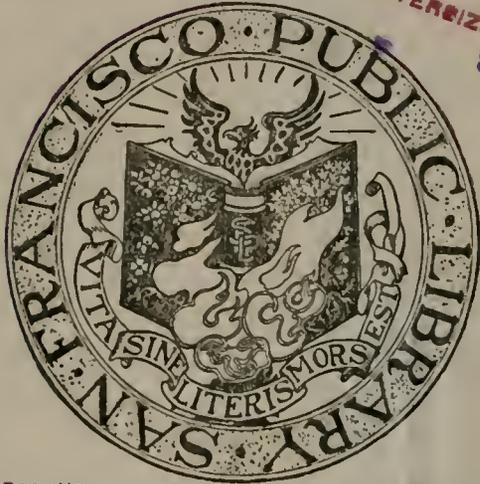




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# *The* ARCHITECT & ENGINEER



JANUARY 1926

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UNION HIGH SCHOOL, SANTA MARIA, CALIFORNIA  
ALLISON & ALLISON, ARCHITECTS

# THE ARCHITECT AND ENGINEER

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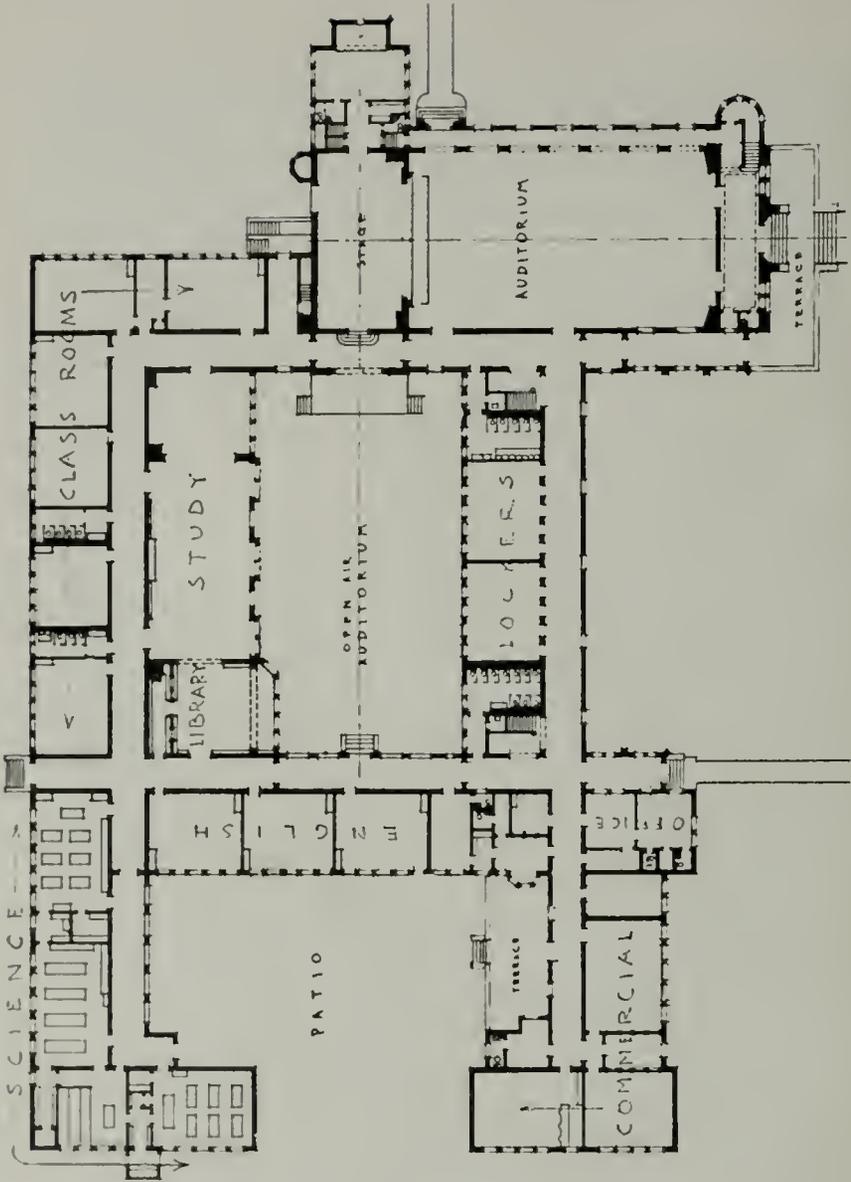
## The Santa Maria High School

By IRVING F. MORROW\*

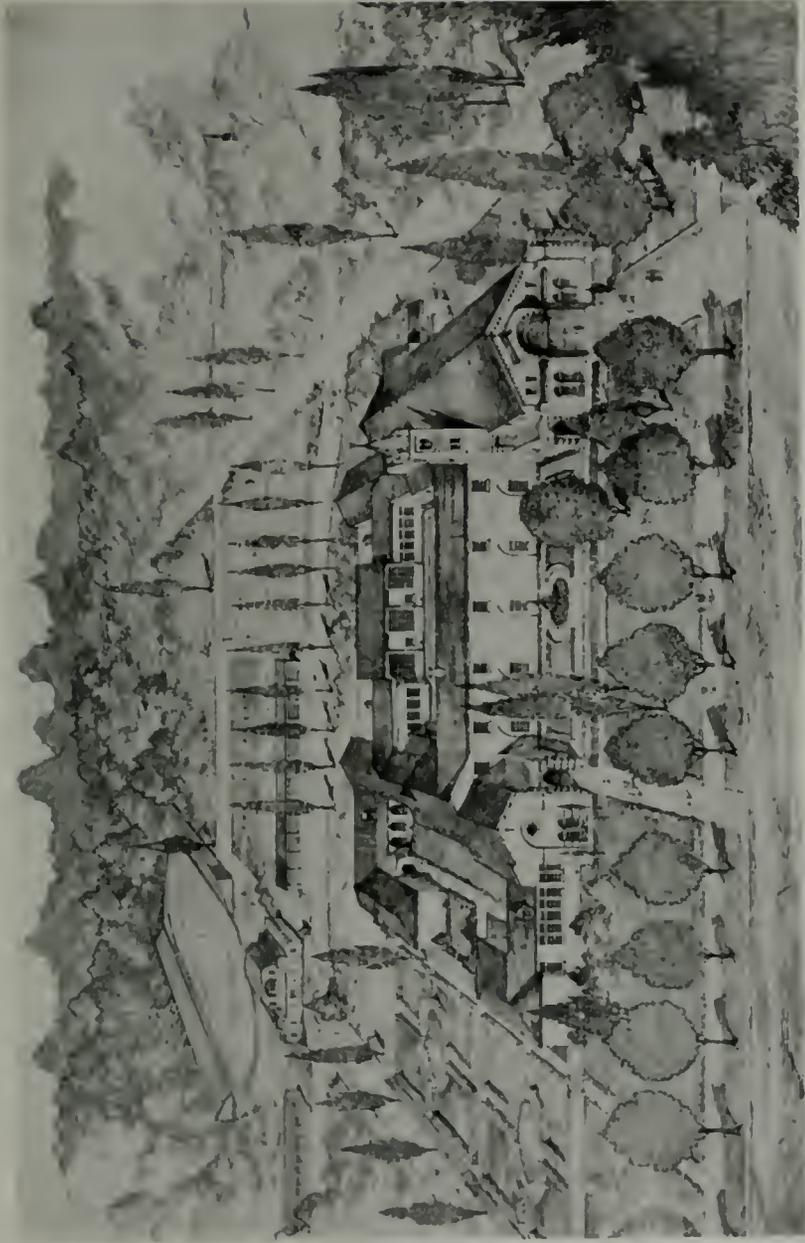
**A**LTHOUGH this building, which I believe will quite generally be conceded as one of Messrs. Allison and Allison's most interesting school achievements, dates from several years back, it has never yet been given adequate publication. For some time we have been looking forward to the opportunity to show it. (Which, in passing, goes to indicate that architects are not always as eager to burst into print as they are sometimes assumed to be.) But although the building be not a journalistic novelty—"news" in the technical sense of the word—it is one of those cases where timeliness (or time even) is irrelevant. After all, what may art have to do with news? And furthermore, it is an ill wind which blows nobody good. For in the meantime the planting has been pushing with southern luxuriance, and our photographs are assuredly more human and finished than they could possibly have been had the photographer tread on the heels of the contractor.

Glancing over the examples shown in almost any collection of school work, magazine or book, the layman might be pardoned for concluding that the constant essential of any proper schoolhouse is a good major axis. Always one meets the central pavilion, veritable "piece de resistance," embracing an elaborate main entrance, surmounted (save when handled as a colonnaded portico) by some degree of a tower, and flanked to right and to left by identical amounts of factory fenestration. If any irregularity in this neat symmetry is rendered imperative by recalcitrant circumstances, a clever architect can always contrive to hold it to the rear. I suppose there are plenty of cases where the monotony of plan in our average city suggests, if it does not seem to require such a result—when, for example, the building occupies two full blocks, with a street ending in the middle of one side of the property. But as often as not I believe the scheme is due to a too ready concurrence in precedent (which is only a more cautious way of saying lack of imagination), and it is frequently palpably unsuited to either the site or the requirements, or both.

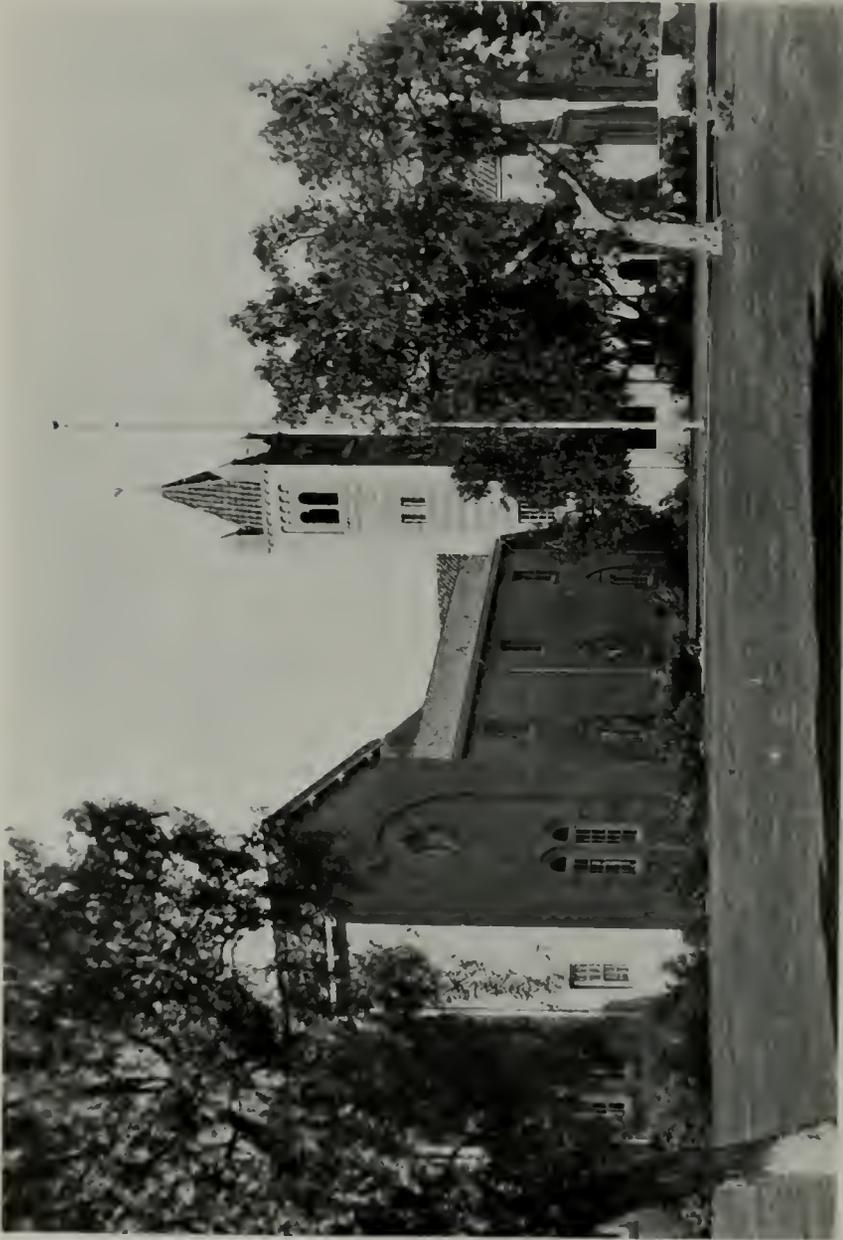
\*Architect; member of the firm of Morrow & Morrow, Architects.



PLAN, UNION HIGH SCHOOL, SANTA MARIA, CALIFORNIA  
ALLISON & ALLISON, ARCHITECTS



BIRD'S EYE PERSPECTIVE. UNION HIGH SCHOOL, SANTA MARIA  
ALLISON & ALLISON,  
ARCHITECTS



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OPEN AIR AUDITORIUM, UNION HIGH SCHOOL, SANTA MARIA,  
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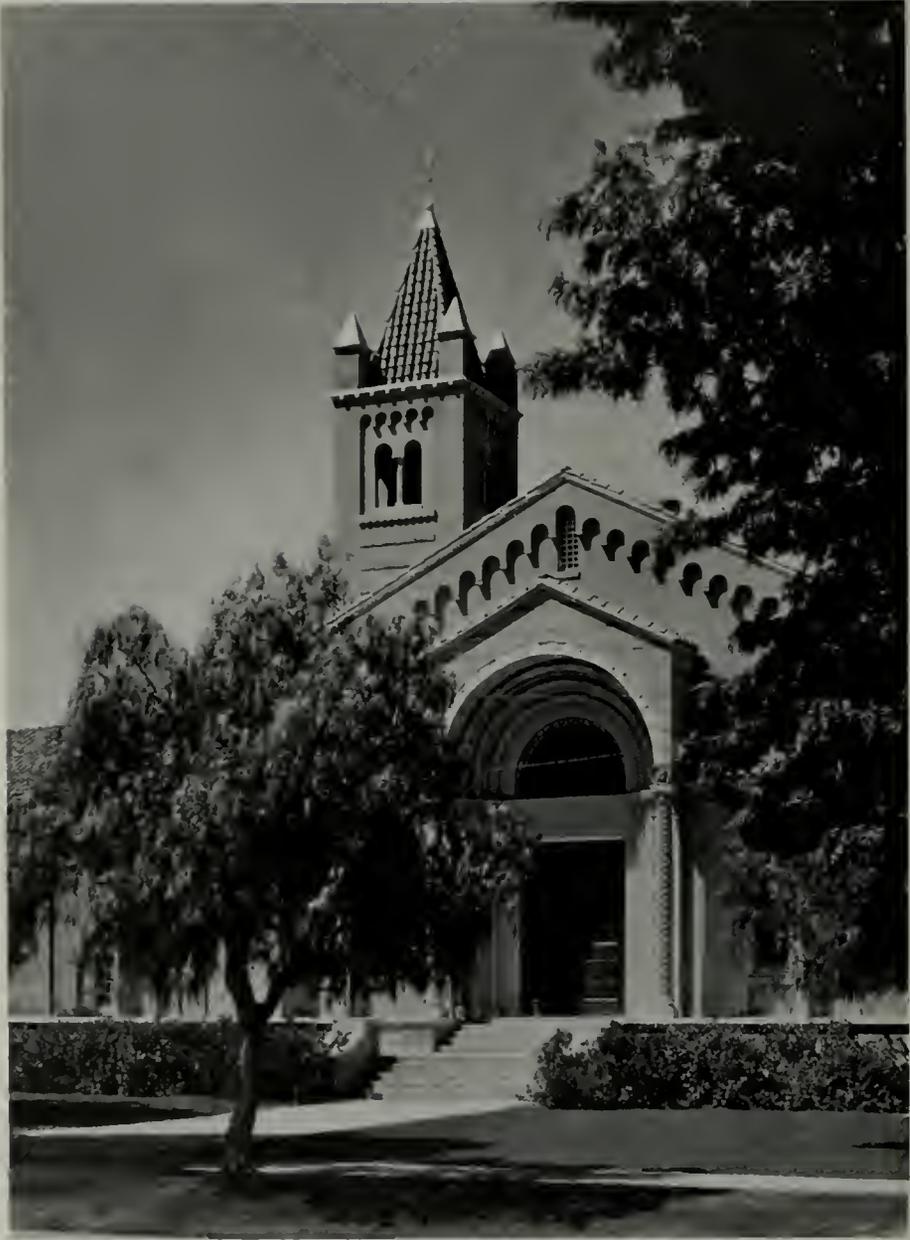
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ALLISON & ALLISON, ARCHITECTS



UNION HIGH SCHOOL, SANTA MARIA, CALIFORNIA  
Allison & Allison, Architects

Barring the justly admired high school at Santa Monica (which by its site, size, proportions, fenestration, handling of planes and sensitiveness in general, is placed outside the class of facile symmetry) I think it is unquestionable that Messrs. Allison and Allison have done their best work in plans which, like this one, are functional rather than formal in conception. Here there is no consideration given to purely archi-



UNION HIGH SCHOOL, SANTA MARIA, CALIFORNIA  
Allison & Allison, Architects

tectonic symmetry. The shape of the building grows out of an organizing of the requirements with a view to the site, always prompted by a sensitive feeling for large architectural masses and for a lively variety of incidental interest. We thus have a building whose form is free, full of picturesqueness, but quite coherent and easily readable. Function is well organized and well expressed. The manner in which the main



ENTRANCE, ROCKRIDGE SCHOOL, OAKLAND  
MILLER AND WARNECKE, ARCHITECTS

forms have been kept clear while richly diversified with minor ones is admirable. Admirable also are the ingenuity in fenestration, and the manipulation of the plan to distribute and contrast large openings and simple wall surfaces. In this way the factory-like banality which we have come almost to expect of schoolhouses has been entirely avoided. The building is singularly quiet and reposeful, human in both its charm and its simple dignity. There seem to be everywhere both surprises and gratification of expectation.



ROCKRIDGE SCHOOL BUILDING, OAKLAND  
MILLER AND WARNECKE, ARCHITECTS



SKETCH FOR A HIGH SCHOOL  
Miller and Warnecke, Architects



PERSPECTIVE, GARFIELD SCHOOL, OAKLAND  
Miller and Warnecke, Architects



PERSPECTIVE, ROOSEVELT SCHOOL, SALINAS, CALIFORNIA

John J. Donovan, Architect



PERSPECTIVE, LINCOLN SCHOOL, SALINAS, CALIFORNIA

John J. Donovan, Architect



POPLAR AVENUE SCHOOL, SAN MATEO



HAWTHORNE SCHOOL, OAKLAND



CENTRAL GRAMMAR SCHOOL, SAN MATEO

## Properties of Cement-Lime Mortars

An increase in workability and possible reduction in cost are the principal reasons why lime might be used to advantage in cement mortars, according to results secured by the Bureau of Standards, Department of Commerce.

When lime plaster is gaged with cement, it still retains considerable of its former workability, and has gained in strength, while the time of set is reduced.

In this work the Bureau found that when cement paste and lime paste were brought to the same consistency, a much greater percentage of water was required by the lime than by the cement. With this relation holding, the percentages of mixing water in cement mortars and in lime mortars increased with a decrease in the percentage of sand. A cement mortar with lime added requires extra mixing water, but this extra water increases shrinkage possibilities, therefore lime should be limited in cement mortars where it is desired to keep shrinkage low. It is possible to keep shrinkage low by the use of a high percentage of sand in any mortar.

The density of lean cement mortars may be increased by the addition of a small percentage of lime. Where the cement mortar is not richer than 1:2, the addition of lime may result in increasing the strength. The percentages of lime which may result effectively in these respects were found to increase with the leanness of the mortar. It is probable that the lime does more than act as a void filler in lean cement mortars, for it can carbonate and form a binder in the place of the missing cement.

