco C-189

First structure of kind to be built in California.
Ralph W. Hart, Architect.

This latter characteristic, next to the great strength of this form of column, is its chief advantage, for if overloaded this column will give warning by the cracking of the concrete outside of the wire winding long before the column has been overloaded to the point of failure.

The columns will be spaced fifteen feet centers one way and sixteen feet centers the other way. These columns are to be octagonal and built with longitudinal reinforcement of eight round rods varying in size in the different stories from one inch to one-half inch in diameter, and wound with black wire varying from No. 3 to No. 7 at a pitch varying from two inches to three inches.

The floor beams span both ways between the columns and are to be sixteen inches deep, including thickness of floor slab ten inches wide at bottom and fourteen inches wide at top. These beams are to be reinforced with two 1-inch by 3-inch Kahn bars placed near the bottom and extending the whole length of the beam from center to center of the columns. An additional top reinforcement of two 3-4 by 2 3-16-inch Kahn bars is to be put in the ends of these beams inverted and extending through the columns to develop the additional strength and stiffness of fixed ends.

It will not be possible within the limits of this article to discuss the qualities of the various methods of beam reinforcement, but it will not be out of place to mention the following reasons governing the choice of the Kahn bars for this work. Beams reinforced with these bars develop their greatest strength in resistance to shear, and have been found to fail almost invariably by the rupture of the bars in tension at the center of the beam. The calculation of a beam which may be known to fail in this manner is more nearly exact than can be made for a beam which fails through shearing stresses near the ends, and, what is more important, these beams do not fail suddenly, but give ample warning of overloading. Furthermore, in the practical work of construction the reinforcement, which in the Kahn bar combines both tension and shear members in one, cannot but be put in properly, and remain in correct position while the concrete is being rammed in place. This eliminates one factor of careless workmanship.

The partitions around the elevator and stairway are to be 4″ thick, and reinforced with vertical ⅜″ round rods and horizontal ¼″ round rods set 12″ centers and alternately near the two faces of the partition. Partition forming a vault in the first story will be 6″ thick, and similarly reinforced.

All stories of the building except the first story and basement will be divided into small storage rooms with partitions 2″ thick, reinforced with ¼″ round rods set vertically 6″ centers and horizontally 12″ centers. These rooms will be approximately 4′ 6″ wide, and the whole end on the aisle will be closed with an iron door.

The floor slabs will be 4½″ thick, reinforced with ½″ square twisted bars set 12″ centers and running both ways through the slab. Each alternate bar is to be brought to the top over the beams to make slab continuous. The rods are to be three feet longer than two spans, and are to be put in with broken joints.

All of the concrete used in this work is to be machine mixed, and the proportions for the columns and foundation are, one part Portland cement, one part sand, one and one-half parts gravel and five parts of broken stone. Proportions for beams and floor slabs to be one part cement, one part sand, one part gravel and four parts of broken stone. All gravel to be of a fineness to pass through a ⅜″ ring, and all broken stone to pass through a 1″ ring.

The cement is to be furnished by the Pacific Portland Cement Company.

Native Sons' Hall, Woodland *Seadler & Loen, Architects.* C-190

As the work progresses tests will be made of the strength of beams and floor slabs. The city ordinance prescribes a live load of not less than 120 pounds per square foot, in a building used for the purpose of light storage, such as that for which this building is designed. The test loading will be 400 pounds per square foot, and floor slab and beams must carry this load without sign of failure or of deflection resulting in permanent set.

The front of the building will be faced with brown glazed brick, and all cornices, belt courses, arches, sills and angle quoins will be red stock brick laid up in red mortar. The building will have a freight and a passenger elevator and an enclosed stairway of reinforced concrete. A standpipe and hose reels in each story are provided. The office, ladies' reception room, toilets, etc., are to be found in the first story.

Architecture of Hollow Block Buildings

AMONG the interesting papers read at the recent meeting of the Concrete Block Machine Manufacturers' Association of the United States, held in Chicago, was one by Frank L. Dykema, Grand Rapids, Mich., dealing with the subject indicated by the title above. He stated at the outset that he had endeavored to eliminate as far as possible any personal ideas he might have, and to present the matter as nearly as he could from the standpoint of the architect. He pointed out that while manufacturers were not altogether dependent upon the architect for the success or failure of the sale of cement stone, still it was the architect finally who created the styles and developed the best methods of using a new material, and as a final result the manufacturers must produce that which the architect demands.

While it is true that three-fourths of the buildings constructed are never heard of by the architects, it is also true that practically all buildings are constructed along lines developed by architects, as sometimes the ideas are originated by the architect, and whether the plan is bought and paid for, or whether the ideas are borrowed from work already done, does not change the origin of the idea. Broadly speaking, the art of architecture is the art of combining the qualities of utility and beauty. A building properly designed must satisfy both as to proper interior arrangement, sanitation and convenience, combined with a satisfactory exterior effect, and in all a durable building as free as possible from the repair expense.

Go Hand In Hand

IN THESE days of reinforced concrete, steel and iron seem to go hand in hand. In talking of the two great industries, however, it is possible that many of our readers do not realize the comparative growth of these two giant businesses.

John Fritz, the real creator of the Bethlehem Iron Company, and who at eighty-three years of age is recognized as the "great old man" of the steel industry, has recently stated that during his lifetime he has seen the output of steel and iron in this country grow from 300,000 tons to over 22,000,000 tons. This growth seems marvelous, yet in point of fact there are those who have been connected with the cement industry, and who are still alive and active in business, who, within a period of thirty years, have seen the Portland cement business of this country grow from nothing in the early seventies to 30,000,000 barrels (estimated production) for the year 1905. Reducing the 30,000,000 barrels to tons, it would seem that the Portland cement industry would aggregate alone between 6,000,000 and 7,000,000 tons, or, in the matter of tonnage, nearly one-third of the iron and steel output of the country. This is a good growth for a lusty industry.—Concrete.

*Reinforced Concrete Construction

By LEWIS A. HICKS, Member Technical Society Pacific Coast

THE determination of the modulus of elasticity for concrete by experimenters has so strongly reflected the uncertainties of the personal equation involved in mixing and other variables, as shown in resulting values of from 1,500,000 to 7,000,000 inch pounds, that there is some natural hesitation in applying the results obtained to actual designs, where the equation of the man with a shovel is introduced and mathematical refinement of treatment is evidently out of place.

The experimental work of Professor Talbot and Professor Turneaure has furnished evidence that the position of the neutral axis in a reinforced concrete beam when stressed to its ultimate value approximates closely to a distance of .6 of the depth of the beam above the center of gravity of the steel reinforcement. Professor Talbot has given an empirical expression for the position of the neutral axis, based on experiment, as a ratio of the depth of the beam below the compression face, viz.:

$$k = 0.26 + 18p$$

This expression may be used for final determination on exceptionally important designs, but for usual percentage of reinforcement, and within allowed working stresses, it is probable that the error introduced in assuming its position at .4d below the compression face will be of much less relative importance in the result than a mistaken selection of a value for the modulus of elasticity not conformable to the actual conditions obtained in construction, and preliminary computations are much simpler by regarding its position constant.

The area of the diagram of compressive stresses above the neutral axis representing the product of the maximum fiber stress and its distance from the neutral axis to the upper compressive face will vary from ½ to ⅔ of the rectangle within which its boundary line of ordinates representing fiber stress is described, and the center of application of the sum of the compressive stresses will be above the neutral axis from ⅝ to ⅔ the distance from said axis to the upper compression face. For practical designing the position of the centroid of compression is assumed to be above the neutral axis a distance of .66 of the total distance to the compression face. Adopting the following notation, viz.:

Let b = width of beam
d = depth of beam from center of gravity of steel reinforcement to upper compression face
p = ratio between sectional area of steel and concrete
Cw = working stress in concrete
Sw = working stress in steel
As = area of steel
M = bending moment in beam

Consider a reinforced concrete beam of unit width. Since the sum of the forces on either side of the neutral axis must be equal, and since $As = p \times d \times 1$, we may write, neglecting tension in the concrete,

(1) $$Cw \times .4d \times .666 = Sw \times pd, \text{ or } p = .2\, Cw/Sw$$

It will be observed that for given working values of safe stress in the concrete and steel there is but one percentage of reinforcement which will preserve an

*The first of this paper was published in the September number of the "Architect and Engineer." Back copies may be had at the publication office.

economic balance. It is desirable that the concrete should not be stressed in compression to more than ¼ of its ultimate, while there is no reason why the steel, if adequate provision for adhesion is made, should not carry the same unit stresses allowed for similar grades of material in structural steel work.