It is not to be expected that these results will be duplicated exactly where other brands of materials or differently graded sands are used with different manipulation and under different storage conditions.

\* \* \* \*

## Deflection of 40-Inch Brick Wall

The amount of deflection of a brick wall 40 inches thick under the pressure of one finger can be measured by an instrument recently constructed by C. G. Peters of the Bureau of Standards, Department of Commerce. If one looks into the eyepiece while some one else walks across the floor the deflection is apparently so great that one would suppose the whole building to be swaying back and forth as though made of cardboard.

The instrument makes use of the interference of light waves, and is very simple in construction. A glass plate is fastened to the wall of the building. Another plate is mounted close to this first plate in the tube of the instrument. Part of the light from a helium tube passes through the plate in the instrument and is reflected back by the plate on the wall into the eyepiece. The remainder is reflected directly from the plate in the instrument. The interference of these two sets of light rays causes light and dark bands to appear in the field of the eyepiece. When the distance between the two plates is changed the bands move across the field. Motion equal to the distance between two dark bands represents a deflection of about one one-hundred thousandth of an inch.

TWO IMPOSING SKYSCRAPERS TO BE BUILT THIS YEAR IN



HUNTER-DULIN BUILDING, SAN FRANCISCO  
SCHULZE AND WEAVER, ARCHITECTS

MONTGOMERY ST., SAN FRANCISCO'S FINANCIAL CENTER



RUSS OFFICE BUILDING, SAN FRANCISCO  
GEORGE W. KELHAM, ARCHITECT

## Wind Pressure on Model of Buildings

THE average wind pressure on a tall building when the wind is blowing at 76 miles per hour (100 miles per hour, as shown by a Weather Bureau, Robinson type anemometer) is about 22 pounds per square foot, according to results obtained by the Bureau of Standards, Department of Commerce. The value which is commonly used is 30 pounds per square foot. This would correspond to a true wind speed of about 88.5 miles per hour (118 miles per hour indicated speed). Gusts of this speed have only been observed in a few cities, such as New York and St. Paul.

These results were obtained by measuring the force of the wind on a model of a tall building mounted in the large outdoor wind tunnel of the Bureau. This tunnel is 10 feet in diameter, and in these experiments winds up to 70 miles per hour were produced, values for higher speeds being obtained by extrapolation. By means of small openings in the face and top of the model which were connected to a pressure gauge, the pressures produced by the wind at various parts of the structure were measured. These measurements were made at 70 places on the face of the model and at 49 places on the top, with the wind coming from 13 directions, varying from directly against one face to directly against the opposite face. Of course, in this work the wind always comes from one direction, and the model is turned on its mounting. The pressures obtained were then multiplied by the appropriate areas to give the total force on the model under the different conditions. The forces tending to overturn and to twist the model were also computed.

This work was undertaken because of the many inquiries received by the Bureau concerning wind pressures on buildings. The same experimental methods were employed which have been found so useful in the investigation of air forces on airplanes.

It has always been recognized that in the design of engineering structures such as tall buildings, bridges, chimneys, transmission lines, radio masts, etc., it is necessary to make provision for the stresses produced by the pressure of high winds. However, the values of the forces produced by the wind used by engineers in structural design are based on experiments made a great many years ago by methods which are now known to be subject to large errors, and on models which do not resemble actual structures. Many engineers have felt that these old values are too large, and that many structures are made stronger than is necessary, and therefore cost more than they should.

The Bureau has determined the actual pressure corresponding to a given wind velocity. There still remains the problem of determining what wind velocity to use in designing a structure. Obviously, a higher velocity ought to be assumed in designing a building facing the Golden Gate in San Francisco than for a building in the downtown section of Washington.

\* \* \* \*

## Wage Scales Now Highest in History

Reports indicate that there is no immediate likelihood of any general change in the prevailing wage scales in the building industry. Wage scales are now the highest in the history of the industry. A campaign for a five-day week in some states seems to have been indefinitely postponed. Practically all building trades workers have been employed throughout the early fall months.



FRONT VIEW OF TYPICAL CHINESE TEMPLE

Crude repairs after a typhoon have destroyed the original curve of the ridge and eaves.

## A Typical Chinese Temple

By K. W. DOWIE

**I**N spite of the high value placed upon Chinese architecture by modern historians, Mr. R. Sturgis very truly remarks that we have little but the photographs of travelers to tell us of it. There are to be found practically no measured drawings and no accounts of the materials used. This fact led the writer, while in Formosa some two years ago, to make the measurements of a small temple which seemed to him typical, and these are now laid out to scale in the belief that they will be of interest to all students of architecture.

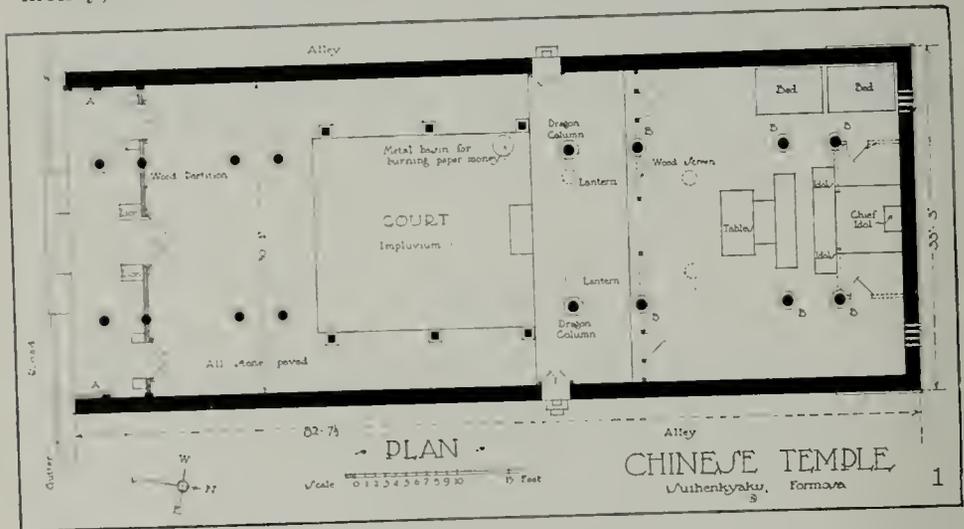
Built about forty-five years ago, when the island of Formosa, which is now a Japanese possession, was still a part of the old Chinese empire, this temple is really typical of those of south China, where there may now be found thousands differing but slightly in general plan, and indeed those erected centuries ago by this conservative people were very similar. The site in this case, however, was unusually restricted, forcing the builders to plan for a narrow front, while a steep dip down to a river at the rear made impossible the customary deep open yard in front.

It is not a Confucian temple, but is dedicated to one of those almost numberless divinities of China—Ma-tsaw, goddess of the sea, and patron saint of fishermen. Her worship requires no elaborate ritual,

EDITOR'S NOTE Drawings used to illustrate this article were made from the author's measurements of the temple. The difference in appearance in drawings and photos is due to a typhoon which hit the temple before photos could be taken. The repairs were rather clumsily handled, Mr. Dowie explains.

and being individual in nature, no large auditorium is needed. The essentials are a building to house the idol, containing tables where the worshipper may place his offerings, and some kind of open fireplace in which to burn his paper money. Sleeping accommodation for the priest is usually provided also.

Perhaps the simplest explanation of the plan will be to describe the mode of worship. To enter, one passes between two grotesque guardian lions of stone and through wooden front doors, the entire surface of which is painted with fearful images of the gods, to afford still further protection against evil spirits. This finds us in an entrance porch from which we may pass to right or left down the colonnades flanking the impluvium, the floor of which is sunk below the front porch level. Just beyond the impluvium, two beautifully carved stone dragon columns stand on either side of the altar building, on the first table of which we may place our votive offering of a dish of food, light a few candles, burn our pungent incense in the places provided, and finally repair to the little fireplace to set ablaze our imitation paper money, the smoke from which passes with the gods for a sort of cele-



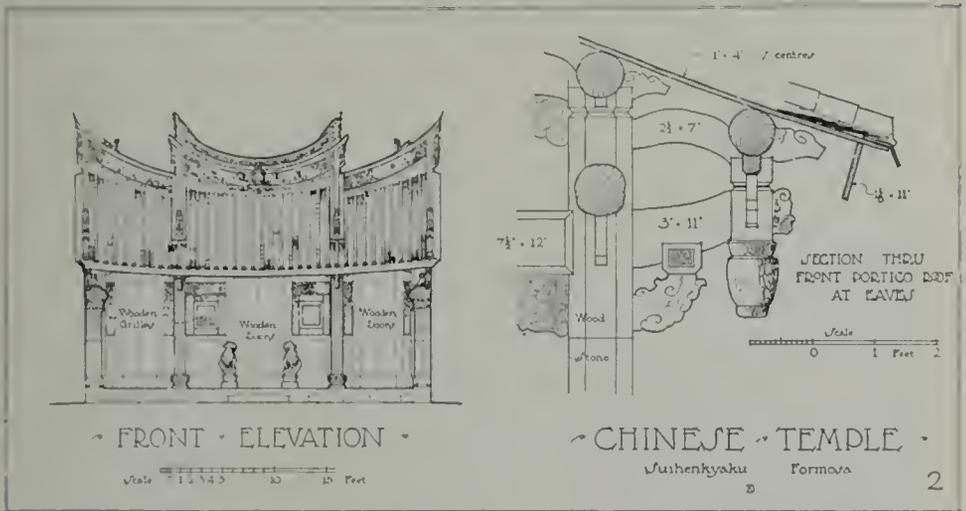
tial currency in payment of all scores, be they past debts or future mortgages. As a last safeguard the divining blocks on the table are thrown on the ground, and if they obligingly turn up the right way, the prayer is made and our worship brought to a satisfactory conclusion. But if they prove stubborn, we must contribute more food and money and go through the whole process again and again till the position of the blocks indicates that our worship is acceptable. The building has masonry walls at sides and rear only, with a wooden partition across the front. The impluvium is practically the sole source of light.

The walls are of sandstone for a few feet above grade, laid in rows of headers and stretchers alternately. Above this they are of brick, plastered inside and out, and with brick quoins. The side elevation shows the usual Chinese moulding under the gables, not unlike one sometimes used over window heads by Gothic builders, and marking the division of the red wall above from the white or cream-grey beneath.

As for windows, in the usual sense of the word there are none, for the narrow slits in the rear wall are more in the nature of vents, though these are all that most Chinese homes in Formosa can boast. Interest-

ing enough from the exterior, they produce on the inside a "dim religious light" undoubtedly sought for and quite effectively mysterious in the temple, but very inadequate when it comes to the needs of a dwelling. The glazed green of the pierced tiles which are also used here and there as vents, affords interesting and decorative spots of color in the walls. Arched openings are used at the side entrances, with stone voussoirs and brick jambs. The double doors here are not paneled, but are built up two inches thick. In lieu of hinges they have the well-known primitive construction of hardwood pins top and bottom fitting into recessed stones. The front doors are of the same type, but with awkward wood thresholds twelve to fifteen inches high.

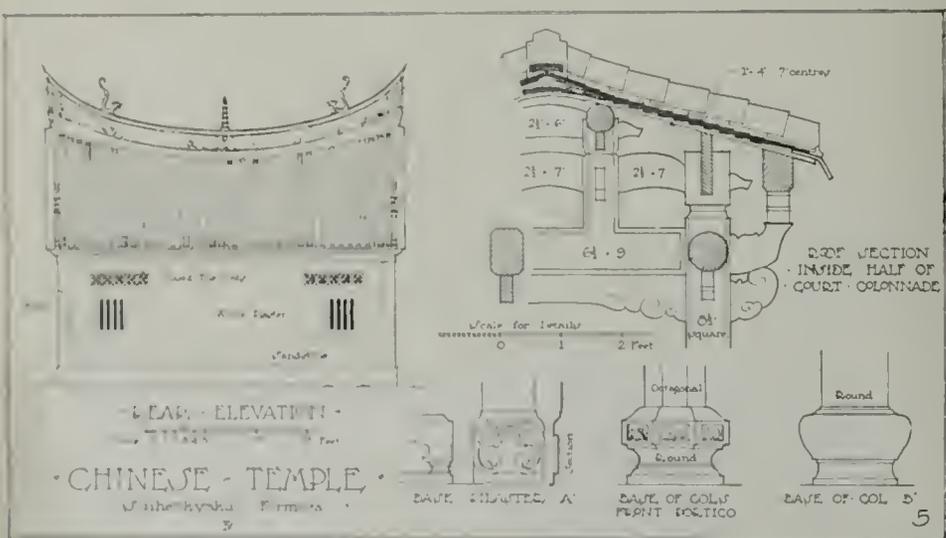
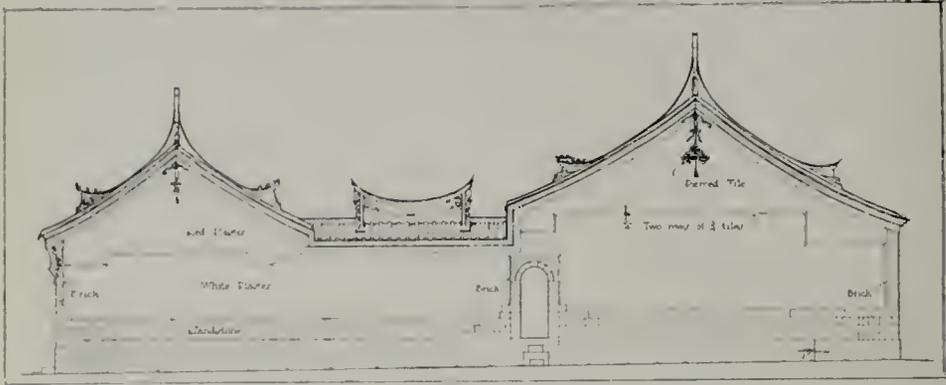
Roofs are always a prominent feature of Chinese buildings. Here they are of tile, with very slightly curved pans one-quarter inch thick laid two and one-half to three inches to the weather, and with round green glazed cover tiles, while at the eaves of the front portico and around the impluvium we have a pretty, leaf-shaped terminal tile in between the covers. At the sides and rear of the building, these terminals are omitted. The ridges are deep, richly ornamented, and beau-



tifully curved, while near the ends are sometimes placed fantastic dragons or birds. They are built up of cement, the spike-like terminations being re-inforced with metal rods.

As will be seen on referring to the section, the roofs are of open timber construction, with large unsquared beams running horizontally, supported by brackets on the columns. The principle of the truss, with triangular divisions, seems never to have occurred to Chinese builders, with the result that a roof with an extravagant use of timber is required. Tiles are put directly on a sheathing of open 1x4 inch strips laid flat on 7-inch centers, running with the slope of the roof and resting on the beams. The eaves at the front are always given a sagging curve, a refinement which is omitted at the rear. As one enters a Chinese village, the high curved roof makes the temple stand out as clearly against the sky as does the spired church of the West, and an unbiased observer must admit that the Chinese is as a rule much more beautiful.

The columns are all of stone, either square, circular, or octagonal, and the dragons twined about the two which go so far to enhance the





DETAILS OF ENTRANCE PORTICO



JUNCTION OF COLONNADE WITH ALTAR BUILDING,  
SHOWING ONE OF THE STONE DRAGON COLUMNS



SIDE COLONNADE FROM IMPLUVIUM, SHOWING THE CHAIR IN WHICH THE GOD SITS IN PROCESSIONS



CLOSE UP OF THE ALTAR AND  
TABLES FOR VOTIVE OFFERINGS

beauty of the altar building are carved out of one piece with the columns themselves. It is a little surprising to find the dragon on one side of the altar hanging uncomfortably head downward, while the other assumes what seems like a more normal position for any really high-minded dragon. The explanation is to be found in Chinese legend, where one is represented as dropping from heaven, and the other as springing up out of the earth.

Entire absence of column capitals is a feature of Chinese architecture. Possibly the fact that bamboo is the main building material has led to the wide use of a plain round shaft without a capital, in stone. To the ends of these stone shafts are fitted wooden ones of the same section, running to the roof and mortised to receive wooden brackets and beams. As shown in the detail, the bases project considerably from the shaft, and in the case of octagonal columns have sculptured panels in low relief. The round or octagonal columns are devoid of either taper or entasis, but the square ones have their corners chamfered off for slightly more than the upper third, thus producing, on the diagonal view, a kind of entasis.

The exterior walls are very plain, except for glazed tile vents and a slightly projecting mould already referred to on the sides, together with a girdle-like strip of plaster in the gables, white against a red background.

The interior side walls of the front portico have sculptured panels of red plaster in low relief, depicting scenes from Chinese mythology. These walls are crowned with a sculptured band in plaster with a few mouldings above it, supporting a plinth upon which sits a small terracotta lion, just under the eaves. The main guardian lions, with conventional, silly, pussy-cat expressions, are of stone, and placed on either side of the main entrance.

The wood partition in front has some grilles with splendid tracery, all of different patterns. Plain stone column shafts are often carved with quotations from the Chinese classics, the letters sunk about half an inch.

The brackets are sometimes richly carved, as are the soffits of some beams, while the wooden pendants, no two of which are carved alike, are a fine feature of the open timber roof. Often this whole roof will be painted in glaring reds, blues, and gold, producing an effect a bit too startling to the Western eye.

The most richly ornamented parts are undoubtedly the roof ridges, moulded in deep relief, with miniature houses, temples, pagodas, etc., not to mention dragons galore. The faces of these ridges are covered with broken bits of glazed tile, yellow, blue, and green, and even with fragments of looking glass and broken bottles, giving a sparkle and richness of color that, to say the least, shows little restraint. When new, this ornamenting is rather horrible, but the kindly hand of Time does much to soften the effect. Indeed, in the present temple, with its respectable age of forty-five years, it is charming.

Someone has compared the China of today to Europe in the Middle Ages. Certainly the guilds for many trades and crafts show points of resemblance to those of mediaeval times in the West, and have done much to hand down ancient traditions comparatively intact. Stone carvers, for instance, are the sons and grandsons of stone carvers, and there are men today who will sit down for a year or so and turn out a pair of dragon columns without once looking at a drawing, yet in their detail showing little repetition, but expressing by slight differences

their own individuality and imagination, just as was done in Gothic days. In the building we are considering, this desire for individual expression is shown everywhere by a lack of perfect symmetry. No two brackets or pendants are exactly alike, in very refreshing contrast to the modern Western use of machine-made ornament.

A glance over the drawings shows the use of a remarkable number of building materials. For the floors, columns, sculptured lions and the lower part of the two front corners of the walls we have limestone. The foundations and walls just above grade are made of sandstone; above this they are of rough brick plastered in two colors, while the quoins are of face-brick. Turning to the inner face of the flank walls of the front portico, we find them covered with unglazed red tiles carefully bonded, about 12x6x2 inches. Mouldings and ridges are built up of a hard plaster that seems almost as strong as if made with Portland cement, with iron used to reinforce the ridges at their ends. Green glazed tiles are used as vents and as cover tiles, while the pans are unglazed. Doors are of wood, as are the partition wall in front and the screen that divides the altar building from the impluvium. The roof, as already described, is of open timber construction.

Although the building materials show such a wide diversity, all of them (with the exception of the glazed tiles which no doubt came across from China in junks), are to be found near the site. And somehow in spite of this variety of material, the building is free from the least suggestion of being over-done, and is restrained rather than extravagant; it gives the impression of being a united whole, a simple expression of the needs that brought it into being.