It therefore appears more rational to develop formulae in which actual allowed unit stress values may be inserted, rather than to calculate ultimate strength of the combined material and affect the result by a factor of safety common to both.

If loading permits less steel than the economic percentage in a beam of given dimensions, the compression in the concrete may be neglected, since the safe loading of the steel will not develop its safe stress. If, on the other hand, more steel is required than indicated by the economic percentage, some provision other than the concrete itself will be required to keep the stress in the concrete within its assigned limits. If values adopted in the ordinances of some of our American cities are used in design, viz.:

Safe compression value for concrete, 500 pounds per square inch.

Safe tensile value for steel, 16,000 pounds per square inch

and a good grade of concrete, mixed 1-1-2-4, is used in conjunction with commercial bars and rounds of soft steel having an elastic limit of 33,000 to 40,000 pounds, it is evident that failure will occur in the tension side long before the ultimate compressive value of the concrete is reached. Most of the experimental results confirm this, failure usually occurring from an extension of the first visible crack in the tension side of the beam, which takes place at about two-thirds of the ultimate load sustained.

The elastic limit of such bars of commercial steel as have come under the personal observation of the writer has ranged from 36,000 to 44,000 pounds, and for the working stress of 16,000 gives an average safety factor of 2-½ in the steel.

If the mixture of concrete is modified to give an ultimate thirty-day crushing value of 2400 pounds, and one-third of this adopted as working stress for concrete, there will be a more nearly balanced condition, and the economic percentage will be

$$p = .26\ 800/16000 = 0.0125$$

in place of about .008%, called for by limiting the stress in the concrete to 500 pounds per square inch.

The most economical method of increasing the strength of a beam of given sectional area is evidently to enrich the concrete mixture, as this not only permits higher working stresses in compression, but within working limits has a favorable influence on the condition of the concrete below the neutral axis.

The effect of placing steel on the compression side of a beam is not well determined, but some experimenters have reported that no increase of strength is obtained by such disposition of metal. The writer believes that the reason for this is the same previously noted in connection with the use of vertical bars in columns without hooping, viz.: that longitudinal shearing takes place before the bars develop their compressive strength. If this is correct, the remedy would be the use of stirrups at much more frequent intervals than is usually customary.

This problem of obtaining maximum strength from members of limited depths is a constantly recurring one in building design, and although reinforced concrete girders are being constructed with steel in the compression side under moments which indicate that the steel must be supplementing the concrete, the writer would not place reliance on steel so placed without further

experimental knowledge. It seems probable also that Considere's results with hooping of columns may be applied to beams with good results.

Illustrating the comparative weakness of reinforced beams, it may be stated that the modulus of rupture for pine beams for center breaking loads is 500 bd^2/L, while the same quality for concrete beams, reinforced with 1.25% of high steel having an elastic limit of 60,000 pounds, would be about 200 bd^2/L. Or, in other words, the strength of pine beams is from two to four times greater than for reinforced concrete of the same depths and spans.

This phase of design needs further investigation before special conditions existing on high building work can be successfully met.

Since the limiting conditions of allowed compressive stress are included in the determination of value of p from equation (1), we may now obtain an expression for the depth in terms of the known bending moment and allowed steel stress.

The tension in the steel is evidently equal to the quotient arising from the division of the bending moment by the lever arm of the resistance moment of the beam.

This lever arm common to both the forces above and below the neutral axis will be the sum of the distances from the neutral axis to the center of gravity of the acting forces in the steel and concrete, or

$$.6d + (4d \times \tfrac{5}{8}) = .85d$$

We may now equate the forces acting below the neutral axis as found in equation (1) with this expression for tension in the steel and solve for d as follows:

$$(2)\quad Sw\ pd = M/.85\ d \text{ and}$$

For beams of any width this may be written

$$(3)\quad d = \sqrt{\frac{.85\ Sw\ p}{M}}$$

$$(4)\quad M = (0.85\ Sw\ p.)\ bd^2,$$

a general equation which may be used for any possible safe or ultimate stress in either concrete or steel, for any percentage whatever of reinforcement. The terms 0.85 Sw will give results agreeing closely with experiment between the limits of ½ to 1—¾% of reinforcement when the elastic limit of the steel is used in place of the working stress. Outside these limits the variation in position of neutral axis and resulting changes in length of lever arm about the center of gravity of the compressive forces necessitate more precise determination of these factors, although the continued use of the constant 0.85 will not involve errors of more than 10% in excess for 2% reinforcement, and about 6% in deficiency for .001% reinforcement.

Using Talbot's experiments, the relation expressing the variation in length of lever arm under changing conditions of reinforcement may be derived as follows:

$$r = \text{Lever arm} = .90 - 6.5\ p.$$

and this resulting value may be substituted in equation (4) in place of the term 0.85, which is evidently correct for a reinforcement of about 1%.

European engineers have derived a formula for strength of concrete beams in the form

$$M = \mu\ bd^2$$

and many foreign experiments have been tabulated in the form

$$\mu = M/bd^2$$

which furnishes a convenient comparison of the relative strength developed by different beams tested. Such tabulations have no value, however, when

the characteristics of the materials are lacking. It will be observed that the formula offered by the writer can be written in the same form, and yet furnishes an analytical working conception of the results of changing percentage of reinforcement.

In cage construction the existence of wall girders and columns furnish ideal conditions for the use of light reinforced concrete curtain wall tied in all directions into the skeleton frame. The maximum wind load, for the spans which occur, are insignificant compared to floor loads, and the saving in weight is important.

Front elevations and other walls receiving architectural treatment may be faced with any building material now in use, with a much more thorough bonding than is now considered necessary for a pressed brick front.

It is possible to lay up the facing, tied with wire to a back form to insure alignment, and back up with reinforced concrete as rapidly as the brickwork progresses, in such a way that the resulting combination, while saving weight and space, is much better adapted to resist the bending moment of architectural projections than ordinary brick enclosure.

All exterior walls should receive the same treatment as to damp-proofing or furring required by other masonry walls.

COMPRESSIVE STRENGTH.

The most important factor in the compressive strength of concrete is the void space of the sand used, since this determines the amount of cement required for unit volumes of mortar of equal strength. If the voids of all materials entering into the composition of concrete, smaller than some agreed limit, such as 1/16 inch maximum dimensions were always measured and stated, the value of comparative tests would be greatly increased. Without this information it may often happen that a nominal 1-3-6 mixture may show greater strength than a 1-2-5 composition. Suppose the first to be made up of Niles sand with a void space of 30%, indicating the presence of more than sufficient cement to fill the voids, a condition requisite for the best results, and that the resulting volume of mortar is mixed with crushed rock having voids of 45%, indicating rather fine sizes. Again, there is an excess of mortar —a condition which facilitates handling and workmanship.

Suppose the second mixture to be composed of beach sand, having a fine, uniform grain and a void space of 58%, showing a deficiency of 16% in amount of cement required to fill the voids, and a total deficiency in comparative strength of 28%. There is a further deficiency in the amount of mortar present to fill the 45% of voids in the rock used with both mixtures, and a probable net loss of strength, to the extent of 30%, in ultimate compressive values when compared with mixture No. 1. Nor does this represent the worst aspect of the case.

Mixture No. 1 would produce about seven cubic feet of tamped concrete in the wall for each foot of cement used, while No. 2 would not make more than five cubic feet.

At present prices of cement in California this would mean that a cubic foot of 1-2-5 mixture would cost 3 cents more, or about 12% in excess more, than for the 1-3-6 mixture, although its virtual value relatively would only be 60%.

Furthermore, since design is based on the application of safety factors to ultimate values obtained from test specimens, it is apparent that the discrepancies in results obtained from lean and rich mixtures by different observers, and the low values shown by numerically rich mixtures with bad void relations, tend to the adoption of low working values, and thus bring

about the use of larger quantities than would be required for the duty assigned it, if the real strength was within the knowledge of the designer.

Formulae have been proposed for the ultimate compressive strength of concrete of differing make-up of aggregate in which the neat strength of cement is the maximum to be reduced by a constant multiplied into the ratio between volume of cement and aggregate, as follows:

C=4500—250f, where f represents the volume of aggregate divided by the volume of cement.

Applying it to the cases already noticed, ultimate values are obtained as follows:

Mixtures..... { No. 1—1-3-6=2250
No. 2—1-2-5=2750

The expression 4500—6000 V, where V equals the percentage of void space in the sand used smaller than 1/16 inch diameter, applies in making comparisons between mixtures having the same make-up in terms of quantities but a different void space in the sand used. The writer believes this to be the logical form for such an expression, and finds that it covers a limited range of experience in our own work with California sands.