While it would be rash to use this example as a basis from which to draw too many conclusions about the architecture of ancient China, still it is of value, for we must remember that China's isolation from the rest of the world for so many centuries, together with the well-known devotion of her people to established traditions, has kept her architecture, along with other institutions, from showing any great change. The words of the old Scotch theologian, "An improvement is an innovation, an innovation is heresy, and heresy is damnable!" fittingly express the Chinese spirit. Certainly a closer study of Chinese buildings fills the student with respect, and makes him inclined to agree with Ralph Adams Cram when he says: "Chinese architecture at the time of its advent in Japan (about 580 A. D.) was almost perfectly developed. In simplicity and directness of construction, in subtlety and rythm of line, in dignity of massing, in perfection of proportion, and in gravity and solemnity of composition, it shows all the evidences of a supreme civilization."

\* \* \* \*

### Hundred-Story Buildings

The American city of 2000 A. D. will have buildings 100 or more stories in height with landing stages for aircraft, and the streets will be of two or three levels to relieve traffic congestion. This is the conception of the future metropolitan municipality as sketched by artists and architects who exhibited their pictorial prophecies at the American Institute of Steel Construction which held a convention at White Sulphur Springs, W. V., recently.

\* \* \* \*

In a forthcoming number The Architect and Engineer will publish Messrs. Allison and Allison's recently completed Wilshire Boulevard Congregational Church, in Los Angeles, a work of great beauty and interest.



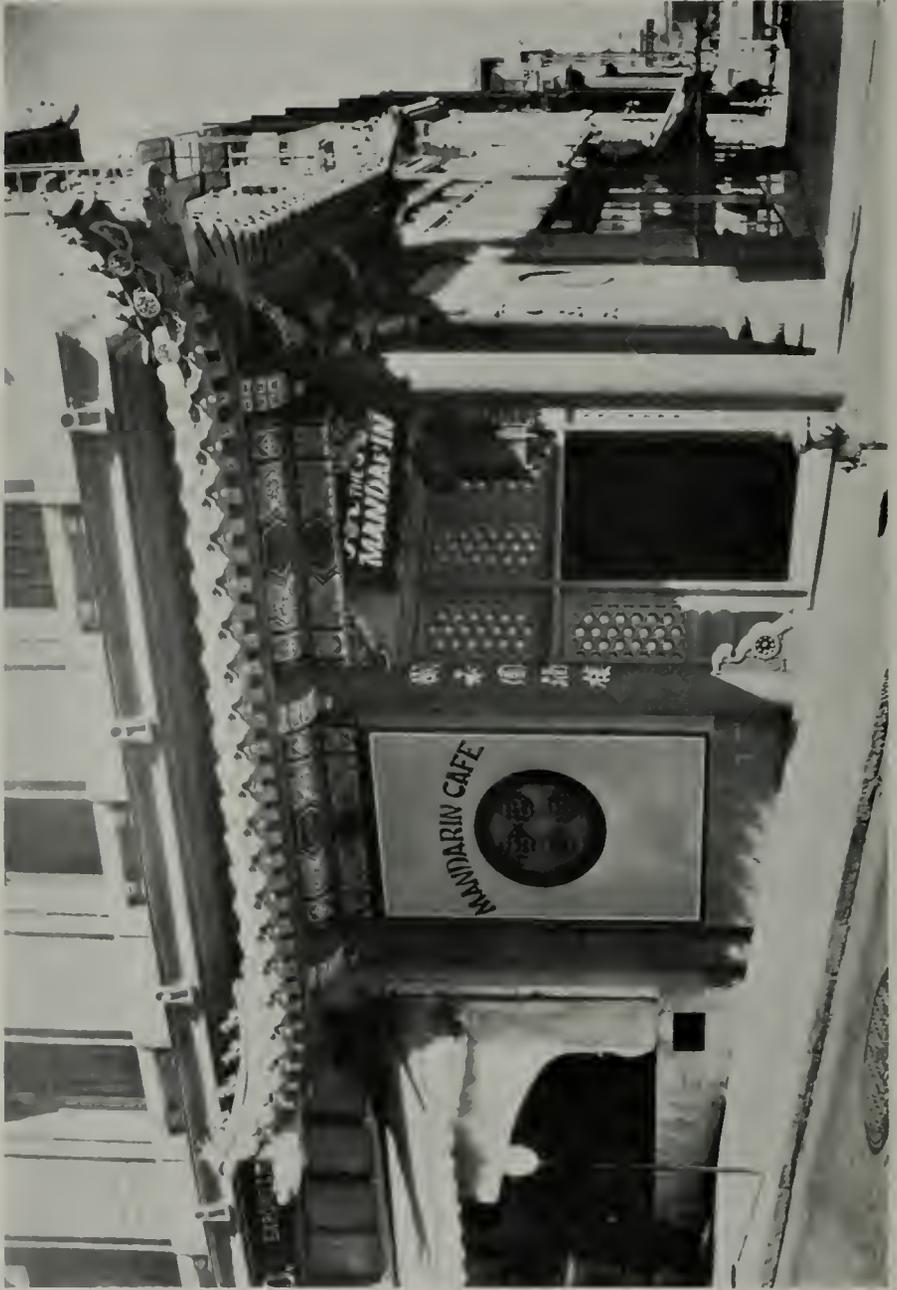
MANDARIN CAFE BUILDING, SAN FRANCISCO  
Ashley and Evers, Architects

## Influence of Chinese Art on Modern Interior Decoration

By K. HOPE HAMILTON

**E**AST is East and West is West and never twain will meet."—But never is a long time, and the prophecy that referred to infinitude of time might definitely be proven false or true.

The brisk demands for Chinese architectural interiors and art treasure are made with more comprehensive understanding, a result



THE MANDARIN CAFE, SAN FRANCISCO  
ASHLEY AND EVERS, ARCHITECTS

of a closer contact with the Chinese. Chinese art has influenced and surpassed all other nations. The French who are famous for their exquisite handling of color combinations have learned much from Chinese textiles and porcelains. Chippendale's designs of furniture are more closely associated with Chinese art than any other cabinet maker.

The Chinese express simplicity in designing of their furniture; noteworthy is the absence in their design of animal legs and feet, originated by the Egyptians and copied by the Assyrians, Greeks, Romans, French, and English of the seventeenth and eighteenth centuries.

Chinese design can only be appreciated by familiarity with motif, unit or element, which is employed with grace, symmetry and charm. Their motifs are derived from nature, flowers, trees, birds and beast. Mythological zoology or religious emblems from the Buddhist, Taoist and Confucian, and other scholarly and philosophical sources.

The official introduction of Buddhism was in the year of 67 B. C. and subsequent influence of Buddhist ideals on Chinese art has been all pervading. Hindu monks expelled from their native country brought their sacred images and pictures with them and introduced their traditional canons of art, which have been handed down to the present day with little change. Thus stimulated by varied influences, Chinese Art flourished.

Of the sixty-five designs that are found on the Buddha's feet, eight of them are known as emblems of good fortune, and have been used by the Chinese for centuries in their composition of art. The lotus flower represented purity rising out of impurity, a covered jar or vase was used for religious purposes, conch shell was carried by marines to safeguard their journey, two fish were emblems of domestic happiness, an umbrella signified official authority in the East, sovereign rank was represented by a canopy which rulers and viceroys carried on state occasions, a bell was used to attract the attention of the gods, the endless knot was copied from the intestines as an emblem of longevity, a bat was the emblem of happiness and love was indicated by the design of a butterfly.

One of the favored designs used by the Chinese is called "The Hundred Antiques," illustrating objects in which a cultured person delights, bronze jade ornaments, vases, and beautiful screens; this design is said to cover an indefinite number of objects similar to the design of "A Thousand and One Things."

The dragon is probably one of the best known of Chinese design. When used out of his natural proclivity he appears to be a bit frivolous in the many duties that have been assigned him in guarding household furniture, linen and wearing apparel, and is one of the busiest animals on earth. When not between heaven and earth, he is in reality the symbol of profound conception of nature.

The Chinese believe the dragon was the guardian of heaven and kept the sky from caving in; when on earth he was a tracer from the source of rivers, and to guarded hidden treasures.

The spiritual dragon controlled the wind, rain and clouds; since the reign of Kao Tsou of the Han dynasty 206 B. C. the five claw dragon has been the emblem of the emperor. Emblems of princes of lower rank were indicated by a dragon designed with four claws.

Architectural design was not neglected, as is recorded in Shih Chi, in the biography of Chin Shih Huang (221-210 B. C.) China, in fact, in every epoch of its history and all of its edifices, civil or religious,



INTERIOR, MANDARIN CAFE, SAN FRANCISCO  
DECORATIONS BY K. HOPE HAMILTON



THIRD FLOOR, MANDARIN CAFE, SAN FRANCISCO  
DECORATIONS BY K. HOPE HAMILTON



ROOF GARDEN, MANDARIN CAFE, SAN FRANCISCO



ROOF GARDEN, MANDARIN CAFE, SAN FRANCISCO



CHINESE INFLUENCE SHOWN IN THIS ROOM, HOUSE OF MRS. EDWARDS, SAN FRANCISCO  
Willis Polk, Architect. Decorations by K. Hope Hamilton

public or private, has kept to a single architectural model, which was not effected by Buddhism and Mohammedanism. It was a cardinal rule in Chinese geomancy that every important building face the South, with the result that this uniformity produced a general impression of monotony.

The roof is the principal feature of a building and is so designed to produce an effect of grandeur or simplicity of strength or grace, and is covered with a glazed tile of brilliant colors, yellow, green and blue.

These colors were never chosen at random, but after strict sumptuary laws, so that they denote the rank of the owner of a house or indicate the imperial foundation of a temple.

The great weight of a roof necessitates the multiple employment of wooden column, generally cylindrical.

The exterior and interior of the roof was the most important architectural feature. Beams are gorgeously inlaid with color and the ceiling geometrically divided with sunken panels upon which appropriate designs were applied. This decoration was one of the earliest developments of pictorial art.

Many treasures of Chinese priceless art are obtainable that have stood faithful sentinel for centuries and have watched humanity, as tiny atoms, ever toiling to interrupt and understand the designs employed, which await to echo messages from their Chinese creators.

## Structural Steel for Houses\*

By HENRY R. BRIGHAM

Chairman, Housing Committee, National Association of Real Estate Boards,  
Boston, Mass.

**S**TEEL is not playing the part that it could or should in the construction of residences, apartment houses, garages and farm buildings. As this country grows the decrease in timber reserves will make it increasingly more difficult and expensive to use lumber in such construction to the extent that it is now used, and the increasing congestion of our cities demands construction offering greater resistance to fire.

Residential construction offers a large and almost untouched field for expansion of the steel industry, and the industry has much to offer in the way of greater permanence, strength, and reduced fire hazard. The customs of centuries, however, are not overcome without effort, and costs are an important vital factor in residential construction.

It is up to the steel industry to assume the initiative in developing such greater use of their product and to arrange for the fabrication of steel for such purposes in designs that can be more easily and quickly handled and erected than wooden beams and girders and at less cost, and to arrange for its distribution in smaller unit shipments.

The question is whether the prospect of increased business is bright enough to be worthy of the effort at the present time.

There is no use discussing large apartment houses, for the value of the use of structural steel in large buildings has been adequately proved and is being adopted. The problem is whether there is not an opportunity for a greater use of steel in small apartment houses, residences, farm buildings and small garages.

Of the total value of building construction in the United States last year about 44% was residential. It is safe to say that steel was a negligible factor in the greater part of that residential construction whereas it doubtless could have been substituted to advantage for lumber in the framework and for floor joists. Making a conservative estimate there was probably 200 millions of dollars spent for lumber that might have been spent for steel.

If, while business is good and opportunities are large, the structural steel business can be developed so that steel will be demanded in place of lumber in residential and farm construction, then when construction declines the steel industries will have created an additional market for their products, which it will be much more difficult to create if they wait until such decline in construction.

Furthermore, they will perform an inestimable service to the country in reducing the fire loss. Steel frames and floor joists alone will not help much in preventing fires, but if costs can be made low enough, steel can be combined with concrete, gypsum, asbestos or other mineral compositions, making fireproof buildings and at the same time protecting the steel from corrosion.

Another factor in favor of structural steel as compared to lumber is that it is something that is scientifically made and it is possible for the manufacturers to establish and to maintain the right standards of quality in manufacture and largely to control its use in building construction. When lumber is ordered for a house it is usually cut to fit

EDITOR'S NOTE: Architects for the Commercial Construction Company and engineers for McIntire-Marshall Company of California are drafting plans for a steel frame residence for Mr. Eugene Webb, Jr., president of the construction company, to be erected at Monte Mar Vista. This project, according to Mr. Webb, is to be made the basis for a study of cost of houses of this type of construction.

\*Abstract of a paper presented at the annual convention of the American Institute of Steel Construction.

on the job which means waste and which also gives the builder an opportunity to fail or neglect to use as much as he should. There are also many grades of lumber, and standards of quality for certain uses can not be as scientifically and accurately maintained. The lumber may all be suitable for some purposes, those uses varying with quality, but the lumbermen cannot control the use after sale, while the structural steel manufacturers, through such organizations as the American Institute of Steel Construction, can determine quality and maintain standards and sell only certain quality for certain uses. By maintaining quality and standards you can see that building codes are drafted to require minimum quantities of material whereas if qualities should vary the building authorities would doubtless feel obliged to guard against use of inferior qualities by requiring more quantities than would be necessary if only first class quality should be used. Thus again, advantage would be gained over lumber where specifications must be based on the average good quality rather than the best. The steel men also can go further and see in furnishing structural steel for building purposes that the building is being properly built so far as the steel is concerned. It is unlikely that where steel is cut perfectly to measure according to approved plans there will be any change on the job although, of course, there is always the chance of poor workmanship due to ignorance or carelessness in contradistinction to intentionally poor work and false economies.

On the other hand wood has many superior qualities which steel may never surpass, such as beauty, ease of working, and longevity. It is very doubtful if steel can ever replace wood for interior finish, or furniture, except where economy or fire protection may be the ruling consideration. Wood under certain conditions will rot quickly but in buildings it has lasted centuries with little or no use of preservatives, while steel must be protected in all cases to prevent corrosion.

The combination of steel with other metals to overcome the evils of rust has been suggested but most steel today must be protected by paint, oil, concrete, or some complete air and water tight covering to keep it in good condition. Harvard University has recently appropriated a small sum for the study of rust and it is suggested that more scientific study of the subject by the steel manufacturers might be highly profitable, though it is probable that they are making such a study.

The ease of working in wood is a strong factor in its favor, particularly in the case of alterations but it is believed that if steel should become more universally used in house building construction, ways to make alterations with reasonable ease would also be found.

There was an account published some time ago of a steel barn with outer walls of copper alloy and it was claimed that it was as cheap as frame and much stronger, but it was stated that the inside would have to be painted every five years. It is hard to imagine any farmer willing and able to clean out a barn even once in five years for a painting job, and it is well known that our wooden barns have lasted generations without any paint inside. Therefore, until corrosion has been better conquered, wood will be preferred to steel for many uses where steel might be preferable except for that objection.

The other objection to the greater use of structural steel in residences, garages and farm buildings is the cost, but it is suggested that that is not a logical objection but one based on wrong premises and one that could be wiped out by a campaign of education and practical demonstrations.

Even if a steel joist of a certain length costs more delivered than a wooden joist of the same length suitable for the same use, it does not necessarily mean that the final cost of erection of the building is going to be more. The greater strength and rigidity that can be obtained in the steel joist makes it possible to reduce the number of joists and to lessen the necessary number of supports. This may result not only in the use of fewer feet of joists but of simplifying the entire structure so that a considerable excess of cost per running foot of steel over lumber might not result in any greater final cost for the material for a building. Then, further, it is very possible, if the structural steel is cut to measure and delivered ready simply to be bolted in place, that with proper appliances for its erection time can be saved as it is saved in the erection of skyscrapers, and labor costs can be reduced. When lumber is delivered on a job it is generally not cut to measure but has to be cut on the job which means additional labor costs.

If, then, in the end a saving can be shown, both in material and labor costs by use of structural steel instead of lumber, that saving will appreciably help to make it possible for the builder to use the necessary materials, such as concrete, to protect the steel and to make a fireproof and strong building as cheap if not cheaper than a building with a wooden frame which is not fireproof and which may be of shoddy construction, without the innocent purchaser being able to detect the difference.

That this is not an idle dream has been proved by one builder who is profitably building small houses to sell, using steel frames and metal lath and finishing the exterior with stucco or brick. In itemizing the cost of a stucco-exterior steel-frame bungalow, size 24x34, with five rooms and bath, he says: "The cost for the metal, lumber and metal lath for the building complete is \$522.72 which will figure about \$75 less than the wood joists, rafters, studs and lath for exterior and interior walls. The reason for this is that the steel in the frame is spaced on two-foot centers, whereas the studs in the wood house are spaced on 16-inch centers, thus creating a saving in steel. The erection cost runs less as laborers are hired at a cost of 60 cents an hour instead of carpenters at \$1 an hour. The lath is installed by men at 70 cents per hour against \$1.35 per hour for wood lath." He uses 4-inch steel channels for all his frame work and 6-inch floor joists and they are delivered to the building site cut to length. He punches the necessary holes, claiming that he can do so cheaper than he can get them cut by the manufacturer. He says: "When it becomes known by the steel concerns of this country that the steel frame fireproof house can be built at no greater cost than wood they will also find that producing steel for house construction will greatly increase their tonnage."

That man doing an individual independent business probably does not have the labor troubles that would arise if such construction should be generally undertaken throughout the country, but if the steel manufacturers should so develop their business and create a large demand for structural steel for residences and farm buildings it is expected that they could so reduce the costs as to offset any increased costs of labor.

Speaking of labor costs it is well known that the seasonal nature of the construction industries is a large factor in the high wages paid, and since steel construction is not so readily affected by weather conditions it might be possible to spread construction more evenly through

the year employing labor more regularly and thus justifying a lower daily wage even if giving a higher annual wage.

So far reference has been made only to the greater use of steel in the framework. The metal lath business is growing fast and needs no comment except that if you have steel floor joists you could use metal lath and concrete in making fireproof floors, but it is possible to extend the use of steel even further by using sheet steel for walls as has been done in England. There some of the frames are made of wood and the walls of steel, but the frame being encased, the buildings are practically fireproof. There is still some doubt as to whether those buildings are a success, because of that enemy of steel—rust—and because of problems of insulation. In endeavoring to make the so-called steel houses at minimum cost the appearance inside and out does not seem to have met with favor, wood being more pleasing as has been pointed out. After the steel manufacturers in this country succeed in satisfactorily replacing wood in the framework of small building construction it might be possible to extend their activities to the greater use of steel in the walls when the problems of corrosion have been better solved.

Meanwhile the substitution of structural steel for lumber in framework of residences, apartments, garages, and farm buildings in combination with fireproof materials to decrease fire losses, to preserve our forests and timber supply, as protection against earthquakes and tornadoes, to keep out rats and vermin, and in the interests of better building is a large enough prospect to be worthy of attention on the part of those engaged in the manufacture of structural steel.

\* \* \* \*

## Suggestions for Making a Built-In Garage Fire-Resistive

**T**HE growing tendency to build garages as an attachment to a dwelling has presented a new problem for fire underwriters, who take the attitude that if a built-in garage is not properly constructed it is a menace to life and property. Investigations have shown that a fire starting in a small garage is not likely to be more severe than would be withstood by the construction classed by authorities as affording one-hour fire resistance.

With an incombustible floor, and the garage separated from the rest of the building by an unpierced wall and a ceiling that meets the one-hour fire test, the fire hazard of a built-in garage is not unreasonable. Such a garage must have fire resistive outer walls, windows and doors to prevent the flames breaking through and spreading through house windows or catching woodwork above the garage. A single swinging and self-closing door leading from the garage into the house is permitted under stringent safeguards.

The six rules adopted by the National Board of Fire Underwriters are given below, and deal with every section of a built-in garage.

Rule 1.—Garage floors shall be of concrete or equally fire resistive and impervious material.

For convenience in cleaning, and to prevent dangerous accumulations of water, oil or grease, all parts of the floor should drain naturally.

Rule 2.—Walls and partitions shall be built to meet the requirements of the standard one-hour fire test.

Many materials are acceptable under this rule, such as brick, hollow tile, concrete block, or gypsum block four inches thick or reinforced concrete three inches thick. As a minimum requirement, walls may also be constructed of wooden studs spaced 16 inches center to center, with metal lath attached outside and inside. The outer lath is to be plastered and back-plastered with Portland cement stucco, and the inner lath plastered with three-quarters-inch Portland cement or gypsum plaster. For interior partitions separating the garage from the rest of the dwelling, three-quarters-inch Portland cement or gypsum plaster on metal lath, on both sides of studs spaced 16 inches apart, is satisfactory.

Rule 3.—The combined floor and ceiling construction directly above the garage shall be unpierced, and shall have a fire resistance of one hour. The same rule applies to the roof when the garage is attached to the side of the dwelling.

Ceilings or roofs of reinforced concrete, or some other type of incombustible construction that meets the fire test, are best and most reliable. In case of true built-in garages, a good, inexpensive overhead construction is as follows:

Ordinary 2-inch or thicker floor joists may be used, spaced not more than 16 inches center to center, and properly bridged. The ceiling should be of heavy metal lath, weighing not less than 3 pounds per square yard, and Portland cement or gypsum plaster not less than three-quarters inch thick. The metal lath is to be attached to the joists by six-penny nails driven nearly home and the heads turned over against the lath, and is to be bent down six inches along the walls on all sides and securely attached to them. The flooring above the ceiling is to be double, of seven-eighths inch rough and finished floor boards, with a layer of asbestos or other high grade floor felt between.

Where the garage is attached to the side of a dwelling, an equivalent construction for the roof can easily be devised.

Rule 4.—When a garage is located beneath a dwelling, all outside doors and windows with their frames and sash shall be of standard fireproof construction, and glazed with wired glass.

Only products approved by competent authorities should be used. A large variety of fire doors and windows have been tested and approved by the Underwriters' Laboratories, and are a standard commodity in the building material market. It is important that such devices should be installed in metal frames, and that the same hardware be used as that with which they were equipped when tested. If not, they may fail during a fire. Fire doors are made in both swinging and sliding types, and many of the former are as artistic as wooden doors. Wired glass glazing is required in all outside windows and doors to prevent flames from a fire in the garage from breaking through and endangering the structure or windows above.

Rule 5.—Openings from a dwelling into a garage shall be restricted to a single doorway. This opening shall be protected by a standard swinging, self-closing fire door, with approved fire resistive frame and hardware. No glass shall be permitted in such a door.

A self-closing fire door is one that normally swings shut by a mechanical device. A swinging door is required because it fits closely into its frame, and thereby prevents passage of heat or smoke when attacked by fire. Wired glass is not allowed in this door because it is liable to soften and sag from its fastenings at a temperature of about 1600 degrees Fahrenheit, which is a heat easily produced by burning gasoline or oil. But, as stated above, it is better to have no opening in any of the partitions.

Rule 6.—When a doorway connects directly with a cellar or basement on the same or lower level in which there is any heating device or gas fixture, the door sill shall be raised at least one foot above the garage floor level or the doorway shall lead into a vestibule which connects with the cellar or basement by a second door.

This is to prevent fumes from gasoline which may leak or be spilled upon the floor when reaching a furnace fire or gas light that might be located in any lower portion of the building. It is well known that gasoline vapors are heavier than air, and will accumulate on a floor like water, and flow to any lower level, and if they come in contact with fire of any kind—even a spark—will ignite and flash back to the starting point, and cause an explosion. Hence the high door sill.

\* \* \* \*

## Cleaning a Stone Building With Steam

**T**HE use of steam from a boiler blown directly against the stone through a simple nozzle has been found by the Bureau of Standards, Department of Commerce, to be a very effective way to remove dirt from the walls of a stone building.

To meet the changing demands of present day commercial conditions many old buildings are being altered or remodeled. In order to eliminate the undesirable contrast always present in such cases between the old dirty surfaces and the new stone put in the walls some kind of cleaning of the old portions is generally carried out. Because of the detrimental effects of acid cleaning or sandblasting, scrubbing with soap powders and hand brushes is customarily employed. This method is effective but slow and laborious, and in an effort to devise a faster and more efficient means of cleaning limestone, experiments with the use of live steam were conducted under the co-operative research program of the Bureau of Standards and the Indiana Limestone Quarrymen's Association, Bedford, Indiana.

An interesting demonstration of this experimental work was the steam cleaning of a remodeled bank building in Baltimore, Md., where the scheme was given a practical trial under commercial conditions. The use of steam at 80 pounds per square inch pressure, the pressure ordinarily used in small portable boilers blown directly against the stone through simple nozzles made of galvanized pipe fitted to the end of one-half-inch steam hose lines was found to be very effective in removing the twenty-year accumulation of dirt on this Indiana limestone building. Although the structure was heavily carved and moulded the work was done rapidly with inexperienced labor, the engineer firing the boiler being the only skilled worker on the job. The cost of the job was somewhat higher than a bid received for acid cleaning which was due in part to its experimental character, this being the first complete building ever cleaned with steam. The final color of the stone was not so bright as that of new stone work but was considered entirely satisfactory since it combined cleanliness with the appearance of age which is usually thought desirable in stone buildings. The successful use of steam in this practical test leads to the conclusion that for the removal of dirt from old limestone buildings, the steam cleaning process would, in most cases, be an economical and effective method to employ with the added advantage that it does not damage the stone.

## The Ventilating and Cooling of Motion Picture Theatres

By D. D. KIMBALL

Consulting Engineer, New York, in Architectural Forum

IT IS to be noted that the title chosen for this paper does not specifically include heating. In the case of the auditorium or theatre, proper, the heating problem exists only in its simplest form, and is usually solved by placing a number of radiators adjacent to entrance and exit doors, such radiators being placed in recesses covered with grilles in number sufficient to offset the cooling effect of the walls and doors. The amount of radiation thus determined will usually be found to be sufficient to keep the theatre warmed to about 50 degrees in winter.

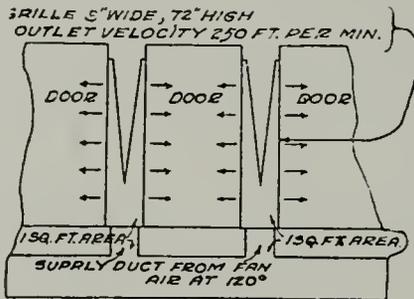
There are two points in theatre buildings at which ample heating is most essential. The first of these is at the main entrance lobby and foyer, at which the maximum amount of heat possible must be provided to prevent cold air blowing into the theatre through the constant opening of doors, which, unless the lobby is thoroughly warmed, will cause most objectionable drafts at the rear of the orchestra. Whenever possible the heating of the main entrance lobby should be accomplished by means of a separate fan system, supplying a volume of air equal to a change of the cubic contents of the entrance lobby and foyer once every one or two minutes. The most efficient method of introducing this heated air into the lobby is through grilles placed at each side of each entrance door. If, as is usual, there are two sets of doors into the lobby, both sets of doors should be thus equipped. In this way the cold entering air is immediately warmed to a sufficient temperature to keep the lobby warmed. A second row of grilles at the second row of doors will provide any additional heat necessary, so that by the time the air entering through the doors reaches the theatre, it will be thoroughly warmed, and thus no objectionable drafts will be experienced by anyone in the theatre. The heating coils to warm this air should be capable of raising the temperature of the air entering the lobby through the door grilles to at least 120 deg. In some cases the grilles at the sides of the second, or interior, row of doors are utilized to draw air to the inlet of the fan, by which means recirculation is accomplished, and fewer heating coils at the fan are required. Direct radiation should be provided in the lobby in any event, however, to keep the space warm at times other than during the performances without the necessity of running the fan. Another method of warming lobbies is to provide direct radiation in recesses in the lobby and to pass air from the theatre fresh air supply system over these radiators into the lobby. Use of either of these methods presupposes some air pressure in the lobby to counteract the outside air pressure blowing in at the doors, but the method first suggested accomplishes this purpose to a greater degree in that the air pressure at which the air is blown into the theatre proper under usual conditions. Thus are treated the conditions at doors.

The second point at which direct radiation is of greatest importance is on the stage. Rarely will the amount of radiation here required be for less than 1,000 sq. ft., and frequently it will be for as much as 2,000 sq. ft. If the stage is not thoroughly warmed, the front portion of the orchestra will always be cold, and this frequently occurs because of lack of sufficient radiation on the stage. In all cases the radiation should be thoroughly distributed, and an ample portion thereof should

be placed near doors or entrances from outside to the stage. Where the stage walls are high, it is desirable that the radiation should be divided and placed at two or three levels on the exposed walls—one-third about 6 ft. above the stage floor, one-third about 24 ft. above the floor, and the remaining one-third from 40 to 50 ft. above the floor. Additional radiation should be provided in the form of a pipe coil in the skylight over the stage for efficient heating.

If the front of the stage over the proscenium opening extends well above the roof over the theatre proper, a coil should be placed on this wall directly over the proscenium opening in the manner indicated in one of the illustrations herewith. Dressing rooms, retiring rooms and other auxiliary rooms will require direct radiation sufficient to heat these rooms 70 degrees.

The heating boilers may be of any suitable type, but they should be selected of very ample capacity, because of the intermittent operation of the heating system and the very large demand made upon the boilers by the ventilating system. For larger theatres the fire box type of boilers is especially adaptable, but for small theatres cast iron sectional boilers may sometimes be used. The boiler, or boilers, should not be placed under the theatre proper, the stage, dressing rooms, or lobbies, exits, etc.



DETAIL OF AIR SUPPLY AT LOBBY DOORS

The heating installation may consist of a gravity two-pipe system but the vacuum return line system is preferable because it is quicker in operation, more efficient and more economical in fuel consumption.

The piping system should be so divided that the different departments of the building may be served independently. The division of heating mains should be substantially in some such manner as this:

- One set of mains for the theatre proper.
- One set of mains for the lobbies.
- One set of mains for the stage.
- One set of mains for the dressing rooms.
- One set of mains for the store and offices.
- (If such are included.)
- One set of mains for hot water storage tank.
- One set of mains for house and sprinkler tanks of all kinds.

Each set of mains should be valved at, and be run down, the main boiler header. Mains for the stage and dressing rooms are sometimes combined in one system, and sometimes the mains for stores and lobbies are similarly combined to some advantage.

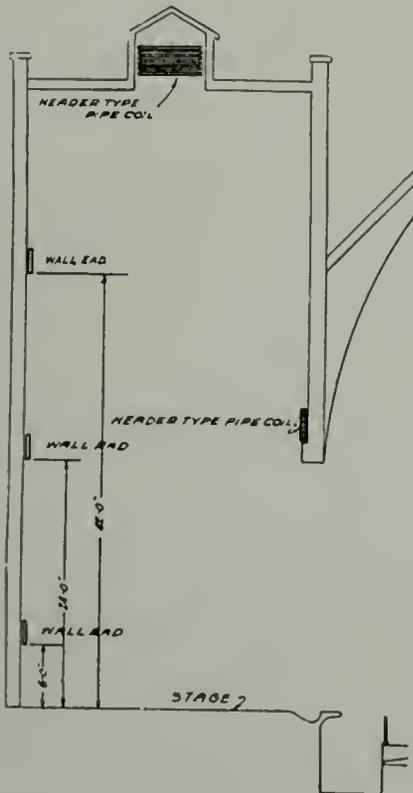
The vacuum return line heating installation simplifies this division of mains in that the return main can be a common return for the

separate piping systems already described. The vacuum return pumps of a vacuum return line system should be automatically controlled in their operation, and should be installed in duplicate so as to insure continuity of operation of the entire heating system.

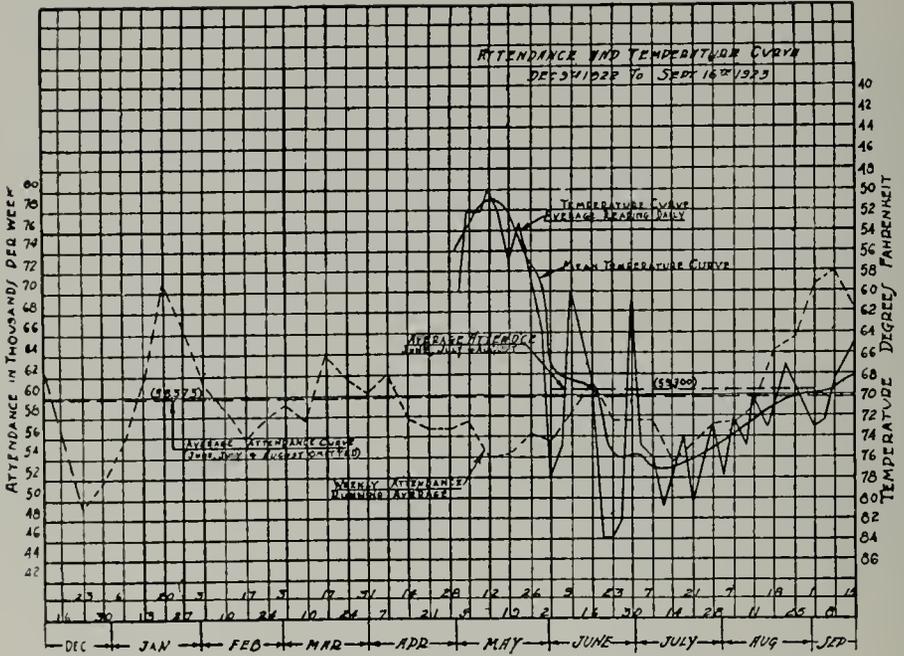
Because of the extensive nature of the piping system, all heating mains should be covered with a high grade of insulating material. The boiler and smoke pipes should be covered with similar material over a 1-in. air space to give necessary protection.

It has already been said that warming the theatre proper (that is, the auditorium) does not involve a heating problem. The fact of the matter is that this is really a de-heating problem; that is, the problem is that of taking off the heat and moisture (and odors) from the occupants of the seats. This can be properly accomplished only by an adequate and complete ventilating system. Such a system is a complete system only when it includes a fresh air supply system and an exhaust system, both of these being mechanical. The distribution of the fresh air inlets and the exhaust outlets must be such as to insure the flushing of every portion of the theatre.

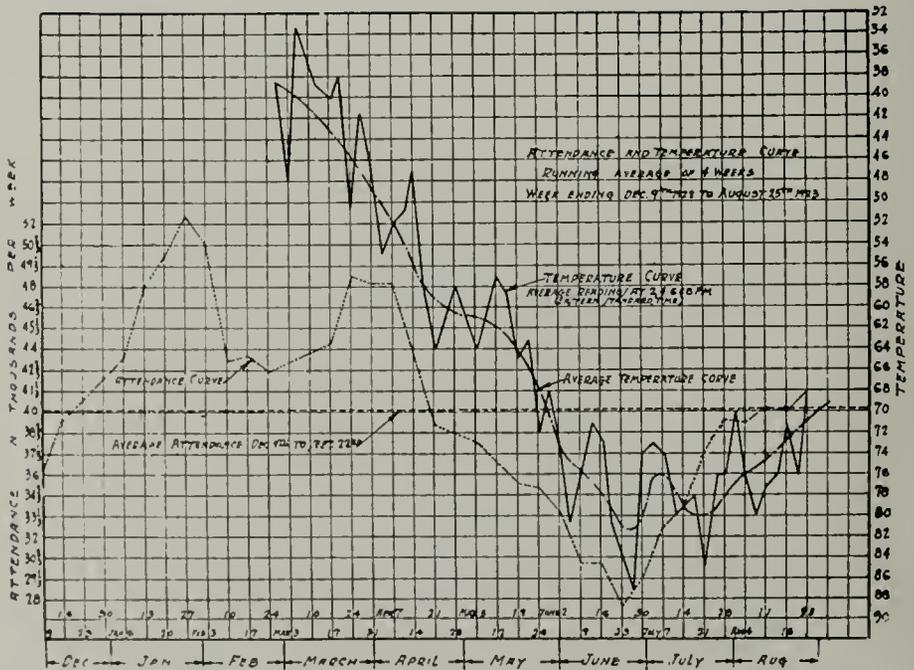
The quantity of air supplied and removed by the ventilating system bears a direct relation to the number of persons whom the theatre may



SECTION SHOWING DISPOSITION OF RADIATION ON THE STAGE.



OUTDOOR TEMPERATURE AND ATTENDANCE RECORD OF A THEATRE ARTIFICIALLY COOLED



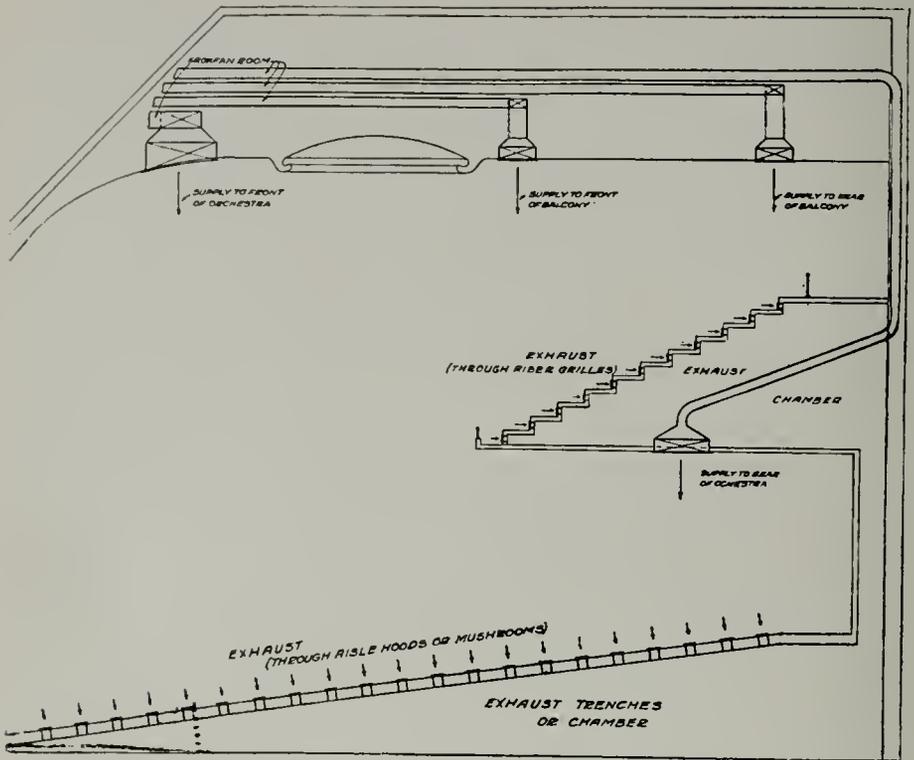
OUTDOOR TEMPERATURE AND ATTENDANCE RECORD OF A THEATRE HAVING NO COOLING SYSTEM

accommodate. No thoroughly defined and generally accepted volumetric standard of air supply for theatres exists. With 10 cu. ft. of air per minute per occupant supplied, the temperature of the air in passing through the theatre will be raised from 11 to 14 deg., which means that in order to keep the temperature of the theatre at 70 deg. or less the air must be introduced into the theatre at a temperature as low as from 55 to 60 deg. Especially when the air is introduced into the theatre through the floor, this low temperature of the entering air will cause objectionable chilling of the occupants of the seats, with consequent complaints of drafts. Hence a supply of air limited to 10 cu. ft. of air per person per minute is found to be too small to give satisfactory ventilation. Fifteen cu. ft. of air per person per minute is the least that may be safely used, and twenty cu. ft. provides only a good and generally satisfactory result in ventilation. Twenty-five cu. ft. is the desirable standard, and in some cases thirty cu. ft. of air per occupant per minute.