We have tested all the sands and quarry products within freight limits of San Francisco, and find that while quarry products show a marked similarity for the same grades, there is a wide variation in the characteristics of sand and gravels.

Good results can sometimes be secured by blending sands from different localities, as the resulting void space of the combination is not always the average of the sands considered separately.

There should be an authoritative determination of the question of comparative compressive strength, and it seems apparent that while a 1-2-4 mixture will be slightly stronger than a 1-2-5 having the same materials, a much more important gain in strength may be secured, with direct saving of money, if another sand having a smaller void space can be substituted.

SHEARING AND ADHESION.

Concrete has been shown to have about the same characteristics in shear as in the natural stones, and the ultimate value for shear approximates 1/10 of the ultimate for compression.

Where a mechanical bonding is not secured between concrete and reinforcing steel by means of deformation of the bars, the shear between the steel and concrete becomes an important matter for investigation in any proposed design.

Statements of the value of adhesion vary from 200 to 700 pounds per square inch of contact. For 1 inch plain round bars this would indicate a minimum shear of 7500 pounds per foot, and would mean that a length of 26 inches would develop the safe tensile stress allowed in the bars, and for lengths usual in practice the factor of safety for adhesion will equal span in inches divided by 26.

Inasmuch as the strength of bars of smaller size decreases as the square of the diameter, while the shear decreases only as the diameter, it is evident that the smaller bars involve larger factors of safety and a better distribution of stress.

CONCLUSIONS.

In buildings where the height or value of floor space does not limit the space available for columns, reinforced concrete may be used economically in place of steel in combination with girders and beams of the same material

within such limits as the available depths and allowable compressive strains in the richest concrete mixtures used permit.

For extreme cases of concentrated loads in long spans of limited depth it is probable that resort must be had to light structural shapes of steel in both tension and compression to insure positive connection between the acting forces, independent of the concrete, except as to the useful function it still performs as a buckling or stiffening element.

Further investigation as to the design of both beams and columns is desirable before the material can be rated as acceptable in all cases.

* * *

Use of Cement Stone

There is no question as to the use of cement stone in building construction. Even the most obtuse of the architects admit this, however grudgingly they may do it. The general desire today in any construction is to create something permanent. American life has been a hurried one, and the most desirable quality in any structure has been immediate utility rather than long life. The standard of values is changing, and permanency is demanded as one of the first requisites. This is not alone apparent in building, but in nearly everything in which wood has been used, and in many cases in such structures as have been made of natural stone, brick and steel.

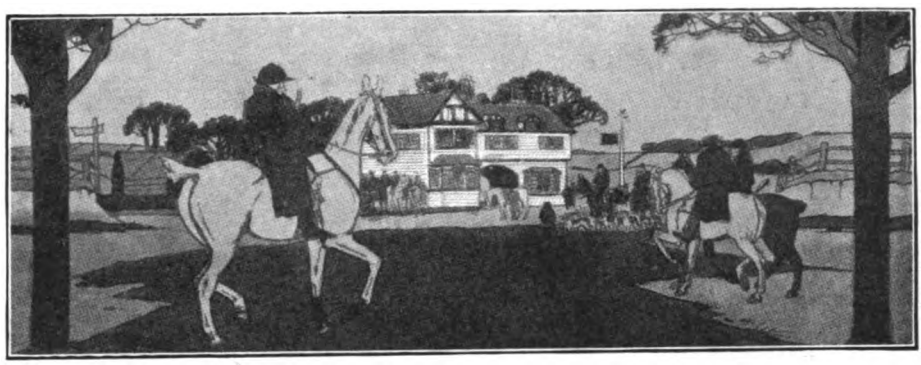
The first demand by the architect is quality. That we can supply. Little question is raised now as to the durability of cement in building construction. Freedom from the effects of the elements which tend to destroy other materials is too well known. The value of the hollow wall as a sanitary feature is a fact that has been recognized for many years and striven for with poor success and greater expense in other styles of construction. The fireproof quality is generally acknowledged by everyone except the fire insurance people, with whom our good friend, Mr. Wiltse, has been making a good fight.

We have, therefore, to offer to the architect the ideal material, so far as quality is concerned; but he asks more than this. To develop artistic effects he must have more to work with than mere durability. This is the work that is given us to do. We are the pioneers in a great movement, and we must furnish the ideas for the architect to work with.

Cement stone represents a radical development in building construction. It is absolutely new. It is an honest material. It gives full service wherever used properly, and its use makes possible new and novel effects in the exterior of buildings.

To develop artistic effects, the architect requires adaptability as to form, opportunity to use contrast in color, form, line or texture. The whole necessity finally develops into ability to develop contrast. As stated above, cement is an honest material; it is a good material, and is amply able to stand for itself. Artificial stone, which we all started to make, is already a thing of the past. Cement stone is the material we are dealing with now, and as cement stone this new material must stand or fall. The architect does not recognize an imitation or anything artificial, and will not deal with it as such. But there is no necessity of imitation. Cement is rich in possibilities, both as to form and finish. The production of any form demanded by the architect is only a matter of mechanical ingenuity, and the development of proper finishes and effects is a matter of study and thought to bring out the latent qualities in the material with which we are working.—Exchange.

An Impressionist Idea *From Camera Craft.* C-191



Interior Decoration Up-to-Date Furnishing

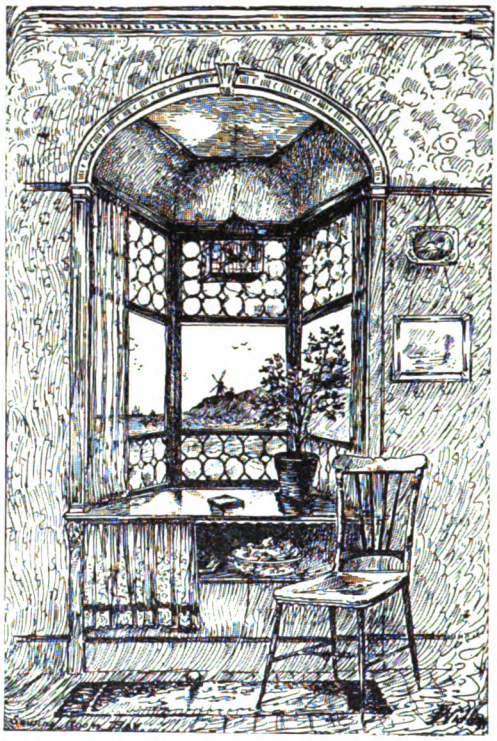
Walter Crane and His Work

AS the chief exponent to-day of the pre-Raphaelite spirit, Walter Crane exerts a powerful influence in the field of decorative designing. Crane's first work was in the illustration of children's books, and his brush and pencil have found exercise in the designing of illustrations, book covers, decorative designs, gesso and plaster work, stained glass, tiles, pottery, easel pictures, textiles and wall-paper. He is still one of the best-known wall-paper designers in England.

His later work is as strongly suggestive of the pre-Raphaelite movement as was the work which he did in the days of Morris and the pre-Raphaelite society. His wall-paper designs are many of them extremely like the work of Morris, and in such decorative drawings as "The Triumph of Labor," the influence of Burne-Jones is marked.

Walter Crane came from a family of artistic culture. Objects of art and the aspiration to achieve were thought of from his birth. At the age of twelve he was taken to London. He became acquainted with the writings of John Ruskin, and at the age of fourteen became an admirer of certain works of some leading pre-Raphaelites.

His earliest effort, in the way of book decoration, was a set of colored page designs for Tennyson's "Lady of Shalot." These were shown by a friend of the family to Ruskin, who admired them, and obtained a position for the boy in his office, where he was formally bound apprentice for three years to learn the art of drawing on wood for the engravers. The work of Rossetti, Holman, Hunt and Millais fascinated him. He became interested in pictorial work, and in 1866 had a drawing accepted by the Dud-



An Attractive Bay Window. *William Wilcox, Architect.* C-192

ley Gallery. It was not until about 1865, in the color designs for children's books, that any real originality in treatment is to be observed in Crane's work. At this time he made the colored designs for some toy books. By 1869 and 1870 his style in children's book illustrations became very marked and well known. In about 1865 Japanese fans and prints began to appear in the London shops, and the Japanese feeling attracted Crane.

Crane was married in 1871, and the long visit to Italy which followed must be counted as an important influence on his work. Upon his return to London in 1873, the Italian influence, blended with the Japanese influences and those of the forms of later Renaissance art, are to be traced here and there in his designs. He was still drawing for picture books. He was accustomed to introduce into these children's book designs not only pictorial ideas, but impressions of fancy and form, as in details of dress, furniture and decorative pattern. The invention of decorative illustrations interested him and lent charm to his work, as it has to the similar work of Carl Larsson, the Scandinavian artist.