The attempt to make a single supply fan, or a single exhaust fan, or both, serve the entire building is wrong in principle and in practice. The fans which serve the theatre proper should not be used to serve any other portion of the building. Separate fans should be provided for the toilets and retiring rooms, for the lobby, for the picture machine booth and for other special rooms, if any such there are.

A great deal has been written upon the question of upward versus downward ventilation, that is, whether the air should be introduced through the floor and be exhausted through the ceiling, or be introduced through the ceiling and be exhausted through the floor. There is a very logical and practical explanation of the better results obtained with the downward system. Theatre ventilation is, as has been said, at all times a problem of de-heating or cooling, since its real purpose, quite aside from that of supplying fresh air and of providing air movement, is to remove the heat and moisture given off by the occupants of the theatre. To do this while maintaining a theatre temperature of approximately 70 deg., that volume of air customarily used for ventilation must be admitted to the theatre 11 to 14 degrees below the desired theatre temperature during the winter, and with a greater temperature difference, if possible, in the summer. Admitted through the floor, this cool air strikes the feet and lower limbs of those in the seats, causing discomfort and complaints in proportion as the general temperature of the theatre is kept down to a proper degree. Admitted to the theatre through the ceiling, the air gradually picks up the heat increment and passes over the occupants of the seats at the correct temperature, causing no complaints. This method of air supply will provide a uniformity of temperature in the theatre which may be assured by no other.

The theory has been advanced that the downward flow of the air supply is contrary to the upward force given to the air by the heat from the people. Compared with the moving force of the fans, the upward effect of the heat from the people is entirely negligible, so that the downward movement of the air suffers no handicap thereby. The advantages of the downward supply of fresh air become increasingly important if a cooling installation is made, because of the fact that the air frequently must be introduced at a relatively low temperature in hot weather, and were air of such a low temperature admitted through the floor serious complaint would be made of the chilling effect of this low temperature air. The fact must not be overlooked, however, that in some cases the construction of the theatre is such that only the upward style of air is possible within the limits of a reasonable cost



METHOD OF VENTILATING REAR OF ORCHESTRA AND BALCONY

of installation. In the case of the upward supply through the floor, dust (and particularly the dust brought in on the feet) is carried up into the air.

Especially when using the upward supply of air, it will be found that there are varying temperature conditions in different sections of the theatre. The front of the orchestra is invariably the coldest portion of the house. The rear of the orchestra, under the balcony, where the construction of the balcony provides a low ceiling, is a congested spot in which the temperature always builds up. Again, the front of the balcony will be found higher in temperature than the front of the orchestra, and the rear of the balcony will be found the warmest section in the house. It is highly desirable that the ventilating system should be so arranged that the air supplied to the different portions of the theatre may be introduced at different temperatures. Manifestly, therefore, it is not possible to conduct the air directly to the seats at differing temperatures, but with a properly designed system and properly located inlets the air may be admitted to the theatre directly over these various areas at sufficiently differing temperatures to maintain a practically uniform temperature throughout the theatre. Without such division of the air supply system, temperatures in theatres are frequently found to vary as much as from 12 to 18 degrees in different portions of the house, making some portions thereof almost unbearable. In the case of the Capitol theatre, New York, seating 5,400 people, the difference

in temperature at any two points in the house never exceeds 2 degrees. The diagrammatic sketch here illustrates the method outlined herein for thus governing the temperatures of various portions of the theatre.

The worst features of theatre ventilation are closely allied to overheating. Only an adequate and properly arranged system of automatic temperature regulation will prevent this. Such a system should be designed to control the temperature of the air admitted for ventilating purposes, and to control also the direct radiators in the important rooms.

In recent years many theatre owners have installed so-called cooling systems, consisting merely of additional fans installed to supply a large volume of outside air during hot weather. Undoubtedly such installations accomplish much in the way of providing air movement and breezes in the theatre during hot weather, and to this extent they are worth while; but they do not meet the demands of large theatres, since they do not actually lower by a degree the temperature in the theatres, nor do they even prevent a rise in temperature. Such installations constitute additional summer ventilating equipment, but they should not be called "cooling systems."

In some theatres the exhaust fans are so arranged that they may be used during hot weather to blow air into the theatres; that is, the direction of the flow of air from the exhaust fans is reversed to provide an auxiliary summer air supply, thus supplementing the regular fresh air supply fan, leaving all of the air to be exhausted through the entrance lobby, exit doors, stage and elsewhere. This is often successful.

The demand for the actual cooling of theatres is growing by leaps and bounds. Two years ago there were but one or two thoroughly cooled theatres in the entire country. At the present time there are dozens such, and dozens more are installing such equipment.

Herewith are shown two charts, the first of which represents the outdoor temperature record and the attendance record (during the same period) of a large theatre. The temperature scale and curve are inverted, and a "running average" of three weeks' attendance is used. The cross-hatched area in this chart represents a loss of paid admission in a single season, their value exceeding the entire cost of a refrigerating and cooling plant installation, plus operating costs. The second chart shows a similar record taken from a theatre possessing a cooling installation, and shows an actual increase of attendance during the hottest days of the year over the average attendance for the remaining portion of the year. Such installations are increasing rapidly in number.

The only efficient, and the only real theatre cooling system, the only one which will actually lower the temperature of the air in the theatre, is the form of cooling installation which includes refrigerating plant equipment. The refrigerating installation required may cost from \$12 to \$15 per seat, and the adaptation of the ventilating plant to the cooling requirements may cost as much more. Nevertheless, such an installation may be counted upon to pay back the amount involved and the cost of operation within one or two seasons in the case of a motion picture theatre, and within twice this time for others.

The considerable cost of such a cooling installation is due to the size and cost of the necessary refrigerating plant. Approximately 200 tons of refrigerating capacity will be required for a 3,000-seat house. The cooling installation requires, also, the inclusion of a de-humidifying type of air washer, recirculating the air ducts, special temperature and

humidity regulating equipment, cork covering, water pumps, etc. The air admitted into the theatre is cooled in passing through the dehumidifier, the water used in which is cooled by means of the refrigerating plant. A closed type of air cooler (strictly dry air cooling) may be used, if preferred, but this is unnecessarily expensive equipment.

The use of an ammonia refrigerating machine is manifestly undesirable in a theatre building, unless it can be placed outside of and away from the building.

No phase of ventilating engineering demands more skill and ingenuity than does the designing of theatre ventilating equipment. A vast amount of money may be wasted by lack of ingenuity, skill or experience. Poorly designed, badly arranged or cheap installation invariably mean unsatisfactory results, complaints and wasted money. Better no ventilation at all than a cheap one, for the result is the same so far as actual ventilation is concerned. Generally speaking, any expenditure made for ventilation which represents less than \$10 per seat may be considered wasted, and considerably more can be advantageously spent upon this work.

\* \* \* \*

## Selection of Stone for Building

**I**N a recent address before students of the Royal Academy of Arts, London, Professor A. P. Laurie described the different stones used in England for building purposes and gave some account of their chemical properties. While the same rules cannot be said to apply to American stones, yet there are many salient points in his address of value to students of art and architecture in this country. Professor Laurie dealt with the two main groups of stones used for building—sandstones and limestones—and described the various causes of the weathering of the stone. He said that the most serious cause of weathering was the attack on the stone of the acid oxidized products of sulphur, due to the burning of the sulphur in coal; and showed that this was not confined to the towns, but was found in buildings even in remote districts. The action of the sulphur acids resulted in the formation, in the case of limestones and in the case of sandstones which contained calcite, or calcium sulphate, which was slightly soluble in water and would cause the stone slowly to waste away. But the most serious effect of calcium sulphate was its crystallization within the stone, resulting in the stone being mechanically broken up. In illustration of this he showed experiments on the breaking up of stone by the crystallization of salts within it, and explained the conditions under which these took place, illustrating this by experiments made on crystallization of capillary tubes. He pointed out that as far as sandstones were concerned, it was possible to select sandstones for building which were practically free from calcite, and should therefore be used in modern cities.

In the case of limestones, all that could be done was to select a limestone which would best resist this form of attack. Much depended upon the susceptibility of the limestone to attack, which could be tested by exposing small cubes to an acid vapor, and by measuring the rate of absorption of water and evaporation from the stone, which could also be made the subject of laboratory tests.

## Choosing the Factory Floor

### *An Analysis of the Various Types of Flooring and Their Application to Specific Conditions*

By B. R. MAGEE and H. K. FERGUSON  
in Industrial Management

*The floor of a factory is comparable in a measure to the roadbed of a railroad; especially in these days of systematized and mechanicalized production. Unlike the railroad, however, the factory cannot standardize upon one "best" type of floor construction. A floor that would best meet the requirements of the lathe department, for example, would be utterly unsuited to the foundry; what is ideal for the ground floor may be quite impractical on the second or third floor.*

*The choice ranges from clay to concrete, from wood to metal, from asphalt to brick. Only through a thorough knowledge of the characteristics of each, together with a careful analysis of conditions to be met, can an intelligent selection be made.*

CHOOSING the factory floor is one of the most important and puzzling problems in factory construction and maintenance. For this reason much effort and thought has been given in recent years by engineers, manufacturers and plant owners, both individually and collectively, to find a material or combination of materials, properly assembled, which would meet all the requirements of an ideal floor for factory purposes. As a result of this quest a number of developments have been made which approach such an ideal, but each has its limitations when put to the service test. A floor which will carry heavy loads and traffic is generally too hard or too expensive for general purposes. The problem therefore resolves itself into finding the floor which will give reasonably long and satisfactory service under the known conditions. It is often advisable to use different types of flooring for various departments, bearing in mind, however, that there is always a possibility of rearrangement of departments or change of occupancy for any given portion of a building.

From the standpoint of a prospective builder or owner, points of fundamental importance are as follows: First cost, probable life under actual service conditions, ease and cost of replacement and repair, comfort to employees, effect on their general efficiency and the yearly cost based on all the above considerations.

From the design and construction standpoint essential factors are: Weights of materials to be handled and type of trucks, width and kind of truck wheels, whether rubber or iron weights and location of machinery and other movable or live loads, rigidity required for machinery, and all facts regarding acids, alkalies, oil, water or other fluids used in the manufacturing processes which are apt to be spilled on the floor. In general a floor consists of two parts of equal importance: the structural or sub-floor, and the wearing surface or finish. In determining the type of wearing surface to be used it is also necessary to consider the structural floor, as combinations of the two are limited. For this reason a description will be given of various combinations with their usual advantages and limitations, beginning with the least expensive and leading up to the most expensive for each type. Please bear in mind, however, that local prices of materials may change the order of sequence in some cases, and the only sure way to get the facts is to take figures from some reliable builder.

In the single story type of industrial building which has come into very general use in recent years, the main floor is generally placed directly on the ground or fill. Dampness and settlement are the particular hazards to be met and provided for. Dampness promotes fungus growth and rotting and also causes serious warping and buckling of wood floors. Settlement is damaging to nearly all types of floors but particularly so to concrete.

**Filling:** Where a fill is necessary to bring the grade to the required level or to raise the grade on account of dampness use sand, if obtainable, slightly dampened and thoroughly compacted. Cinders are often used for this purpose, but should not be placed around iron piping or structural steel, due to the presence of free alkalies. A further objection where concrete is to be poured directly on the fill is that part of the cement is lost by capillary attraction of the cinders, and this materially weakens the concrete slab. Clay filling is not so satisfactory as either sand or cinders, as it settles more, generally unevenly.

A very successful method for compacting fill is to place the filling material as early as possible in the construction operation, and drive over it with trucks or teams until it becomes thoroughly compacted. Drive in a one inch bar to locate possible voids.

**Clay Floor:** A clay floor is soft, resilient, easy to walk on, and is particularly adaptable to foundry work where ladles, flasks, etc., are handled by an overhead carrier system. It should be put down in layers of from 2 to 6 inches, depending on the stiffness of the clay, to a total thickness of about 12 inches. Where surface water is present, the subsoil should be thoroughly tiled. To prevent dusting, the surface may be sprinkled with sand, and in order to maintain the floor in a level condition, it should be scraped and rolled once or twice a year as conditions require. Clay floor is not adaptable for trucking of any kind.

**Concrete Floors:** Floors consisting of a stone concrete base and either cement or special finish have been used with more or less satisfactory results in a large number of industries. The general objections to floors of this type are that they are cold and hard, causing cold feet and leg weariness of employees; they also have a tendency to dust and wear in spots. When properly constructed, however, concrete floors are comparatively cheap in first cost and fairly satisfactory for general purposes.

It is very important that care be taken in the selection of materials and special attention given to proportions, mixing and water content to insure maximum density and evenness of texture in the finish. It is not reasonable to suppose that a floor constructed of soft and inferior materials will have any greater resistance to wear and tear than the materials of which it is composed.

The structural concrete slab is usually poured in either a 5 inch or 6 inch thickness, and should never be leaner than 1-3-5 mix. It should be reinforced with wire mesh or rods where there is a possibility of any settlement of filling material below the slab or where the subsoil may become soft during the wet season.

**Cement Finish:** Either a monolithic finish or a topping of one inch cement and sand (1-2 mix) may be applied for ordinary purposes. Except under good weather conditions under cover and protected from frost, it is difficult to obtain a good monolithic finish. This is also more

difficult to repair than a separate topping but has the advantage of a perfect bond to the structural slab. The addition of limestone screenings will very materially increase the hardness and life of the floor.

The finish should generally be laid with a smooth surface, as experience has shown that excessive wear generally results at the markings, if the floor is blocked off into squares. Of course, this would not hold for office or garage display rooms, or other spaces where improved appearance is desirable and the usage is light.

**Liquid Floor Hardeners:** Sodium silicate has been successfully used on concrete floors and roadways (in Ohio) as a top dressing to cure dusting and waterproof the cement. But it should be mentioned that common viscous waterglass is not always satisfactory. The most generally useful silicate for use on cement has a ratio of 3.3 molecules of silica to 1 of soda and is usually clear. (See *The Qualities of Various Composition Floorings* in June, 1924, issue of "Buildings.")

There are a number of patented liquid hardeners on the market which have given satisfactory results and special paints developed for use on concrete surfaces. Painting is especially to be recommended where color treatment is wanted. It also effectively prevents dusting and renders the surface impervious to water.

**Calcium Chloride:** The Illinois Division of Highways has made a series of very exhaustive road tests in the use of calcium chloride and have found that 2½ lbs. of the flaked chemical per sq. yd. takes the place of the usual curing by the earth and water method and saves about 14 days in the curing period required. Tests also show the ratio of wearing resistance of treated and untreated concrete specimens to be about 10 to 1. About three-fourths of the total mileage of concrete roads constructed in 1923 in Illinois were built in this manner (see "Engineering News Record," April 3, 1924). There are no floors installed in this manner in the writer's knowledge but the method is worth considering as a time saver and also as a surface hardener, if the Illinois tests are borne out in fact.

**Metallic Floor Hardeners:** Where the floor is apt to be subjected to abrasion, such as dragging of heavy objects over it, either iron or copper filings troweled into the surface will generally increase the life of the surface under such severe usage. The weight of the filings necessitates careful handling and troweling to prevent their settling below the surface.

**Patented Concrete Floors:** Owing to the difficulty in securing a good cement floor by usual methods, a number of patented processes have been developed. One of the most elaborate and successful of these is as follows:

The sub-floor is brushed with stiff wire brooms immediately after the concrete has set to remove laitance and scum together with loose waste material, exposing the firm bone clean concrete surface and leaving it evenly scored and pitted, thus assuring uniformity of bond. Grease, oil and similar substances that resist removal by brooming are eliminated by mechanical chipping and scouring.

All material used, cement, sand and aggregate, are carefully selected and tested to insure that cleanness, hardness and size are standard. The standard mix is 1 part cement, 1 part sand and 1¾ parts aggregate (hard gravel or crushed stone ¼ inch to ½ inch). This is

mixed in a stationary drum type mixer, using only enough water to produce a dense workable and flowing mixture. This mixture is spread smoothly, struck off to level, and at once covered with burlap in strips laid with overlapped edges. Then a dry mixture of cement and sand is spread on the burlap to about one inch depth. This mixture acts as a blotter to draw to the surface and absorb all excess water. This process requires about twenty minutes, when the burlap is removed, leaving the finish in a plastic state ready for finishing, well in advance of the initial setting of the cement.

Immediately after the burlap is removed the finish is compacted by heavy electrically operated disc floats and then hand troweled with steel trowels.

The surface is saturated with water 24 hours after final troweling and kept saturated from 7 to 14 days. It is then allowed to dry and treated with liquid hardener.

(The process above described is protected by patent.)

**Limitations of Concrete Floors:** Olive, whale, bone and wood oils, tallow, organic fertilizers and manure have a tendency to attack freshly laid concrete but concrete one month old is generally immune. Mineral oils derived from distillation of coal products have no action on cement unless some acid is present. Even weak acids like vinegar (in large quantities) have a destructive effect. Alkalies like potash and soda have no action but ammonium salts tend to roughen the surface.

Where women are employed they almost invariably object to standing or working on concrete floors. This difficulty may often be met by the construction of raised wood panels around the machines.

**Magnesite Floors:** Magnesite floors consist generally of half inch of magnesite cement (a mixture of magnesium oxide and magnesium chloride), laid over either a concrete or wood base. This thickness is intended for offices or other light duty. Where heavy duty is required the thickness is increased. Magnesite is warmer underfoot than concrete, more resilient and non-slippery. It has been installed in a large number of factories, warehouses, office buildings, hotels, etc., and on the decks of ocean going ships. It comes in a number of colors and may be laid in patterns or solid ground with different colored border as do nearly all the special floorings following.

**Granolithic and Terrazo Floors:** Granite or marble chips mixed with cement and sand placed on a concrete base produce hard, beautifully variegated surfaces, very durable to resist foot traffic and non-absorbent in nature, respectively known as Granolithic and Terrazo Floors. These finishes are used in entrances, lobbies, toilets, restaurants, etc., where such flooring is desirable.

**Special Floorings:** In an effort to obtain a warm and noiseless flooring especially adaptable for offices, a number of composition floors have been developed. Some of these consist of short fibre asbestos held in a binder of sodium silicate with or without other aggregate such as powdered serpentine. A mineral coloring is added to produce desired effects. Other floors use a sawdust base with a silicate or magnesite binder. Most of these floors are proprietary and suitable for light use only.

**Waterproofing:** In the construction of basement or ground floors where water is present in sub-soils, waterproofing is necessary. There are three ways of accomplishing this: the integral, the plaster coat, and the membrane methods. In the integral method, a filler which closes the pores of the concrete is added to the other materials at the time of mixing. The plaster coat method consists of a waterproof plaster finish over the concrete base. The membrane method is seldom used except where hydrostatic pressure is present. It consists of placing waterproofing felts over a concrete base and a cement finish 2 or 2½ inches thick over the felts. Where water pressure exists, it is also necessary to reinforce the structural slab to resist the lifting action and prevent cracks which would damage the topping and puncture the membrane.

**Brick Floor:** In localities where the price of paving brick is not excessive, the brick floor has some advantages worth considering. When laid with grouted joints, it presents a fairly smooth, non-slip surface which will stand excessive heat without cracking. It is easily repaired and adaptable for change of occupancy requiring installation of heavy foundations or change of foundations and consequent tearing up and relaying of portions of the floor.