Crane continued to do book designs and illustrations with increasing success and growing power during the following twenty years. He came into touch with William Morris, and the two became close friends. The design of "The Goose Girl," done for a volume of Grimm's "Fairy Tales," was seen in 1882 by Morris, who asked Crane to do for him a design capable of being worked into Arras tapestry, which Morris was at the time engaged in reviving. This was the first work which Crane did in the way of tapestry design. Among the more popular books which were published during these years containing decorations by Crane were "The Babies' Opera" and "Flora's Feast."

In 1891 Crane collaborated with William Morris in producing the illustrated edition of "The Glittering Plain," issued from the Kelmscott Press.

Morris designed all the ornamental borders and the initials, while Crane supplied the little pictures. Regarding this work he writes: "I doubt, however, if I was ever quite Gothic enough in feeling to suit his (Morris's) taste."

In the fall of 1891 Crane visited America and was enthusiastically received, particularly in Boston. He speaks with particular pleasure of the friendship which he formed with Dr. Emerson and W. D. Howells. During his stay in America he drew the illustrations and decorations for Hawthorne's "Wonder Book," published by the Riverside Press. He also completed two allegorical designs and some black and white illustrations while here. He received very little encouragement, however, in his decorative work, though he was intensely interested in the subject at this time. He returned to England in August, 1892. He continued his illustrating work, doing, among other things, a set of pen drawings for an edition of Shakespeare.

It was William Morris who exerted the chief influence over Crane in his work for furniture and textiles, stained glass and decorations. A few designers began to gather from time to time to discuss subjects connected with the theory and practice of their art.

The little society first met at the house of Lewis F. Day, whose influence is important in England, and whose books on design are authoritative. This little society became absorbed into a larger and more comprehensive one, called "The Art Workers' Guild." Inspired by the example of his fellow artists and craftsmen, Crane undertook the originating of decorative designs. He approached the decorative design rather from the painter's and book designer's point of view. From "The House That Jack Built" and "The Palace of Beauty and the Beast," he was gradually led to create a modern dwelling—the ornamental side, cultivated in the toy books, worked into special designs in wall-paper, both side-walls and friezes, and designs for embroideries and tiles.

Crane's first wall-paper was very naturally designed for a nursery. It contained the pictured stories of "The Queen of Hearts," "Little Boy Blue" and "Bo-Peep," arranged in three vertical divisions and repeating. This was for machine printing from a roller. Crane's wall-paper designs have, from the first, been produced by Jeffrey & Co. In response to their request for a hand-blocked paper, he produced "La Margarete." It was a little conventionalized floral treatment, very strongly suggestive of Morris. He also designed a complete wall decoration, with "La Margarete" as a side-wall, a dado of lilies, a frieze of classic figures and a ceiling. These first efforts in the way of wall-paper designs were produced about 1875. Crane's wall-paper designing has continued ever since, and while it has undergone many changes, it still bears the pre-Raphaelite stamp. In the later designs we find the use of a more flowing character of line in general structure of the pattern, and, in general, a richer and more redundant detail.

Crane's work in textile designing was limited. It was confined to a few embroidery designs, one or two tapestries, printed cottons and silks, a carpet design and a pattern for a damask table cloth.

Crane also did some rather noteworthy work in plastic relief. In about 1874 he had some decorative panels to do for the frieze of a dining-room, and it occurred to him to raise and gild parts of them, somewhat after the manner of the early Florentine school.

After this he completed a somewhat extensive piece of decorative work—the large salon of the country house of Dr. William Spottiswoode at Combe Bank, Seven Oaks. The ceiling was particularly elaborate in symbolical figures. These were modeled in gesso and decorated. On the side-wall Crane placed the stamped and gilded Italian Renaissance wall-paper which he designed for Jeffrey & Co.

Glimpse of the Architectural Club's Recent Loan Exhibit C-193

Suggestion for a Dining Room

A COMMONPLACE dining room was transformed by a scheme that depended neither on furniture nor new things. It was simply a color idea that has proved as satisfactory as anything one could have, be he rich or poor.

The room that was so changed was itself unmitigatedly plain, with "grained" woodwork, a pine floor and wall-paper, colorless and characterless. The furniture was ordinary, neither good nor bad.

When Venetian red paper was put on the walls, the possibilities for distinction began. One discerning woman had long determined to have only blue and white dishes. Because they are cheap, and a variety of designs and qualities may be harmonious, and because she believed that color, managed with judicious determination, makes an effect; she bought nothing else. So with a red background she actually achieved an effect—that subtle disposition of things that is good and appropriate, whether they are cheap or costly. The good color on the walls and the pine floor stained, and rubbed with paraffine and turpentine, made the essentials; the non-essentials did the rest.

On a shelf was a row of Japanese teapots. Two plain racks held blue and white plates; two photos in flat black frames were the only wall decorations. On the sideboard were candelabra of black iron, and blue and white porcelain. A punch-bowl of Japanese ware, the usual silver, and more blue, and some red clay teapots on the top shelf.

Blue and white figured denim curtains hung straight at the sides of the windows from top to sill. All the table dishes were blue and white, some Japanese, some willow pattern, and all of them cheap. Comfortable coffee cups of willow ware, exquisite teacups of thin Japanese porcelain, chop plate, bowls, ramequins, and plates of rather thick Japanese ware for several courses. Even salt and pepper dishes are made in blue and white, and a fairy-like fern dish of openwork design, with a low, broad asparagus plant in it, made a centerpiece that no one tired of all winter. The larger platters, vegetable dishes, pitchers, dinner and soup plates were of willow ware, not one piece costing over a dollar, and most of this gradually accumulated collection was bought for nimble nickels, dimes and quarters.

The colors, and adherence to a simple idea, wrought the change.—The House Beautiful.

Mistakes in Building His House

WHEN one is building a home for himself, it is always interesting to hear the opinions of his neighbors regarding the new structure and the many changes or improvements which they would incorporate if the building was being put up for them. Sometimes these ideas are suggestive and practical, and again they are more amusing than otherwise. Not long ago a railroad contractor by the name of O. M. Weand erected a home for himself at Reading, Pa., and to commemorate the completion of the building, he published an illustrated pamphlet of fifty or more pages containing the criticisms of leading citizens. The title of the little book was "The Mistakes I Made in Building a House." These criticisms are of such a nature as to interest a great mass of readers, and we have been permitted to copy those presented herewith:

"I would prefer one large window in the second-story front instead of the double window."

"Of course, you are building the house, but if it were mine I would run an open porch around the corner so as to connect the two porches."

"You'll make a mistake if you don't pebble dash the exterior."

"You'd better run thirteen-inch walls all the way up. It gets pretty windy out here sometimes."

"I think the ceilings are too low."

"My! how small your rooms are."

"You ought to be on the other side of the street."

"If it were my house I would prefer to have the cornice several inches higher."

"By all means put a double line of boards on the first floor. It keeps the cellar dust from coming through."

"Those chimney tops look like tombstones."

"The lawn steps should have been immediately in front of the main entrance."

"Why didn't you set the house in the middle of the lot?"

"Personally, I prefer steam heat to the hot water system."

"Why didn't you build the refrigerator in the den instead of in the cellar? It's handier."

"Don't use sod. Sow lawn seed."

"I think your house is built too close to the ground."

"If you don't cover the pipes with asbestos you'll regret it."

"You certainly have made a mistake in putting in a concrete cellar. It makes everything very dry."

"Say. Oh! I was through your house on Sunday, and I think it an ideal plan. I don't know when I saw a house that pleased me more, both from the exterior and interior point of view. It is perfect. Possibly the pitch of the roof is a trifle low, and I would have made the crest longer so as to provide a billiard room on the third floor; and I would have built a separate addition on the ground floor and had my kitchen sort of detached, and——"

"I think it looks like a stable."—Carpentry and Building.

* * *

Matrimony is an optical institute for the blind.

The man after a woman's own heart may not want it.

The man who puts his head into a barrel does not eclipse the sun.

Nine times out of ten the doctor doesn't know what is the matter with the patient—but he knows enough not to say so.

The Schwab Mansion

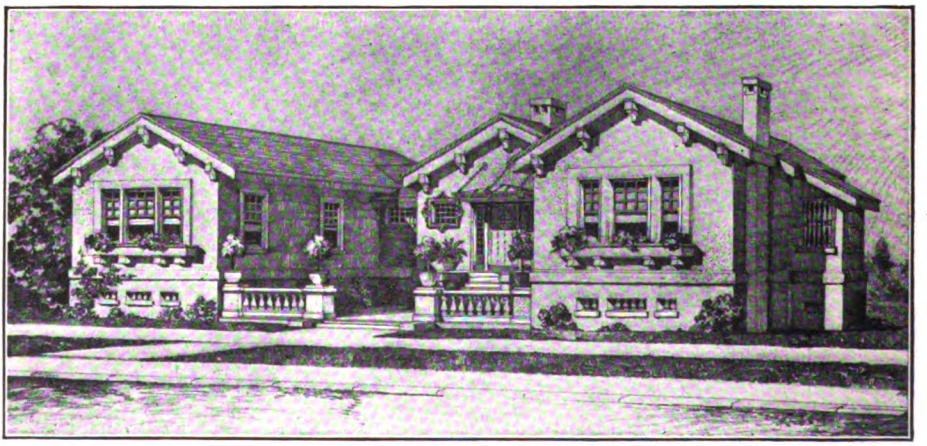
CHARLES M. SCHWAB has built a mansion on Riverside Drive, New York City, at a cost of about eight million dollars, says the Decorative Furnisher. Mr. Schwab is a typical prosperous American iron magnate. He made his money in and near Pittsburg, in the iron business. In iron he is one of the most talented men in the world. In other things he is nothing remarkable. His eight million dollar house is less remarkable than Mr. Schwab himself. It is an eight million dollar example of period styles. This house will be talked about all over the United States. It will be illustrated in all the ladies' magazines, and the newspaper Sunday supplements will glow about it.

Do not forget that the house cost eight million dollars. Whenever you look at one of the pictures of its like-France interiors remember that eight million dollars was the cost. The house is interesting—because it cost eight million dollars. It is not especially interesting for any other reason except as showing that even eight million dollars is not sufficient money to induce an American to create a truly American house.

Mr. Schwab has obtained, doubtless, his full eight million dollars' worth. He has paid for a house that is as unlike Mr. Schwab, the Pittsburg iron man, as anything could well be. The pictures of his house are like the wood cuts and engravings of the elegant palaces of France. The house itself is a masterpiece—it is an eight million dollar masterpiece—but it is a French mansion dollars and forty years of time.

We do not doubt in the least that Mr. Schwab got just the kind of a house he wanted. We doubt if he could have secured an original and high-grade American house for any mere eight million dollars. To reproduce or to adopt a period style to give absolutely perfect results eight million dollars seems quite sufficient. To get an American to create a house that would show absolute originality would probably cost Mr. Schwab eighty million dollars and forty years of time.

The architect, to say nothing of the decorator and finisher, would probably have to be born, bred and trained for this particular job. What he would do after this structure was completed we do not know. Probably he would be transported.



Havens and Topki, Architects. C-194

With the Builders

We solicit correspondence on all matters of general interest to the building trade in all of its branches :: :: ::

Henry A. Hoyt,
President Builders' Exchange, Santa Rosa

Frank A. Sullivan,
Secretary Builders' Exchange, Santa Rosa

The Santa Rosa Exchange

THE Santa Rosa Builders' Exchange, although comparatively young, is one of the most prosperous organizations of the kind in California, and its membership is continually on the increase. The Exchange has an extremely bright future. Through the medium of this organization a strike, which for a time, threatened to be serious, was adjusted. Other matters, just as important and beneficial to the members, have been looked after by the Exchange to the full satisfaction of all concerned. The officers are: President, Henry A. Hoyt; Vice-President, Thomas Jones; Recording Secretary, Frank A. Sullivan; Financial Secretary, U. G. Davis; Treasurer, J. F. Wallace. Executive Committee—F. Berka, J. O. Kuykendall, W. L. Nagel, J. H. Minard, E. M. Williamson, C. D. Roberts.

Among the Architects

Information contained in this publication is gathered from the most reliable sources accessible, but to make it absolutely accurate the publishers urge the co-operation of the members of the profession :: :: ::

Sutton & Weeks have received the award of the State Commission for modernizing and making fire-proof the State House at Sacramento. The cost of the improvements is $325,000. Sutton & Weeks are to be assisted by Myers & Ward and Copeland & Pierce, both San Francisco architectural firms. There were nine firms in all to compete for the work. Work is to be started on the improvements at once.

Architect Newton J. Thorp has prepared plans for a handsome residence for John Martin of the California Gas and Electrical Company to be built in Mill Valley. Besides a residence there will be a coachman's cottage, stable, dairy, artificial lakes, etc. All the buildings will be in the Spanish style of architecture.

The Wheeler mansion at Berkeley is to be finished at once from plans by Albert Pissis and John G. Howard. The exterior of this palatial mansion was finished some time ago.

The Hillside Improvement Club of Berkeley is to have a new club house and the University of California Press Club also plans to build a home for itself from plans by John G. Howard.

Wolf & McKenzie of San Jose have made plans for a residence for Edward M. Rea, a prominent attorney of that city, to be built in the Neglee tract at a cost of $4500.

Stone & Smith are busy, as usual, planning new school houses and this firm is fast acquiring an enviable reputation in supplying California demands for good school house architecture. Recent contracts taken by Stone & Smith are at Sebastopol, Healdsburg and Santa Rosa, and the San Francisco Normal.

Architect Maxwell G. Bugbee is a busy man these days. Among the substantial contracts lately taken in his office are residences for Du Ray Smith, Mrs. Ida Nesmith, M. F. McBrerty, and Col. A. D. Cutler.

Shea & Shea have made plans for a substantial parochial residence to be built in Oakland for the Church of the Immaculate Conception. The house will contain fifteen rooms and will cost in the neighborhood of $12,000.

Joseph D. Grant of the well-known San Francisco firm of Murphy, Grant & Co., is to build a palatial residence at the corner of Webster street and Broadway, San Francisco, to cost $80,000.

D. Franklin Oliver has made plans for a flat and store building to be built by Smook & Thomas at Twentieth street and Telegraph Avenue, Oakland; also a $10,000 residence for B. C. Cook in Alameda.

Plans for residences are being made by Architect H. M. Patterson of Los Angeles for J. A. Woods and J. A. Lewis. Mr. Patterson has also made plans for a new church edifice for the Third Presbyterian Church of Los Angeles.

It is understood that Brown & Schulze are preparing plans for a substantial addition to the Olympic Club house. Three additional stories are contemplated.

Plans for the alteration to Frank W. Marston's building at the corner of Kearny street and Market place were

made by Meyer and O'Brien and call for an expenditure of about $25,000. The present building is to be raised four stories.

Cunningham & Politeo have made plans for a $12,000 residence for Mrs. H. C. Newell to be built on Clay street in San Francisco.

Bliss & Faville have made plans for a handsome residence for J. J. Moore to be built at Menlo Park at an outlay of $12,000.

Architect D. Franklin Oliver has purchased the Maple Hall building at the corner of Fourteenth and Webster streets in Oakland and at the expiration of a two-year's lease Mr. Oliver plans to erect a fire-proof business block to cost $100,000 or more. The location is one of the best in Oakland and it is the opinion of realty men that Mr. Oliver has made one of the best investments of the year.

August J. Headman, who, with Ernest H. Hildebrand went to Philadelphia six weeks ago to attend the University of Pennsylvania, has written an interesting letter to the members of the San Francisco Architectural Club, telling of the trip across the continent and of the entertainment given the two while in Chicago. A part of Mr. Headman's letter is given herewith:

"The San Francisco Architectural Club—Dear Boys: Earnest and myself are now real 'Pennsylvania men,' and find it real hard to get accustomed to the student mode of dress, actions, athletic lingo, yells and numerous other things which are classified in a worthy 'Penncy' student. Our work is of a preliminary nature at present, but we are told that we will have all a fellow can handle in a week or so. As yet we can not offer an opinion as to the special course offered here.

"We enjoyed a grand trip on our way East; saw everything it was possible to view in the space of time and enjoyed the very best of weather.

"San Francisco, as far as architecture is concerned, is ahead of any city as far East as Chicago. In fact it can compare with Chicago, though it may not be in possession of as many large and high buildings. Art is very much advanced out here also, but remember, fellows, our dear city is quite young. New York, of all cities, is worth mentioning. The standard of architecture there is something wonderful. Design is beyond improvement and seems so wonderful that the mind becomes tired studying it in a very short space of time. While at Chicago, Earnest and I were grandly entertained by the Architectural Club there. The Chicago boys invited us to lunch and to a club jinks which were held the same evening. We talked club and scague work all night and I have a good idea how they conduct the clubs here. We are not behind, though we ought to expand before we carry on things on as large a scale as they do here. So strive to increase the membership. I am awful sorry I am not there to put my hand to the wheel. I shall write more next time and go into detail."