**Wood Floors:** In placing any wood floor on a base resting directly on the ground, special precautions, in addition to those outlined for cement floors, must be taken to prevent moisture getting into the floor, as this always causes buckling and rotting. Air spaces should be left between the sub-floor planks and around the walls or other fixed boundaries for ventilation and expansion, as moisture may find its way through the structural slab in spite of waterproofing precautions, or water pipes above may leak, or other accidents occur.

**Maple Floor Over Tarred Rock Foundation:** In line with the precautions outlined above two methods of laying wood floors directly over the ground have been developed. The first method consists of a tarred rock foundation, a dampproof course, 2 inch plank sub-floor and 7/8 or 1 1/8 inch maple finish floor. It is constructed in this manner: A foundation course consisting of crushed stone thoroughly machine mixed with tar is put down, raked to an even surface and rolled to finish 4 inches in thickness. A dampproof course made by mixing dry sand with tar is spread over the tarred rock foundation 1 1/4 to 1 1/2 inches thick so it will compact to 1 inch, leveled with a straight edge and followed immediately with the plank. Hemlock planks, if obtainable, 2 inches sq. edge, are laid directly on the dampproof course, spaced approximately 1/4 inch apart, brought to proper level and toe nailed to each other. Over this sub-floor, 7/8 or 1 1/8 inch factory maple flooring is securely nailed, leaving expansion joints as noted above.

**Maple Floor Over Concrete Base:** The second method consists of a floor exactly similar to the first except that a concrete base is substituted for the tarred rock foundation. These floors are designed to resist dampness and give firm support for vibrating or heavy machinery. Tools or finished machine parts are not injured by falling on wood floors and the maple surface is suitable for light trucking, warm and resilient underfoot.

**Wood Block Over Concrete Base:** Another type of dampproof floor consists of 2 or 2 1/2 inches creosoted wood blocks, having at least 8 lbs. impregnation, laid in hot pitch directly over a 5 inch stone concrete base, which has been floated to a smooth and even finish. This floor

will give very good service for heavy trucking and has the advantage of being easily repaired where blocks are worn or damaged. It employs the well known principle that wood has the greatest resistance to wear and shock in a direction parallel to the grain of the wood. It has the disadvantage of being more difficult for the attachment of machinery as the blocks have a tendency to loosen, and any heavy loads are localized on the structural slab by the nature of the floor. It is not so easily cleaned as maple, and offers a little more resistance to the moving of trucks, but not enough to be objectionable.

It does present a non-slip wearing surface, having a long life under heavy trucking conditions. It does not require any special arrangement at aisle crossings.

Care should be exercised in keeping creosoted blocks dry before laying, as they absorb moisture and have a tendency to shrink and loosen, if laid in this condition. If blocks having 12 lb. impregnation are used, absorption is less apt to take place. Blocks used in locations exposed to the weather should always have this amount of impregnation. Expansion joints should be placed along the walls and around machinery foundations.

**Attached Wood Blocks Over Concrete Base:** This type of flooring consists of wood blocks 2 inches thick, dovetailed to a 1 inch wood sub-floor. It is laid over concrete base and sleepers the same as maple flooring, except that the wood blocks and the sub-floor are laid at the same time with wood splines between each row of blocks. It is also laid on a concrete base without sleepers, using a method of lateral nailing, which attaches all the blocks into one solid floor. These blocks are milled to give a uniform finish, similar to a maple floor, at the same time provide a non-slip surface. The blocks will not pull loose and for this reason the floor is suitable for direct attachment of machinery. Blocks and attached strips intended for interior use are treated with paraffin, thus eliminating the usual objection to the use of creosote in inside work. This floor has given long and satisfactory service in main trucking aisles, elevators, loading platforms, freight cars, etc., and is especially designed for heavy traffic. It can be easily repaired and is becoming more popular each year.

**Limitations of Wood Floors:** In general, wood floors should not be used where a large amount of water is used in the operations or where acids or alkalis are present. Also, when heavy materials are to be handled, which would have an abrasive action or cause local damage, necessitating frequent replacement.

**Mastic Floors:** A mastic floor consists of asphaltic concrete composed of natural asphalt with a binder of cement placed over brick or concrete base. For factory use the mastic should be laid in a thickness of at least 1 inch and the asphalt percentage varied to give a soft under portion and a hard wearing surface. The amount of asphalt in the lower portion should not exceed 10 per cent and the surface  $7\frac{1}{2}$  per cent. Mastic floor is intended to withstand heavy trucking and at the same time be sufficiently resilient to increase the efficiency of workmen and remain moisture and waterproof. It should not be laid where cutting or transformer oils are used, or under heavy storage on account of the tendency to show indentation. Hand trucking of heavy objects is

also difficult in warm weather. A great deal of experimentation has been done in recent years by the manufacturers of mastic floors to perfect a mixture which would not have these objections, and considerable progress has been reported. Mastic cannot be used where the temperature exceeds 110 degrees, as the material softens at this temperature. In general, use of mastic is limited to trucking aisles, loading platforms and roadways. If there is an objection to the black color, it can be whitened by dusting with cement.

For laboratory use, a  $\frac{1}{8}$  inch soft mastic floor has been successfully used. It comes in black, green, red and brown colors, black being the best wearing. This thickness of flooring cannot be used over a concrete slab placed directly on the ground where dampness exists, as any moisture will throw the asphalt and cause it to peel. It is usually put on in six coats, and is easily repaired by putting on another coat. It cannot be used in offices as a chair will cause indentation.

**Asphalt Blocks:** Asphalt blocks are generally an improvement over asphalt mastic laid in a mass, eliminating cracking and sponginess, but the other limitations for mastic floors hold for this type of construction, and they are more expensive than wood block.

In constructing floors above ground, the structural type is determined by considerations of first cost, required carrying capacity or live load, spacing of columns, building code requirements, relative insurance rates based on construction and contents, probable length of occupancy, and probability of change due to rearrangement of departments, or improvements of methods of manufacture, and obsolescence.

In the cotton mills of the South and in New England, a very close spacing of columns in both directions is permissible. This makes the mill or slow burning type of floor the most economical in first cost. Where a sprinkler system is installed, this type is generally rated as good or a better risk than an unsprinkled fireproof floor. It is also true, that a mill type structure is more adaptable to change than any other type of structure.

When the columns spans exceed 16 by 16 feet, and the live load exceeds 125 lbs., it generally becomes economical to use either a combination of structural steel and timber, reinforced concrete, or structural steel and concrete.

For the support of heavy machinery requiring delicate alignment, as for instance a motor-generator-set or for supporting heavy vibrating machinery, reinforced concrete construction generally gives the greatest rigidity.

When column spacings exceed 25 by 25 feet, a comparison of cost must be made to determine the most economical kind of structural floor, as costs of the various types vary directly with the live load requirement. For live loads up to 125 lbs., either the two-way tile and concrete system or concrete slab over metal joists will generally prove the most economical, the former having the advantage of stiffness, the latter of speed and flexibility after construction. For live loads above 125 lbs., flat slab will generally prove the most economical. But it is also necessary to consider the type of finished floor to be used, as the cost of applying a wood floor to a concrete base is greater than in the case of the mill type construction.

**Mill Type Floors:** In cotton mill construction a 3 inch or 4 inch yellow pine splined floor is laid directly over the joists, which have a spacing of 6 or 7 feet on centers laid over wood. For other types of occupancy, this type of construction is varied to consist of a 2 inch sub-floor over joists spaced from 3 to 4 feet on centers with either  $\frac{7}{8}$  inch or  $1\frac{1}{8}$  inch maple floor laid on top. The finish should be sanded or scraped as previously mentioned. For office or other similar purposes, there are a number of special composition floors which may be laid directly on the wood sub-floor such as magnesite and other "Special Floors" previously described.

**Flooring Over Reinforced Concrete:** The structural slab may be surfaced either monolithically or with a cement or other special finish the same as for slabs resting directly on the ground. Where the structural slab is poured in freezing weather, it is necessary to use one of the latter methods.

Maple flooring  $\frac{7}{8}$  or  $1\frac{1}{8}$  inch in thickness is laid in the same manner described above the ground slabs, or on sleepers placed directly on top of the structural slab with a fill of either cinder or stone concrete placed between them. The sleepers should be carefully leveled and anchored to the structural slab by metal anchors or wires placed before the concrete is poured. An asbestos compound mixed with stone concrete is sometimes used in place of sleepers and fill. This sub-floor is nailed directly to this compound fill, which is placed in about 2 inch thickness. Difficulty is generally experienced in mixing the compound evenly throughout the concrete and in placing the fill with a level surface to receive the planking.

Wood block over structural concrete becomes about as economical, or even cheaper in comparison than the maple flooring laid by the sleeper method on account of the expense of concrete fill. It must be borne in mind, however, that wood block always give better service if laid on a troweled surface.

The use of attached wood blocks is the same as for ground slabs, using the lateral nailing method. It probably represents the most efficient type of wood flooring, although the first cost is high. It is feasible to use it in combination with maple floor for trucking aisles.

The development of an ideal factory floor is a problem that is still unsolved. All of the floors developed so far and described above have their special applications and limitations. We would urge manufacturers toward the development of a low cost, resilient, long wearing, composition floor which could be placed either on concrete or wood base for factory purposes.

\* \* \* \*

## Cubical Contents of Buildings to be Analyzed

The American Institute of Architects, desiring to eradicate all possible differences now existing between architects, contractors, appraisal organizations, bonding companies and others on the question of determining the cubical contents of any structure, has appointed a committee of three to make a thorough analysis covering the situation and to prepare a report for presentation to the scientific research department of the Institute. The committee is composed of Messrs. D. Knickerbocker Boyd, chairman, Dr. Warren P. Laird of Philadelphia, and Dalton J. Snyder of Detroit.



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### FEBRUARY FEATURE

We take pleasure in announcing to our readers that the major feature of the February issue will be an article on "Architectural Settings for Outdoor Easter Worship in the West," by Mr. Emerson Knight, landscape architect of San Francisco. The article will be abundantly illustrated to portray as vividly as possible the growth of outdoor worship and the development of architectural settings to date and the entire work is in effect a sequel to the article entitled "Outdoor Theatres and Stadiums in the West," by the same author and published in *The Architect and Engineer* of August, 1924.

In order to provide an edition large enough to meet the demands of the many individuals and institutions vitally interested in this significant movement, we would

suggest that readers notify the publishers as promptly as possible, stating approximately the number of copies required.

### BETTER HOTEL LIGHTING

Once before attention was called in this magazine to the tendency of architects and hotel owners to cut down on guest room illumination. It is apparent that owners believe that here is an opportunity for economy. Is it? True, something is saved on the initial outlay and again, with fewer fixtures in a room, there is less juice to pay for. But how about the loss of patronage that is sure to follow if a guest is dissatisfied with the lights in his room? Not only are many of our hotels inadequately lighted but the few fixtures installed are far from effectual. Most of them seem to have been designed primarily from the standpoint of their appearance. It is well to bear in mind that the principal reason for having lighting fixtures is to obtain light—presumably good light. The fixtures should be beautiful in themselves, they should harmonize with the furnishings of the room, and the light they produce should serve to beautify the interior. But all this should not—and need not—be done at the sacrifice of adequate light. There are types of fixtures available which illuminate, as well as beautify.

An important lighting fundamental, often violated in hotels, is that every lamp should be well shaded. Even lamps of a diffusing-bulb type are uncomfortably bright when exposed to direct view, and there is no question that this practice is undesirable from the artistic standpoint. Perhaps the most inexcusable—and yet the most common omission of shades is on candelabra fixtures. Designers and manufacturers have taken great care to copy minutely the artistic candle fixtures which tradition links with the splendor of

by-gone times. Yet in the most important detail of all—the light source—a very inharmonious note is introduced. Bare lamps are allowed to intrude their glaring harshness upon the beauty of the fixture, like a crashing discord at the end of a symphony. It is encouraging that the use of shades is rapidly increasing; in fact where bare lamp fixtures are being specified it is indication that “fixtures” and not “illumination results” have been given first thought.

#### *LUMBER SITUATION IMPROVING*

Within the past decade the lumber industry has come to the realization that unless new forests are grown, the end of the lumber industry as it has been known historically, cannot be long delayed. The industry, however, has no intention of passing out, when the economic demand for its product is becoming more and more insistent every year. Under the pressure of providing adequate raw material to keep the sawmills in continuous production, lumbermen and timber owners have turned their attention to a serious study of commercial reforestation. It has been a study of a practical, unromantic but extremely business-like matter. While the theorists and sentimentalists have grown lyric upon the subject of reforestation, the forest owners and users, with a studious sense of economic proportion and spurred by the necessity of protecting their industry from extinction, have gone about the matter of reforestation in a slower but immensely more promising way. Thus we find many of the larger manufacturing operations, both in the South and West, employing forest engineers and experts to work out plans whereby the supply of new timber could be made adequate to the capacity of the mills to produce lumber.

Undoubtedly if the public attitude is favorable to this logical

and natural development of the industry, the dismal croakings of the pessimists will have no justification, and there will be a sufficient supply of lumber for its necessary uses in the future. But this beneficial situation cannot be brought about by lumbermen alone. The public must be aroused to its interest and so educated to a helpful co-operation with forest owners, that commercial regrowth will be made possible. The first consideration is that of adequate fire protection, and the second, hardly less important, is the readjustment of taxation systems so that timber growing may be placed upon the same general taxation basis as the product of any other crop from the soil.

This proposal does not involve any suggestion of the evasion of taxation. Lumbermen expect to pay their proportionate share of tax obligations, but manifestly forest growth cannot be taxed at its full value over a period of from 40 to 60 years with any prospect that it can be harvested at a profit, any more than a field of corn could be similarly taxed each day of its growing period. The so-called yield tax is a logical solution of the problem. This means the taxing of timber after it is cut and made into a merchantable product. By such means vast tracts of cut-over lands can be made reproductive and the forests become a permanent source of business income. More than this, the economic pressure to cut timber faster than it can be profitably used, will be removed. This will bring about true conservation.

While lumber production reached a high level in 1925, economic conditions were not favorable from the standpoint of profits in the industry. Mounting costs were not accompanied by general increases in prices. This is especially true of the Pacific Coast regions, where, at certain periods, the amount of

lumber produced seemed to glut markets already over-supplied. This condition naturally has increased stocks at the mills which gained 16 per cent in volume from January 1 to November 1, 1925.

Labor and employment conditions in the lumber industry in 1925 were generally favorable with few strikes, a smaller percentage of establishments idle and a greater percentage operating full time than in 1924. Building costs were slightly lower, especially labor costs. Transportation service in general, except in Florida, is reported to have been very satisfactory.

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#### THE PANELED ROOM

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Paneled walls are in vogue again. The Tudor or Elizabethan style which calls for small oak panels from the floor to the ceiling, with ornamental plaster overhead, is one of the most popular and beautiful modes. This was the style used to such beautiful effect in the old castles and country houses in England and the continent.

In the old days of handwork this method of covering the walls was an expensive one. Many of the interiors of the sixteenth century baronial halls have been brought over intact and at great expense to the United States and installed in the homes of wealth in this country.

The modern methods used in the manufacture of veneered panels have, however, brought the cost down to such an extent that it is not alone the homes of wealth which can afford a paneled interior. The most modest bungalow as well as the more pretentious mansions can have rooms paneled in hardwood. The installation is extremely easy and the labor cost is low.

This trend of interior decoration toward hardwood and away from painted woodwork is a step toward greater refinement and a more permanent form of home atmosphere.

—C. H. W.

#### More Anent the San Mateo Theatre Editor The Architect and Engineer:—

The cold impersonality of type, as well as the passing of a little time, often makes us revise—or wish to revise—some of our utterances. I have been going over an article I wrote for The Architect and Engineer last month concerning the San Mateo theatre and some of the problems suggested by it (I generally make certain that somebody reads an article after I have written it, even if I have to do it myself); and in the perspective of afterthought it seems to me that there was a point which, while implicit in the article as it stands, deserves nevertheless more specific attention than was given it.

I refer to the damage done the artistic conception as a result of the dual authority in completing the scheme. I pointed out that the building was built by a realtor who provided everything of a strictly architectural nature, and leased to a tenant who provided his own equipment and furnishings. Naturally we enjoyed the full co-operation of our client, the realtor, without which the scheme could not have been undertaken at all. On the other hand, no terms of the lease bound the tenant to consult anything but his own desires in supplying the furnishings for which he paid. Much current architectural work is done under this arrangement, and because it is fraught with such serious possibilities to his own work it deserves the architect's attention. In most cases a tenant's reasonableness will operate to avoid glaring inconsistencies. Yet obviously it is only the tenant's vision or indifference, or the architect's diplomacy, that can avert disaster. If the former be lacking, or the latter prove ineffectual, the architect's best efforts may be made ridiculous without redress. Many a discrepancy observable in commercially executed work is doubtless due to such causes, and is unjustly charged against the architect. Signs and other features on store fronts are one of the commonest examples falling in this category. A writer or a composer whose works are put before the public under his name but in garbled versions has legal recourse. When the architect's conception is denatured he must grin and bear it.

Or perhaps the damage to his prestige is merely illusionary. Nobody ever knows or cares who designed a building anyway. At the dedicatory exercises of the theatre in question business men and politicians patted each other lustily on the back and exchanged bouquets, but the closest scrutiny of the index would fail to reveal a single entry under "Architect" or "Architecture." One would have supposed that, like Topsy, the building just grew.

IRVING F. MORROW.



PHOTOGRAPH OF MODEL, NEW HOTEL DEL MONTE, MONTEREY  
Lewis P. Hobart and Clarence A. Tantau, Architects

## The New Hotel Del Monte

**T**HE new and greater Hotel Del Monte, successor to the structure destroyed by a fire a year ago, is rapidly nearing completion on the famous Monterey Peninsula and, according to the present plans, the grand opening will be held on April 15, 1926.

The new Hotel Del Monte will be one of the most beautiful hostelries in the United States with every modern feature embodied in the building. It has been so designed that each room will receive an abundance of sunshine during practically the entire day. The exterior of the hotel will be of white cement with a heavy tile roof.

In the main building will be 96 rooms, and as there are 110 rooms in each of the two wings, in which guests are housed at present, and 50 in the nine cottages which surround the main building, the total number of rooms available will be 366 with a capacity of 600.

The building is of Spanish architecture and was designed by Architects Lewis P. Hobart and Clarence A. Tantau. It is fireproof throughout. The builders are Lindgren, Swinerton, Inc.

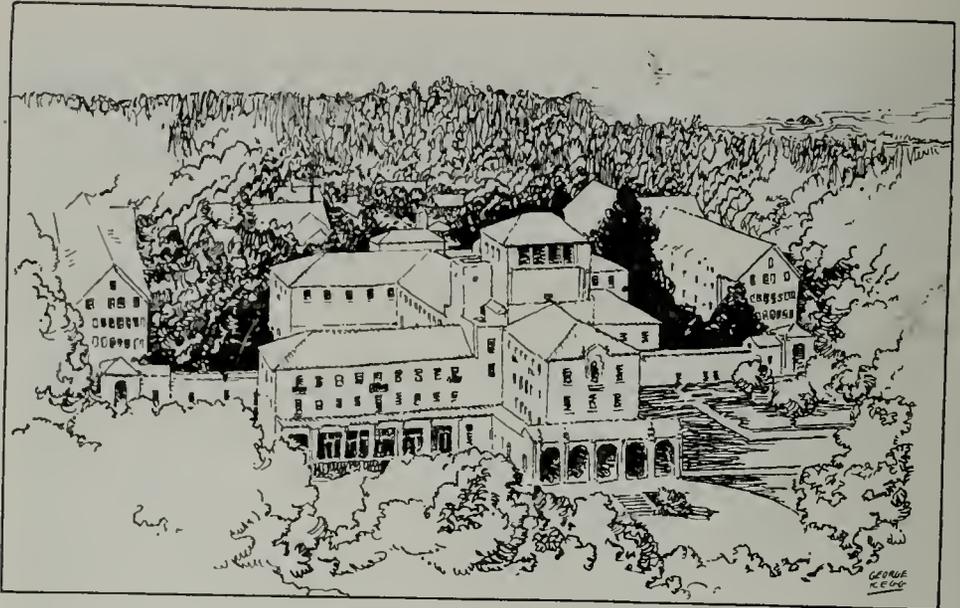
On the main floor will be a large entrance porch, while a luxurious sunporch will open onto a terrace on the south side and extend over the passage to the wings. This porch, incidently, is on the

same spot as the old one. Two sunken gardens will be seen on either side of the main building. From the hotel lobby a full view can be had of the Roman pool. The windows in the lobby are twenty feet in height and two paintings by Francis McComas, the famous American artist, will decorate the main window. The room will be of Spanish design with a beamed ceiling.