$1,000,000 FUND WILL PROVIDE ART TRAINING IN ROME

As a sort of grand prize, the highest reward to promising ability in architecture, art and music that can be given, an endowment fund of $1,000,000 is being contributed to the recently incorporated American Academy in Rome.

The income of this fund is to be utilized in the creation of scholarships for students who, through competitive examinations in America, have proved themselves to be the most worthy to study in the citadel of ancient art.

A little less than a year ago a beautiful home, the Villa Mirafiori, was purchased in Rome through the beneficence of Henry Walters, of Baltimore, for the American Academy. A few days later the endowment fund was started.

Already seven contributions of $100,000 each have been made, and three others are almost complete. It is expected that the first students of the Academy will be sent abroad during the fall of 1906.

Numbered among the persons interested in the Academy at Rome are some of the most famous art connoisseurs in the United States. Who they are, what they have done and what they hope to accomplish in connection with the school are best told here by Frank D. Millet, himself Secretary of the Academy.

Think of your own faults and you will talk less about the faults of others.

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EDITORIAL

THE LOAN EXHIBIT

There is an old rule that "One good turn deserves another." We would like to see this changed a bit so as to read "One good thing deserves another," thereby giving the San Francisco Architectural Club another reason for holding a Fifth Annual Loan Exhibit. We say another reason because we believe they have thousands at their command. Of all "Good things," this exhibit was the "goodest," and it is to be regretted that one week was the limit set for the public to enjoy it. Previous exhibits have been larger. The walls of the exhibit room at other exhibitions have been covered with pictures until not a square inch of the plaster could be seen. But for quality, the Fourth Annual Exhibit was so superior to others that there is no comparison.

The architectural firms whose pictures we noticed on the walls were: Sutton & Weeks, O'Brien & Werner, Hemenway & Miller, Meyers & Ward, T. Paterson Ross, B. J. S. Cahill, Copeland & Pierce, Ira W. Hoover, John Galen Howard, William Curlett, Wright & Polk, D. Franklin Oliver, A. A. Cantin, Southern Pacific Company, Stone & Smith, Frank S. Van Trees, Schulze & Brown, Newsom & Newsom, W. G. Hind, William Knowles, Reid Bros., George E. McCrea, Albert Farr, John M. Curtiss, H. Geilfuss & Son, Ralph Warner Hart, M. J. Lyon, Haigh Patigian, Sylvain Schnaittacher and Harry Skidmore.

The exhibits of Meyers & Ward and Sutton & Weeks were particularly good. Both firms showed that their interest is keen in the public exhibition of their drawings. The pictures hung by these two firms were many and of various kinds of buildings, all treated in a bold and original style.

Albert Farr, George E. McCrea, William Knowles and Wright & Polk all deserve credit for the originality and quality of the pictures they had hung; perhaps not as many as the first mentioned firms, but they were greatly in evidence just the same.

Ira W. Hoover showed some foreign sketches in water colors and ink that attracted a great deal of attention, and well they might—were they hung at an artist's exhibit it would have been the same story.

Reid Brothers' facade for the Mercantile Trust Building showed "what might have been."

The pedestal of the McKinley statue by B. J. S. Cahill is a very commendable design.

Some good things were shown by O'Brien & Werner and Hemenway & Miller in competitive drawings for the Golden Gate Temple.

Haigh Patigian exhibited some clever conceptions that were exceptionally well executed.

The rest of the pictures were all good—some standing out from the others because they had a dash or a bit of color to make them attractive to the eye; some because the design was too cleverly handled to be overlooked. This was the case with the Church of Christ the Scientist, by John Galen Howard, and others because they were good, honest, truthful photographs.

The catalogues of the exhibit were not a success. We have heard some rumors to the effect that this is due to the fact that the contract was let to a publisher who handled the thing entirely. Heretofore, the boys have handled the catalogue, attending to its make-up and superintending the work. This year they had nothing to do with it; consequently, a very poor catalogue was the result.

A. O. JOHNSON.

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MR. BURNHAM AND SAN FRANCISCO

The termination of Mr. Burnham's studies for the future development of our city and the presentation of the results thereof to the citizens of San Francisco were the principal events in the architectural life of the city during the past month. Everyone may now see the splendid drawings which will be used to illustrate Mr. Burnham's report (now in print), and form his own opinion of their various qualities. It is a matter that California may justly be proud that in the development of the two great ideas conceived for the betterment of her architectural surroundings, the work has been carried on in a manner which has drawn the attention of the world for its broadness and thoroughness. We speak of the Hearst plan for the university, upon which no care or expense was spared to make it the model for all competitions, which it is today; and the plan for the improvement of San Francisco, which has been carried forward without stint and with the constant determination to have only the best.

Washington, New York, Cleveland, etc., which are doing work in the same line, can only hope to equal the results achieved by the local society.

We are all waiting with great interest the publication of the report; in the meanwhile let everyone go to the City Hall, where the drawings are exhibited. If he be sympathetically inclined, he will be charmed and delighted. If he be skeptical, let him be just, and suspend judgment until he has read the lucid and convincing arguments of the report.

Then we are sure that, no matter what his sentiments may be, he will have had new ideas presented to him which cannot help but appeal to his sense of truth and beauty.

✤ ✤

PICTURESQUE SAN FRANCISCO

Houses should be beautiful, externally as well as internally. The difficulty of this part of the problem of house architecture lies in the fact that clients insist on a fixed plan regardless of the exterior, and then insist upon an artistic interior. The plan is the most important and should come first, but the exterior should be born in mind and little changes made here and there and new arrangements accomplished in order to add to the picturesque or symmetrical as the case may require.

The usual procedure is this The client gives the architect an arrangement he has in mind, then indicates some house whose exterior he admires. It often happens that he wants high stories and then wonders why the architect cannot make his house look as cosy and low as the house he admires, or wants a square box plan and

cannot see why it does not give him a rambling exterior, or, on the other hand, wants his rambling plan to look like a Colonial house which is essentially symmetrical.

The correct way and most satisfactory to all concerned is to first choose an architect in whose ability you have as much confidence as in your doctor's; next tell him in a general way your requirements and what style of architecture you wish him to work in; then let him do the rest. Advise with him as to changes that occur to you, but always bear in mind that he probably knows a great deal more about architecture than you do, and be willing to take his advice. In general the picturesque should be confined to the country and the dignified to the city, but a hilly seaside city like San Francisco has a license to be picturesque.

In addition to bearing in mind the general location, the specific lot should be carefully considered and the appropriate style selected. If you wish a house to look like Mr. B's, it must have a similar situation and surroundings. A house in a twenty-five-foot lot can not be made to look like one on a fifty-foot lot.

It is very dangerous for an architect to do a bad piece of architecture, and when he does, it is nearly always the fault of some whim of the client, for bad things are as often copied as good ones, as is evidenced in the row after row of similar impossible designs that exist to-day.

The same watchword for interior decoration applies to the exterior, "Let simplicity and naturalness be the guide."

CHARLES PETER WEEKS.

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CURING OF CONCRETE BLOCKS

T. A. McMurtrie, of Los Angeles, reports that concrete blocks in that section are especially good, that they have a very dense texture, and are quite conspicuous for the absence of the muggy appearance which is commonly seen in other sections. He attributes this to the nightly fogs prevalent in that section, which have a beneficial effect upon the blocks. This suggestion is worth following, and reiterates the fact that there are all degrees in the curing of concrete and that in a great majority of cases nowhere near the full benefit of the cement is obtained. Fog is nothing more nor less than the atmosphere nearly saturated with water. It would be possible in a closely constructed curing shed to produce an artificial fog, or in other words to saturate the atmosphere with fine particles of moisture so that the blocks would not only not lose any of the water they originally held, but in addition would receive benefit from the surrounding air.

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STEEL CONSTRUCTION

The Architect and Engineer takes pleasure in announcing that an article is in course of preparation for a future number of this magazine, comparing the structural steel work on the Pacific Coast with that of the East and Middle West. The article is being written by a prominent engineer who is fully acquainted with this class of work both in California and in the East. Some striking comparisons will be given, and there will be no covering up of the true conditions which, we regret to say, are, in some instances, not to California's credit.

The Publisher's Corner

In this number of The Architect and Engineer is shown an excellent photograph of the building of the Redwood Manufacturers Company in Oakland. So large is this structure that many people have an idea that it is the main plant of the Redwood Company. As a matter of fact, however, it is only one of several distributing depots from which orders may be filled promptly. The main plant of the Redwood people is situated about fifty miles from San Francisco, outside of the fog belt and in a climate that for the purpose of drying lumber, cannot be surpassed. It is located on the upper end of San Francisco bay, near the mouths of San Joaquin and Sacramento rivers, easily accessible for vessels with eighteen feet draught. It has direct connection by means of two spur tracks with the Santa Fe and the Southern Pacific Railroads.