The main floor lounge has paved terraces on both sides and will be decorated with the finest of Groesbeck murals. The pictures depict the landing of Cabrillo on Monterey Peninsula. This room will have a coffered ceiling. The dining room, which is situated next to the main floor lounge, is 210 feet long, 49 feet wide, and from ceiling to floor will be 27 feet. It will have four decorations of tile, one of them being the fountain which is seen near the entrance. The ceiling will be of Spanish Colonial design.

The ground and main floors will be tied together by two elevators and three massive staircases. Two service elevators will service all of the rooms.

In the tower, from which a magnificent view can be had of the wide sweep of Monterey Bay, there will be a Spanish banquet room. A staircase and two elevators will permit of access. Above the tower room will be a covered terrace.



AIRPLANE VIEW, NEW HOTEL DEL MONTE

#### The American Academy in Rome

The American Academy in Rome has announced its annual competitions for Fellowships in architecture, painting, sculpture and landscape architecture. These competitions are open to unmarried men not over thirty years of age who are citizens of the United States.

In painting and sculpture the Fellowships will be awarded by direct selection after a thorough investigation of the artistic ability and personal qualifications of the candidates. Applicants are required to submit examples of their work and such other evidence as will assist the jury in making the awards.

The stipend of each Fellowship is \$1,250 a year for three years, with some additional allowances for material and model hire. Residence and studio are provided free of charge at the Academy. All Fellows have opportunity for extensive travel.

Entries will be received until March first. For circulars of information and application blanks, address Roscoe Guernsey, Executive Secretary, American Academy in Rome, 101 Park Avenue, New York, N. Y.

#### Oakland Department Store

The Kress Co. of New York City have let a contract to the Clinton Construction Co. of San Francisco, to build a five-story reinforced concrete store and loft building on the site of the old Delger building at 14th street and Broadway, Oakland. The plans were made by Architect E. T. Hoffmann, 114 Fifth avenue, New York City.

#### Tall Buildings Safer in Earthquake Zone

Tall steel buildings are safer than structures of 100 feet in height during earthquakes, in the opinion of Dr. Bailey Willis, seismologist and professor emeritus of geology at Stanford University.

This view, contrary to the general conception of the layman, is supported by Dr. Willis on the theory that the period of swing in a building of more than 200 feet does not coincide with the earthquake's period of swing, and, hence, the inertia of the building mass stops jerking when the theoretical pendulums pass.

A building 100 feet high swings with the earthquake and this receives the maximum jerk when the subterranean pendulum changes its swing, he said.

"There is almost no danger in the ordinary light dwelling house unless the chimney comes through the roof," Dr. Willis continued. "The most dangerous place is on the outer edge of the sidewalk and the adjoining part of the street, where store fronts and heavy cornices will strike."

The safest places are in doorways and against walls, he said.

#### Bliss and Faville Dissolve Partnership

The architectural firm of Bliss & Faville, established in San Francisco in 1898, was dissolved on January 1. Walter D. Bliss and J. S. Fairweather will continue the practice of architecture, maintaining the firm's old offices in the Balboa building, while Mr. Faville has opened offices in the First National Bank building.

# With the Architects

Building Reports and Personal Mention

## Chapter Names Delegates

The Southern California Chapter, A. I. A., has elected the following delegates to the annual convention of the Institute: Messrs. J. E. Allison, C. E. Noerenberg, Edwin Bergstrom, Sumner P. Hunt, Reginald D. Johnson, H. C. Chambers, John C. Austin and C. H. Cheney. The president and secretary are ex-officio members of the delegation. Alternates to delegates were elected as follows: Fitch Haskell, Donald B. Parkinson, Wm. Lee Woollett, Gordon B. Kaufmann, A. M. Edelman, S. B. Marston, Alfred W. Rea, Wm. Templeton Johnson.

## Architects Meet

Two hundred Southern California architects gathered at Uplifters Ranch to meet the president and board of directors of the American Institute of Architects who held their semi-annual meeting in Los Angeles in December. Mr. D. Everett Waid of New York City, president of the American Institute, delivered a splendid address, and each of the directors made a short talk.

Similar meetings and dinners were held for the Eastern visitors in San Francisco, Portland and Seattle.

## Plans Completed

Architects Ashley & Evers, 58 Sutter street, San Francisco, have been awarded plans for the new \$1,000,000 store and loft building which the Fourth and Market Street Realty Company will build on Fourth street, from Jessie to Stevenson streets, San Francisco. The same architects have also completed drawings for a four-story Class C reinforced concrete store and loft building for the Trinkler-Dohrmann Company of San Jose.

## Contract for Printing Plant

Cahill Bros., 55 New Montgomery street, San Francisco, have been awarded the general contract to erect a three-story reinforced concrete printing plant at Sansome street, between Vallejo and Green streets, San Francisco, for the Abbott-Brady & Sunset Printing Co. The building was designed by T. Ronneberg, construction engineer.

## Addition to Building

Architect William Knowles has prepared plans for a two-story addition to the William Eide building at 1041 Market street, San Francisco. The lessee is the Weinstein Company.

## New Officers

Architect T. F. Doan, of Bellingham, succeeds Roy D. Rogers, of Seattle, as president of the Washington State Society of Architects. Other officers elected for the new year are: J. L. McCauley, Seattle, first vice-president; Roy D. Rogers, Seattle, second vice-president; Julius A. Zittel, Spokane, third vice-president; Louis Svarz, fourth vice-president; William J. Jones, secretary; Theobald Buchinger, treasurer, and H. G. Hammond, trustee. The latter four are Seattle architects.

## Two Large Residences

Architects Powers & Ahnden, 460 Montgomery street, San Francisco, have prepared plans for two large residences, one of Italian design and the other Spanish, to be built in the vicinity of Divisadero street and Pacific avenue, San Francisco, for Romolo A. Sbarboro and Remo E. Sbarboro, of the Italian-American Bank. The two homes will cost approximately \$40,000 each.

## Death of Colonel Daubenspeck

Col. W. S. Daubenspeck, for many years engaged in building construction in Los Angeles, died December 10 at the Ransley apartments on W. Third street. He had been a resident of Los Angeles for 33 years. He was active in the Builders' Exchange and served for 10 years as president of that organization.

## Partnership Dissolved

Architect M. C. Parker announces that the firm of Parker & Crawford, Amarillo, Texas, has been dissolved, and that he will continue the practice of architecture under the name of Martin C. Parker & Co., suite 303 Temple Ellis building, Lubbock, Texas. Manufacturers' samples and catalogues are requested.

## Hollywood Theatre

Plans have been completed and bids taken for Warner Bros. office building and theatre at Hollywood, estimated to cost \$2,000,000. Architect G. A. Lansburgh of San Francisco and Los Angeles, prepared the plans.

## Piedmont Residence

Architect Leonard H. Ford, Coit Hotel building, Oakland, has completed plans for a \$20,000 residence to be built on Prospect Road, Piedmont, for Mr. E. H. Fenton. The house is designed in the Spanish type with terra cotta tile roof.

### News of Portland and Seattle Architects

Architect Morris H. Whitehouse, 619 Railway Exchange building, Portland, Oregon, has taken Messrs. George M. Post and A. Glenn Stanton into his firm, now known as Morris H. Whitehouse and Associates.

Architect George Foote Dunham, 1201 Northwestern Bank building, Portland, is in Orlando, Florida, where he is supervising church construction. His first commission is the construction of a \$100,000 edifice for the First Church of Christ, Orlando. Mr. Dunham's Portland office is in charge of Wayne Mills.

Architects Mendal and Buchinger, formerly in the American Bank building, Seattle, have moved to the Lumber Exchange building.

Architects H. C. Whitehouse, George H. Keith, Ernest W. Price and Henry C. Bertelsen all of Seattle, have given lectures at Washington State College, Pullman, on architectural work. Fabian Smith, of Spokane, has given a lecture on landscape architecture.

Prof. Stanley Smith, Architecture Department, Washington State College, attended the last meeting of Spokane A. I. A., and promised to give an address at some future time. A general discussion about zoning occupied the greater part of the evening.

Architect M. J. Beezer of Beezer Brothers, Seaboard building, Seattle, has returned from San Francisco where he was associated with his brother, Louis Beezer, in the design and construction of St. Dominic's church. Beezer Brothers have returned to their old offices at 903 Seaboard building, Seattle.

### Berkeley Residences

Architect B. Reede Hardman, Berkeley National Bank building, Berkeley, has completed plans for an English type residence to be built on Santa Barbara street, Berkeley, for Mr. Ronald Long and also a stucco home on Vine street, Berkeley, for Mr. George Knowles.

### Theatre Contract Awarded

Architect Mark T. Jorgensen, 110 Sutter street, San Francisco, has let a contract to Barrett & Hilp at \$75,000 to build a two-story reinforced concrete theatre on San Pablo avenue, Berkeley, for the Golden State Theatres Company.

Mr. Jorgensen has just moved to more attractive offices in the Bond building, 321 Bush street.

### Piedmont Residences

Architect W. E. Schirmer has completed plans for a \$16,000 residence for George Maurer in Piedmont; also a \$25,000 home for Mr. Roger Chickering.

### Los Angeles Building Forecast

All indications point to a volume of construction in Los Angeles and Southern California during 1926 equal to that for 1925, if not greater. These indications, enumerated, are: The volume of construction now being started or reasonably certain to be started during the coming year; improvement in general business conditions; continued gain in population and a prevailing feeling of optimism which became very pronounced during the closing months of the year.

A survey of building operations just being started and work planned for the present year in Los Angeles and Southern California cities, made by Southwest Builder and Contractor, shows approximately \$75,500,000 worth of construction in sight for 1926. This survey covers only structures estimated to cost \$100,000 or more, except for city schools, and does not take into account scores of projects which would range from \$25,000 to \$100,000. A large volume of building started during 1925, which will be carried over into the new year, is not included in these figures.

### Civic Center for Sydney

San Francisco's Civic Center is being held up as a model for one to be established in Sydney, Australia, if the hopes of Mr. W. H. Myers, chief electrical engineer of Sydney, are to be fulfilled. City Engineer M. M. O'Shaughnessy is in receipt of a letter from the Australian engineer, stating that photographs of the San Francisco group of civic buildings had been received and were to be presented to the government as an example of how things should be done.

The Sydney officials several years ago started work on a civic center plan, but the government "pigeon-holed" the matter, according to Mr. Myers.

### Architects Incorporate

Architects of Santa Barbara have incorporated as the Associated Architects of Santa Barbara "for the protection of the interests of their profession in the city and for the furtherance of the business." Incorporators are: W. A. Edwards, K. E. Lockard, A. C. Sanders, G. W. Smith and Winsor Soule. Incorporation provides a membership fee of \$50.

### Berkeley Sorority House

Plans are being prepared by Architect W. H. Ratcliff, Jr., of Berkeley, for a new home for the Alpha Phi Sorority, estimated to cost \$40,000. Mr. Ratcliff has also completed plans for a new dormitory at Mills College and a residence for Mr. Scott Hayman.

**Criticises Fire Conditions**

The National Fire Protection Association, in its October news letter, states that a review of its field service of conditions on the Pacific Coast reveals a most gratifying fire prevention development and morale in many of the small and in all the large municipalities except San Francisco.

With direct reference to that city, the news letter says:

San Francisco's built-over area is estimated to be 90 per cent wooden construction. The housing of automobiles in wooden buildings in which people sleep is common practice. Smoking is allowed in even the best picture houses. The salvage corps reports 749 fires last year from sparks on wooden shingles. The state of municipal housekeeping is indicated by the record of 941 fires from burning rubbish and grass. The fire department operates no systematic inspection service nor investigation of fire causes. No record of fire losses is kept by the department. The salvage corps and the fire marshal, both maintained by underwriters, are the fire-conservation agencies of the city. The fire marshal reports an increase in the number of suspicious and incendiary fires during 1924.

**Oakland Architects Move**

Messrs. Louis S. Stone and Franklin E. Warner, associate architects, announce the removal of their offices from 357 Twelfth street to Howden building, 337 Seventeenth street, Oakland.

Other architects who have moved into the same building are Washington Miller, Paul V. Tuttle and J. Harvey Slocombe. The latter firm are preparing working drawings for a two-story reinforced concrete hotel at Tracy, estimated to cost \$125,000. Construction will start early in the spring.

**Architect Addresses Millmen**

At a recent convention of the Millwork Institute of California in Oakland, Architect J. J. Donovan declared the Institute was doing splendid work, not only for the industry but also for the architect. He said the most difficult part of building specifications for the architect is the carpentry and millwork, and suggested the Institute should have a specification bureau which will co-operate with the architect on millwork so that a standard may be established.

**Chinese Theatre**

Architects Meyer & Hollier, Wright & Callender building, Los Angeles, have completed plans for a Chinese Theatre for Grauman's Greater Hollywood Theatre, Incorporated. The new playhouse will have a seating capacity of 2500 and will cost close to one million dollars.

**Given Architect's License**

Mr. Louis W. Simonson of Carmel was granted a certificate to practice architecture in California at the December 29 meeting of the State Board of Architecture, Northern Division.

**Personal**

Architect Philip Dean announces that he has moved his office to larger quarters in room 701, Builders' Exchange building, Seventh and Los Angeles streets, Los Angeles.

Architect Edward C. Nowers Brett has moved his office from 502 Slavin building to 5110 W. Marathon street, Pasadena.

Architect Harry H. James, formerly in the Alaska building, Seattle, has moved to larger offices in the Lowman building. Mr. James reports a considerable amount of work in view for next year.

Mr. N. A. Dickey, president of the California Brick Company and the Livermore Brick Company, accompanied by Mrs. Dickey, have returned from an enjoyable six weeks trip to Havana.

Architect B. G. McDougall of San Francisco gave an interesting talk at the Builders' Exchange weekly luncheon, November 19, on the proposed bridge and tube across San Francisco Bay. He exhibited pictures and preliminary drawings of the structure.

Mr. Rudolph Weaver, formerly of Seattle, is now head of the Department of Architecture, University of Florida, and architect to the Board of Education for all the state educational institutions. Mr. Weaver was at one time head of the Department of Architecture at Pullman, where he inaugurated the first four year course in architecture in the Northwest. More recently he was in charge of the School of Architecture at Moscow, Idaho.

Mr. Henry Auerbach, builder and engineer, has opened an office at 1163 North Kingsley Drive, Los Angeles, and will be pleased to receive catalogues and trade literature.

**More Oakland Schools**

Plans have been approved for two more school buildings in Oakland and bids will be called for at once. They are the San Leandro Junior High School, E. W. Cannon, architect, and the Prescott School addition which has been designed in the Moorish type, by Wm. Mooser & Son, architects.

**Masonic Temple**

Architect Paul V. Tuttle & J. Harry Slocombe of Oakland have been commissioned to prepare plans for a Masonic Temple for the Rockridge Masonic Hall Association at a cost of \$48,000. Building will be three stories of masonry type with stores on the ground floor and lodge rooms above.

**Residence and Garage**

Architect Edward E. Young, 2002 California street, San Francisco, has completed plans for a \$30,000 home for Mr. Julius Goldstein to be erected on Pacific avenue, west of Divisadero street, San Francisco.

# With the Engineers

## Problems that Practising Engineers Meet

**I**N ORDER to secure a consensus of opinion on certain problems affecting the standing and welfare of our profession, the American Association of Engineers recently addressed a hundred representative engineers of national reputation for their views on ethical conduct in negotiations for professional services. Specifically it asked, among other things, how far the engineer may solicit an engagement without invitation; whether he should decline to do so competitively; whether a warning against competition should be included in the code of engineering ethics; and what can be done by the profession to combat the evil of inadequate fees.

This questionnaire elicited a truly noteworthy response, representing the best thoughts of men of eminence in the engineering world. Believing that the views expressed and the ideas suggested merit careful study and consideration by the entire profession, this article is presented as a review of the replies received. It is by D. B. Steinman, consulting engineer, New York City, and appeared originally in "Engineering News-Record." The views recorded are the predominant or averaged opinions of the three-score leading engineers who contributed their thoughts.

### PROFESSIONAL ENGAGEMENTS

On the first question, regarding the limitations of ethical procedure in negotiations for professional engagements, the individual replies stressed various points as violations of proper or honorable conduct. The following are typical excerpts:

Where an engineer has been employed either to make a preliminary report or do anything in connection with a certain project, it is highly unethical for any other engineer to submit a price or attempt to get the work, or to take part in a competition where the owner is possibly looking for a lower price.—H. E. Riggs.

There should be no ethical objection to an engineer's informing a prospective client of his readiness and fitness to undertake a commission, provided no other engineer has been engaged. He should make no effort to get work away from another.—J. R. Worcester.

I consider it unethical for an engineer to submit estimates of cost for work on which he is not yet employed.—C. W. Hubbell.

From the scores of replies received, appears that the following practices in attempts to secure engagements are to be regarded as unprofessional:

1. Trying to get an engagement away from another engineer.

2. Intruding where another engineer has been active in developing a project, or has been employed to make a preliminary report.
3. Intruding where another engineer has already been retained, or where negotiations for his engagement are about to be concluded.
4. Intruding where a limited list of other engineers have been invited for consideration.
5. Intruding where clearly not wanted.
6. Submitting a price or proposition for professional services without invitation.
7. Giving a cost-estimate or other gratuitous service before being retained.
8. Knowingly or intentionally underbidding another engineer.
9. Taking part in a price-competition.
10. Disparaging the character or ability of another engineer.
11. Undignified or self-laudatory advertising or solicitation of professional work, or self-glorifying newspaper interviews.
12. Paying commissions to others for recommending one's services.

### UNINVITED SOLICITATION

While the profession is in general agreement on the foregoing delimitation of ethical procedure, there is a diversity of opinion on the specific question of the propriety of uninvited solicitation of professional engagements by practising engineers. The replies that definitely disapproved of uninvited approach are typified by the following:

It is my belief that solicitation of business should be discouraged in every way possible, as I consider it not only unethical but it is bad business for individual engineers, as well as for the profession as a whole.—Alten S. Miller.

Personally I do not feel that the engineer should make any special effort to secure an engagement for a given work when not invited to do so.—Wm. J. Wilgus.

The opposing views are well represented in the following replies:

It is only the nationally acknowledged expert in any line of engineering who can afford to avoid all solicitation.—T. Chalkley Hattun.

The practice of a professional engineer involves a certain amount of business department and, consequently, unless an engineer either directly or indirectly places himself in a position where he will be invited or even go so far as to ask for consideration, I am inclined to believe that he would find his professional business in rather a precarious position.—R. Robins Burroughs.