The entire plant occupies one hundred acres and reaches from the water-front to the main track of the Santa Fe Railroad, has a frontage of sixteen hundred feet and a depth of over one-half mile. The two standard gauge spur tracks making connection with the Santa Fe and Southern Pacific Railroads run through the property, parallel to each other and to the water-front—one about six hundred feet and the other about fourteen hundred feet from the water.

The building at Oakland, as the picture shows, is of considerable size, but is none too big to fill the ever increasing business of this hustling corporation. The building is sixty feet square and four stories and is located at the corner of First and Alice streets, close to the railroad and water front, with aspur track of its own, so that cars may be run close to the building for the loading and unloading of lumber without interference.

W. A. Boscow, manager of the Oakland branch, is a veteran lumberman, and his

friends say what he don't know about the business isn't worth knowing. Mr. Boscow was with the Old Excelsior Lumber Company which was absorbed by the Redwood corporation some years ago. He has the confidence of the best architects in California and there are few of them, indeed, with whom he has not come in contact in a business way. The Redwood Company has supplied the material for more than sixty of the most pretentious structures in the State the past year.

The factories are turning out milled lumber of all kinds, wooden water tanks, wooden pipe staves, siding, ceiling, doors, sash, etc., for the purpose of supplying local and Eastern demands, and shipments of any size in carload lots, straight or mixed, can now be made in a more effective, satisfactory and quick manner than is now possible from any other point. The company is now doing a heavy local business, besides extending the general Eastern market of redwood lumber, reaching territory with heavy shipments that have not been in the habit of drawing upon the California redwood supply. It is, therefore, an enterprise which has not only attracted the attention of the local lumbermen, but is of national importance.

The Charles A. Palm Iron Works at Sacramento reports one of the best year's for business in the company's history. The company is at present building a new shop, 65 by 140 feet, at its new location where it has much more yard space than formerly.

The well-known house of Cowles & Simpson in Sacramento has the contract for plumbing the new Elks building in the Capital City. The company is having a big run on its patent hot-water heating system which, with the aid of a small gas stove, will heat an entire house. Radiators are placed in each room, the radiators being in the shape of mantels, hat racks, etc. The cost of installation is less than for the regular hot-water system and is much more economical to maintain. The same stove that is used for domestic purposes can be used to supply the heat.

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Ross McMahon has a fine new line of awnings for winter service, samples of which are on exhibition at his salesrooms at 35 Market street, San Francisco. Mr. McMahon carries one of the most complete stocks of awnings in the city, in addition to teamster's rain goods, bags, tents, hammocks and covers. Mr. McMahon is a hustler.

The California Oil Burner Company has produced and offered to the general public a crude oil burner which is in every respect a success, and as evidence thereof it may be stated that it has been in use for about three years and has given universal satisfaction.

It is found to be much cheaper than coal and far more convenient.

This burner is in successful use in the leading hotels of Oakland—the Crellin, Metropole and Galindo—where it is giving absolute satisfaction; and also in the sanitarium of Oakland. Many of the private residences are also using them, both in stoves and furnaces. Among the number are Henry Butters, Mr. Chabot, Mrs. John Yule, and many others. For full particulars regarding the burner address the California Oil and Burner Company, 968 Boardway, Oakland.

For many years the use of hardwall gypsum plaster has been common in the East, particularly in the Mississippi Valley. On the Pacific Coast, the Alpine Plaster Company has manufactured this plaster for nearly seventeen years.

The pioneer hardwall plaster of the Pacific Coast—Alpine—has had more or less of a checkered career, the fault wholly of its manufacture. This vital defect has however been remedied by the new company which came into possession of the large gypsum properties at Palmdale, Los Angeles county, this State, the first of the present year. Particular attention is now paid to every detail of manufacture from the time the rock is selected at the quarry until it is sacked, ready for shipment, with the result that the material has back of it the company's guarantee.

At the present time practically all of the principal buildings of Los Angeles have been or are to be plastered with this material, the architects and builders, having gained confidence in it, which it deserves, and are to a large extent specifying hardwall plaster exclusively. Among the many large buildings in which Alpine has been used in more recent years in Los Angeles and vicinity are the twenty-six schools of Los Angeles as well as the normal school; county jail and courthouse; Lankershim and Angelus Hotels; Braly and Lankershim buildings; Douglas and Laughlin blocks; Wilhelme apartments, the largest in Southern California; Arrowhead Hotel, San Bernardino; Hotel Green Annex, Pasadena, and many buildings in San Francisco, Seattle, Tacoma, Honolulu and other coast and interior cities.

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PRAISE FOR MR. ROSENHEIM.

(From the Builder.)

"News from California indicates that Architect Alfred F. Rosenheim, formerly of St. Louis, but now located in Los Angeles, has taken rapid strides in his profession. The high repute of St. Louis architects gain by successes such as have marked the career of Mr. Rosenheim.

"The H. W. Hellman building, Mr. Rosenheim's creation, represents an outlay of $1,500,000, and the Architect and Engineer of California, a San Francisco and Los Angeles publication of influence, gives a detailed description of it in the current issue. It is eight stories, besides basement and attic, of California gray granite, pressed brick and terra-cotta, with an interior court starting at the second floor level, 33 feet wide and 90 feet long. There are stores, banking quarters and 279 offices, which have compressed air besides other modern requirements, and there is a law library for lawyer tenants in the skyscraper. Los Angeles is proud of it."

Mr. Rosenheim is associate editor of the Architect and Engineer of California.

ENGINEERING CLUB.

The Engineering Club of San Francisco has been organized with temporary officers and the following committee to perfect a permanent organization. L. E. Sperry of the California Electrical Works, George P. Low of the Journal of Electricity, Power and Gas, E. B. Parsons of the Kilbourne & Clark Company, T. E. Bibbons of the General Electric Company, G. E. Wiggin of the Electrical Contractors' Association. The club expects to have quarters sufficiently commodious for an assembly room, cafe, library, reading, billiard and smoking rooms. The club will aim at the highest advancement of all branches of the engineering fraternity, socially, scientifically, intellectually and commercially.

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The difference between a strong will and a strong won't: The first is firmness; the second, obstinacy.

Our thoughts about others are of less importance than our thoughtfulness for others.

After you have learned how to live well, there will be no trouble about your learning how to die well.

George Washington was so opposed to lying in any form that he refused to establish a weather bureau during his administration.

Not only is Santa Rosa growing in size and importance but a much better quality of residences and business buildings are being constructed with the "Ever onward and upward" motto to improve as each year goes by. With the possibility of Santa Rosa, during her years of growth, with a population at 20,000 in 1910 many things are to be considered in the building line; finer residences, and larger business blocks with more artistic designs are to be put up. To accomplish this, many skilled artisians and mechanics will be required. In this important feature there is one concern in Santa Rosa that has grown up with this movement, and by diligent study and the employment of mechanics well advanced in their lines the Haven Hardware Company are prepared to handle the most difficult and important work. Buying in the largest markets and in the largest quantities, consequently obtaining the lowest costs for their goods, make it possible for them to compete with the largest concerns on this coast. Some of the monuments of their work, energy and enterprise are shown in the plumbing and heating of the Brush-Keegan building, the St. Rose Hotel, the Occidental Hotel Annex, as well as in the new Masonic Temple now in the course of construction. All of these speak volumes for this community towards the better and more improved ideas and methods of plumbing and heating.

A CRITIC OF ARCHITECTURE.

San Francisco architecture is under fire. Mr. William Elroy Curtis is the man behind the gun. He is the Bayard Taylor of the Chicago Record-Herald. He travels over the world and tells about it in the paper. As much of his work has been interesting reading, it is too bad that he should himself destroy confidence in its accuracy. He recently visited San Francisco and found but little worthy of note except what he conceives to be the extreme badness of our domestic architecture, which he says is "just as bad as it can be." Continuing with the minute specifications of a bill of particulars, he says we build of wood for fear of earthquakes, and that our houses are covered with imitations of bird cages, vegetable crates, dog kennels, sewing baskets, wedding cakes and preposterous lathe work.

He finds nobody living on Nob Hill, "where the bonanza kings erected their preposterous palaces a quarter of a century ago." "The owners are dead or have moved to New York or are living at their country seats." The capacious bay-windows of many of our residences afflict him greatly, and he longs for the square brick and stone houses of Chicago, the snug flats of New York and the apartment-houses of Washington City.

Mr. Curtis is like many men who know more about architecture than he. It will be found that domestic architecture everywhere conforms to physical conditions. In our coast climate, sunshine and light are luxuries within doors. Indeed they are more than that. They are necessary to comfort and health. Our building conforms to this physical condition. It is climatic and unchangeable. In Chicago houses one half the year is spent in seeking a "boundless contiguity of shade," and the other half in roasting over a hot air register or hovering around a red-hot stove. The domestic architecture of that city conforms to those conditions. In the summer only possible outdoor recreation that may be had in comfort is found in riding back and forth on a street car through the damp tunnels under the Chicago river. People die of heat in the streets in July and freeze to death in the streets in December. For these physical reasons the architecture of San Francisco would be impossible in Chicago, and the Chicago style would be impossible here.

We fear that Mr. Curtis is a poor traveler and an unreliable reporter of what he thinks he sees. Shelter is a matter of climate. The nipa huts of the Filipinos are suited to the climate, but he would build brick houses there, heated by a furnace, because they build that way in Chicago. His location of the bonanza kings on Nob Hill is another evidence of his shallow information. The palaces of which he speaks were built by the railroad builders, Stanford, Colton, Hopkins and Crocker. The Stanford, Colton and Crocker houses were not in any sense preposterous nor palatial, except perhaps in their roominess. The Hopkins house is more pretentious externally. The others are such houses as prosperous merchants would build for comfort and not for show. Only one bonanza king built on Nob Hill, Mr. Flood, and his house is of severely simple exterior.

Mr. Curtis says that when a man wants a house built in San Francisco he merely "tells his architect or builder to tack on a porch or balcony wherever he can, to conceal the outside walls as much as possible with wooden embroidery and fancy trimmings, and to make it as ridiculous as possible." Now a writer like Curtis should study accuracy, as his usefulness depends upon his reliability. He states as a fact that a prospective builder here issues only that order to his architect. Did he ever hear it? Did any one tell him who ever heard it? What is his authority for saying that a house owner here deliberately issues an order to make his building as ridiculous as possible?

The paper for which he writes should take notice that preposterous prevarication of that kind destroys his usefulness. The cross grain in his article raises the suspicion that on his last visit here he did not have an opportunity to see the inside of any of our homes, and takes it out in making faces at their outside. The Eastern styles, which seem to fill his fancy, would be unfit to live in here. We build of wood not because it is cheap, but because we have fireproof wood, and it is better and makes a drier and more wholesome house than is possible out of brick or stone in Chicago. When we use brick or stone we pierce the walls so as to admit the sun.

Mr. Curtis has the same weakness and lack of knowledge that is shown by Eastern architects when they plan buildings for San Francisco. One would suppose that they would make a study of our physical conditions, but they do not. Our City Hall was planned by an Albany architect, and he put the court rooms and offices on the north side, in the shade, as he would in Albany, when they should have been on the south side.

The architect of the new Custom-house, a St. Louis man, has made the same mistake and many others of a grievous nature in that building. When these gross mistakes are perpetuated by building them into stone and iron, the penalty is paid by the occupants of the buildings. Yet according to Mr. Curtis it is the sort of architecture we need.—San Francisco Call.

We are indebted to the Mason McDuffey Company of Berkeley for the loan of several excellent cuts shown in this number of The Architect and Engineer.

H. W. Moffatt of the H. W. Moffatt Company, incorporated, has gone on an extended trip north for the purpose of opening branch offices for the Peerless Kitchen boiler for which the company is sole agent on the Pacific Coast. Mr. Moffatt may establish offices in Portland, Seattle, Tacoma and other northern points. It a letter recently received at the San Francisco office, 314 Post street, Mr. Moffatt reports much encouragement and declares that the outlook for a good market for the Peerless boiler in the Northwest is most promising.

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Of the several large, modern buildings in course of erection in Sacramento, Hoit's electrical Works have the contract for wiring two of the largest, the Bryte building, at the southwest corner of Seventh and J streets, to be the home of the Fort Sutter National bank, and the W. P. Fuller Company building on Second between J and K streets.

The Bryte building will contain all modern conveniences in its electrical installation, including telephones, messenger calls, power and lighting service, etc. The building will contain about five hundred lights.

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William Hooper, the Oakland art glass man, reports business good. He has recently placed a handsome art glass window in a palatial Oakland residence on Clay street and he has also made a fine piece of glass for Mr. Crellin on the Central bank in Oakland.

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Sinclair & Bessey, of 513 J street, Sacramento, manufacturers of architectural metal cornices, tin, copper and art metal ceilings, is a representative house in northern California for this class of work and all descriptions of first-class work, having turned out the most intricate designs in art metal to the entire satisfaction of such exacting architects as Seadler & Hoehn of Sacramento. From these architects' designs, Sinclair & Bessey have just completed the N. S. G. W. Hall and the I. O. O. F. hall in Woodland, the Biglow & Toma building in Reno, and the Johnson building, Wasserman building and the Elks' Hall in Sacramento.

In addition this firm makes a specialty of furnace work, its installations increasing which is evidence that the firm is giving its clients satisfaction.

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The Electrical Supply Company of Sacramento, of which C. V. Schneider is the manager, are the Sacramento representatives for the General Electric Company which latter corporation has a world-wide reputation. The company makes a specialty in handling the General Electric Company's motors and dynamos, many of which have been placed in service through the Sacramento agency. The Electrical Supply Company is the only exclusive electrical house in the Capital City. It has been established for ten years and in addition to the articles already referred to the company carries in stock a full line of gas and electrical fixtures—in fact everything electrical.

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One of the most successful brick contractors in the State is J. W. Haley of Sacramento, who has built some of the most pretentious business structures in the Capital City. Mr. Haley has been a brick contractor for a great many years, and architects place the greatest reliance in his work. Mr. Haley is painstaking and thorough, and he employs only men who are reliable and expert in their particular line. The buildings which Mr. Haley has had a hand in erecting speak for themselves. The brick work on the new Elks' Hall is being done by Mr. Haley, as well as the masonry work on the Clunie building.

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Everything depends on the point of view. The successful man fully believes that every one gets about what he deserves. Of course, the unsuccessful man can't see it that way.

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Correspondence solicited on all matters of general interest to the building trade in all its branches. All queries will be cheerfully answered.

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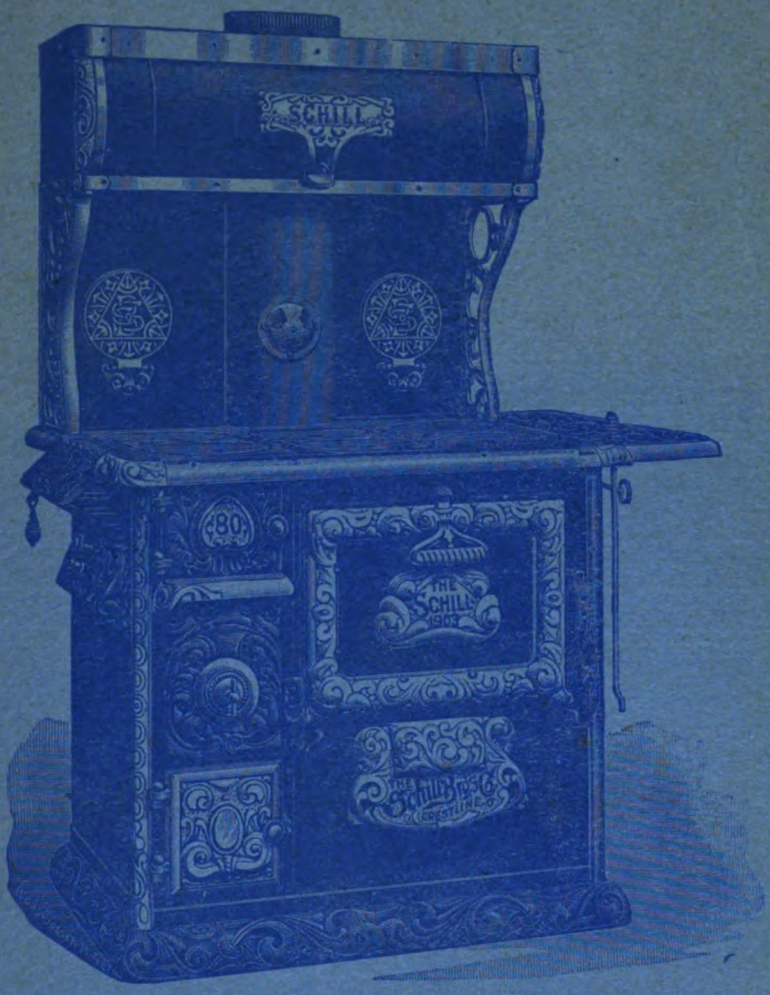

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