Clarifying the apparent difference of opinion represented by the preceding excerpts, the majority of replies took a middle ground by indicating that there is a line beyond which solicitation of professional work becomes improper. The need for a developed sense of ethical discrimination to guide the individual engineer in such matters was emphasized. The prevailing opinion was that limited approach is permissible, but that it should not go beyond making the

engineer's available ability known to prospective clients. The following are some expressions of this view:

I think it is perfectly proper for an engineer to make known, to persons who might employ him, his experience in the field of his work. He should not however, make any direct effort to secure a given piece of work without invitation, except to this extent.—George F. Swain.

Concerning the extent to which it is proper for an engineer to solicit an engagement without invitation, I feel that it is in order only to make himself known.—Ernest P. Goodrich.

I think it is entirely proper for an engineer to let it be known that he is in practice and also, if he knows of a new development, to place his name before those responsible for it so that they may know he is prepared to undertake the work if they elect to employ him.—Nicholas S. Hill, Jr.

I think this effort should be limited to merely acquainting the parties who have charge of the work with the fact that the engineer is available. This is often helpful to such parties, who frequently are only vaguely informed as to who is qualified in a particular field.—H. K. Barrows.

The dozens of similar replies indicate that we are not ready to adopt the rule of the British Institute of Consulting Engineers declaring all solicitation unprofessional. At the same time, it appears to be the consensus of opinion that uninvited efforts to secure professional engagements should be reduced to a minimum, and should be kept within certain defined limits.

The outstanding new thoughts developed in the foregoing discussion may be summarized in the following statement of principle:

The engineer should avoid soliciting an engagement without invitation, beyond making himself known to a prospective client. He should never name a fee for prospective services before he is requested, nor give an estimate for any project before he is retained.

UNPROFESSIONAL COMPETITION

The engineers who responded were practically unanimous in denouncing the evil of price-competition for professional services. Conviction was expressed that no engineer entering such competitions can secure the compensation necessary to give proper service, also that such competitions seldom result in the selection of the right man for the work. It was the consensus of opinion that price-competition for engineering services is not only detrimental to the profession, but is also hurtful to the best interests of the public.

There is, of course, a natural and proper competition in quality of service rendered. Competition on the basis of qualifications promotes the selection of the best man for the work; but competition on the basis of fees charged interferes with a wise selection and with adequate compensation, and should therefore be discouraged and avoided.

It is certainly desirable to eliminate competition in price for professional work. The competition should be in the quality of work done. Allen Hazen.

It is recognized that a large part of the responsibility for competitive condi-

tions rests on those who employ such methods for selecting professional services.

Those who employ engineers have also a duty, which they violate frequently. They should not go around trying to get the lowest price from some engineer for doing a projected piece of work, but should go to an engineer in whose uprightness, fairness and competence they have confidence.—George F. Swain.

A SPECIFIC QUESTION

Although engineers are generally agreed that price-competition is an evil to be suppressed, there is a difference of opinion as to how far an engineer should be expected to go to avoid such competition. What is an individual engineer to do when he is asked to name a fee a given work and knows or suspects that the same inquiry has been addressed to the other? Is it proper to name a fee under such conditions?

This question evoked a wide range of replies. At one end of the range, a number gave an unqualified negative answer, as illustrated by the following:

Engineers should not name prices knowingly in competition with other engineers. As I consider it improper for invitations to be sent to engineers asking their fees in competition, the best engineers receiving such letters will not respond.—H. de B. Parsons.

At the other end of the range of responses are a number indicating an affirmative answer to the same questions, as represented by the following:

An engineer can hardly avoid the necessity of quoting a price for doing a piece of work, when invited by a client, even though he may know that others have been asked the same question. The client may be entirely justified in asking prices from more than one.—J. R. Worcester.

Almost invariably, however, the affirmative answers are qualified by certain reservations. A study of these reservations, as emphasized in the following typical quotations, brings out the pivotal points of the problem:

If generally followed, it would result in a lowering of professional standards of fees. Only twice in my own experience have I received such an invitation and it was declined on both occasions for reasons satisfactory to myself. Both cases were obvious efforts to "shop around" to get the cheapest man obtainable but I do not believe that this, necessarily, is always the case when such invitations are issued.—Arthur M. Shaw.

When engineers are invited to submit propositions for their services in connection with special work, I can see nothing unethical in their submitting a proposition in which they state clearly the services which they propose to render and the fee which is customary for them to charge for such services. But should an engineer learn either directly or indirectly what fee his competitor is naming for a job, and then should name a lower fee it becomes a case of unethical practice.—J. E. Greiner.

I can see no valid objection to an engineer's stating his schedules of fees to a possible client, even though he knows other engineers have been asked for similar statements. It might be questionable practice for the engineer to reduce his standard schedule under such circumstances. J. F. Coleman.

The ethics of the profession seems to me to be based upon each engineer's having a set price, so far as possible, for his services of different character, and naming that fee regardless of what other engineer may be invited to name a fee or may be interested in securing the work.—T. Chalkley Hatton.

In the replies represented by the last two quotations an essential thought is

expressed. The engineer should not allow the fact that others are being considered to influence the fee named by him; to reduce his usual scale of charges under such circumstances is a violation of good professional conduct. In naming a fee, the engineer should decide upon a proper and adequate figure and should give no consideration to its possible effect upon his securing the work.

It is evident, from a comparison of the various replies, that the profession is not ready to give a categorical answer to the specific question under discussion. This is one of the questions on the shifting battle-line of engineering ethics, and merits careful consideration by all who are interested in the progressive raising of our professional standards.

#### SOME CONCLUSIONS

On the basis of the replies, however, it is possible to formulate certain concrete conclusions that will represent conservative statements of guiding principles. From the following conclusions there appears to be no dissent:

1. Price-competition for professional services is not only detrimental to the profession, but is also hurtful to the best interests of the public.
2. The profession should do all it can to discourage conditions of price-competition among engineers.
3. It is the duty of engineers, by publicity and protest, to educate the public and prospective clients to avoid competitive methods of selecting professional services.
4. An engineer should decline to name a fee when he believes the invitation is an attempt to secure competitive prices.
5. It is distinctly unethical for an engineer knowingly to underbid another in naming a fee for a given work.
6. For an engineer to reduce his usual scale of charges under competitive conditions is a violation of good professional conduct.

#### LEGALITY OF RULES

The replies to the questionnaire were practically unanimous in the opinion that a warning against unprofessional competition should be included in engineers' codes of ethics, and that legal objections to any such clauses may be and should be ignored.

I am heartily in sympathy with you in your desire to warn the profession against the conversion of its professional practice into an ordinary industrial business.—J. V. Davies.

I cannot understand how professional services can come under statutes forbidding combinations in restraint of competition.—Daniel L. Turner.

Professions are exempted under the common law from this statute. Certainly, neither the medicine nor the law are compelled to compete in professional services. It would be against public policy.—F. A. Mollitor.

The idea that refusal to name price is illegal and in restraint of trade is absurd for the very good reason that in engaging professional ser-

vices it is manifest that the best public interest lies in securing the best quality of services rather than the cheapest service.—Terrell Bartlett.

The half hundred replies in this vein, with no dissenting comment, may be regarded as a conclusive indication of the best professional opinion on the policy and legality of adopting a rule against price-competition.

#### EXISTING AND PROPOSED RULES

Some time ago, the Practice Committee of the American Association of Engineers, in its report on certain objectionable forms of invitation for professional proposals, crystallized its conclusion in a statement principle which was worded as follows:

"The engineer should maintain the professional attitude in negotiations for his services, and should decline to submit competitive bids for professional services or to furnish monetary guarantees of reliability as to estimates or otherwise."

To satisfy certain objections raised on legal grounds, indicating possible misinterpretation of the underlying spirit, this clause was restudied and the following revised and amplified statement was substituted.

"The engineer should strive to give a full measure of service for the best interests of his client and of the public, and should charge fair and adequate fees for such service. He should maintain the professional attitude in negotiations for his services; and he should avoid all practices that have a tendency to affect adversely the amount, quality or disinterested nature of professional services, such as charging inadequate fees, competing on a price basis where (as is almost invariably the case) the service to be rendered or the character of its performance cannot be precisely defined, spending large sums in securing business, or consenting to furnish monetary guarantees of cost estimates."

This clause received the hearty approval of practically all of the leading engineers to whom it was submitted, and it has been incorporated in the Specific Principles of Good Professional Conduct of the Association.

Supplementing this statement of principle, the writer suggests the following clause to cover additional thoughts brought out in the foregoing discussion:

The engineer should avoid underbidding or reducing his usual charges when he knows that another engineer is being considered for the same work, and he should decline to name a fee when the invitation is presumably an attempt to secure competitive prices.

On the clause quoted from the code of the American Institute of Architects, namely: "Under no circumstances should experts knowingly name prices in competition with each other," the responses pointed to a marked division of opinion indicating that our profession is not prepared to accept that rule without modification.

Under existing conditions I do not believe it would be advisable for our profession to adopt that standard. If experts are asked for prices, they should give standard ones, as nearly as may be, even if they know that other engineers are being asked to compete.—J. A. L. Waddell.

The clause covering this subject in the codes of the American Society of Civil Engineers and the American Institute of Consulting Engineers is as follows:

"It shall be considered unprofessional and inconsistent with honorable and dignified bearing for any member: to compete with another engineer for employment on the basis of professional charges, by reducing his usual charges and attempting to underbid after being informed of the charges named by his competitor."

The qualifying phrases at the end of this clause practically destroy its effectiveness. This was recognized in several of the replies.

I would omit the latter part of the sentence, thereby making unethical the competing with another engineer for employment on the basis of professional charges, without any qualifying conditions.—Wm. J. Wilgus.

I believe that the following should be lived up to by every engineer: "It will be considered unprofessional to compete for employment on the basis of professional charges by reducing his usual charge in the attempt to underbid his competitor." This is condensed from the code of the American Institute of Consulting Engineers.—Henry R. Buck.

The rule given in the code of the Western Society of Engineers was also cited:

"Competition in professional work, where it enters in at all, should always be on the basis of efficiency in service rendered, and never knowingly in price concessions."

If a simple statement of principle is desired, the following condensed form (based on the rule of the A.S.C.E. and A.I.C.E., with the weakening phrases omitted) would probably cover the essentials to the satisfaction of all the engineers who have contributed to this discussion:

The engineer should never compete with another engineer for employment on the basis of professional charges.

**THE PROBLEM OF INADEQUATE FEES**

The question "What can the profession do to combat the evil of inadequate fees?" evoked a large number of helpful and constructive thoughts. The outstanding suggestions made, with supporting quotations, are as follows:

1. Increase public respect for the profession.  
The only way to increase the fees of the profession is to increase the respect of the public for the profession as a whole and for the individuals in it. If the engineers of a community are friendly and pulling together and are doing their share of public welfare work, they will be highly regarded by the public. If a client hears an engineer criticize a competitor it is natural that he should not only think less of the engineer criticized but of the maker of that criticism and even of the whole profession.—Henry R. Buck.
2. Encourage rendering adequate service.  
The profession can encourage rendering adequate services. The rendering of such services would go far toward establishing adequate fees.—Harrison P. Eddy.
3. Improve the standards of the men in practice.  
These matters in my judgment may be reached only in improving the standards of the men actually in the practice, and while this would be a slow process we can each do our best to bring about the desirable result.—Allen Hazen.
4. Establish individual reputation for services.  
If an engineer, like a prominent lawyer, has training and experience and is qualified by ability and reasonable cultivation and dignity so as to be obviously an outstanding character in his profession, he will secure plenty of work and his clients will expect to pay him relatively speaking large fees. If on the other hand he has not been willing to make the self-sacrifices and perform hard work which successful men in all callings of life have to undertake and labels himself a commonplace man, he would have less work and less fees.—Wm. H. Burr.

**5. Educate those who employ engineers.**

Educate the people who require the services of engineers up to the point where they will recognize that it is as important to secure a good engineer as it is to secure a good physician or a good lawyer, and that good engineers cannot be secured at low rates by the use of competitive methods.—Alfred E. Forstall.

**6. Establish standard fee schedules.**

The most important thing which the profession can do to combat the evil of inadequate fees is to make a rule against engineers' charging less than a given fee. Every time an engineer cuts fees it hurts the profession.—Nicholas S. Hill, Jr.

**MINIMUM FEE SCHEDULES**

On the last suggestion, to establish a rule against charging less than a given fee, opinions are divided.

I am certainly not in favor of establishing any schedule of minimum fees, as that would seem to bear too close a relationship to a union scale of wages. I think we must all recognize that there is an actual difference in the value of the professional work done by any two given engineers.—J. F. Coleman.

Upon analysis, however, the objections are found to apply to standardization of fees, rather than to the drafting of schedules of recommended minimum fees. If the latter represent honest estimates of the cost of rendering proper and adequate specified services, the adoption and publication of such fee schedules should serve a useful purpose: They furnish a guide to the engineer in estimating adequate charges for new work, and they show the client what he must expect to pay, as a minimum, in order to secure proper professional services. The primary function of published fee schedules is educational and advisory, and the violator soon learns that he pays the price in economic loss and in professional standing.

On the question whether it is practicable and legal to enforce minimum fee schedules by official action against violators, the responses, directly or indirectly, were in the negative. The outstanding thoughts expressed, with representative quotations, are as follows:

1. Official enforcement is not practical nor legal.  
I do not think it is either practical nor legal to proceed officially against men who offer to perform work below the schedule established by any organization.—H. E. Riggs.
2. Individual variations from fee schedules may be proper.  
The schedules may be fixed as a minimum which may control the profession similarly to the schedules of the A. I. A., but the more experienced and well-known the engineer becomes the higher are his fees, so what he might think was a cutting of the schedule by engineers of lower grade might cause discussion.—T. Chalkley Hatton.
3. Fee schedules should be only advisory recommendations.  
In the matter of fee schedules, I do not feel that organizations should go farther than to recommend, and no effort should be made to make a proposed schedule mandatory. I believe that regulation of fees, excepting in cases of unfair competition, should be by advisory methods only.—Arthur M. Shaw.
4. Observance of fee schedules is a matter of honor.  
An established schedule has no legal standing. Its observance is purely a matter of honor without which ethical conduct is impossible.—C. W. Hubbell.

### 5. Depend on moral suasion and the force of public opinion.

I do not believe it possible to take official action against any member of the profession who has not been proven dishonest and I believe that, after having adopted a standard, it will be necessary to depend on moral suasion and the force of professional public opinion to accomplish the results.—Alten S. Miller.

#### THE FEE PROBLEM

1. To combat the evil of inadequate fees, engineers, individually and collectively, should ever strive to raise the standards and the standing of the profession. Higher standards of ethics, qualifications and service will increase the respect of the public for the profession. Engineers must also establish individual reputations for the value of their services; by personal character, quality of performance, and refusal to cheapen their services, they will not only advance their personal success but will also enhance the public regard for the value of engineering services.

2. In addition, concerted efforts should be made to educate those who employ engineers in regard to proper methods of selecting professional services and proper standards of compensation. Professional organizations can issue information sheets for the guidance of public bodies and other prospective clients, presenting standard fee schedules and arguments against price-competitions and inadequate fees.

3. The adoption and publication of standard schedules of minimum fees are desirable as a guide to the engineer and for the education of those who employ engineers. The observance of such schedules should be a matter by moral suasion and the force of professional public opinion.

4. Practising engineers should also do their share to raise the standards of compensation in the profession by maintaining high standards of pay for engineer employees and salaried assistants.

#### Is It a Gamble?

If contracting is the gamble it is usually accused of being, isn't it largely our own fault? Aside from the hazards of strikes, public calamities and hazards which menace all human enterprises, the contractor should take no more risk than that assumed by other industries. The hazards which strew the shore with wrecks are those which are avoidable.

Lack of accurate cost data, poor book-keeping methods, poor organization, over extension of credit and capacity, slipshod estimating and a disposition to take a chance are the factors that make our endeavor a gamble instead of a business. Technical ability alone does not make a contractor, but it is one of the requisites, for in the very nature of things contracting is a calling that demands high courage and ability; those who do not possess these qualities are doomed to failure.—Dallas A. G. C. Newsletter.

### An Architect's Name

M. A. B., in *Washington State Architect*

Who can name the architects who have produced the better buildings in Seattle? Who, even among the architects themselves, can give this information?

A painter signs his name to his work. His name is on the very face of the picture; and no matter how poor is the signature, no one has yet said it mars the work.

Coming down Cherry street, the old Bailey, now called the Railway Exchange, is taking on new glory, as the sand-blast is revealing the architectural lines and the pristine face of the material. It would seem to be a new building. One is pleased with the fact that its 36 years have not put it far into the background architecturally. It is pleasing, and it does not seem out of place in contrast with the Dexter Horton, and Hoge buildings. The entrance is most attractive.

One asks, "Who was the architect?" and one finds that no one seems to know, so we do a little research work and find that the architect has an office in this same building. We learn that there is scarcely a square on the entire Second avenue, which has not a building produced by this man—E. W. Houghton.

We note the Moore theatre, Gowman hotel, Amherst building, Clemmer theatre, Arcade, Esterbrook, Curtis, old P.-I. and Brooklyn buildings, Berkshire hotel, Hart, Schaffner & Marx, London and Palace-Hip buildings, all are the work of this architect. We have known him long, but we did not know which work was his.

Why should it be that monuments to the hand of the architect should not have his name engraved thereon?

Surely, it is a most important work. It is 36 years since the Bailey building went up. The Burke building went up the same year; and the old New York block, which has just given way to the Dexter Horton, was erected one year later. In fact, the picture of the old P.-I. building completed shows the stone for the New York block in the foreground.

Let the architect have his signature to his work.

In Washington, D. C., are many charming examples of Richardson's work. The homes which he erected stand forth in beautiful simplicity, dignity and grace.

#### Appointed Architect

The Vallejo City Council has made a contract with Mr. C. E. Perry, San Francisco architect, for plans for the \$80,000 City Hall and branch County Jail to be erected in Vallejo this year.

# Field of the Contractor

## Chapter Aids Attack On Irresponsibility

The Southern California Chapter, Associated General Contractors, has declared its purpose to co-operate with the Los Angeles board of public works to the fullest extent in eliminating irresponsible contractors, in the following resolutions adopted by the executive board:

Whereas, it has come to the attention of the Southern California Chapter, Associated General Contractors of America, that the board of public works, city of Los Angeles, has publicly announced its intention of requiring each low bidder on street improvement work to satisfy the commission of their financial ability to undertake and complete a job, before they are awarded a contract; and,

Whereas, it has been charged that in the past, contracts have been awarded to contractors who did not possess sufficient funds to complete a project, causing a delay, while arrangements were being made for additional finances to complete the work; and

Whereas, when a contract is awarded to a firm not having sufficient funds to complete the project without undue interruption, streets are left in an unpassable condition for an indefinite period, causing the public and property owners an unnecessary inconvenience; and,

Whereas, it is to the public's interest that only contractors possessing "Skill, Integrity and Responsibility," together with sufficient working capital and adequate equipment, be permitted to undertake street work, therefore be it

Resolved, that the Southern California Chapter, Associated General Contractors of America, endorse the movement and command the board of public works for their action; and be it further

Resolved, that the Southern California Chapter, Associated General Contractors of America, co-operate to the fullest extent with the board of public works in an effort to eliminate the incompetent contractor, whose entry into municipal construction is not for the best interest of the public.

## Big Water Project

Bids will be asked by the city commission of Medford, Ore., about February 1 to construct the Big Butte Falls municipal water project which will include the construction of thirty-eight miles of steel pipe line from Big Butte Springs. The project is estimated to cost \$1,000,000. Bonds have been voted to cover the cost of construction.

## How Tony's Boss Fixed It Up for Him

A good many Northwestern contractors journeyed to Florida during the spring and summer, attracted by the intense construction activity in the land of boom and sunshine. Among the number was one contractor of the Twin Cities, who succeeded in signing up two or three contracts at profitable figures, and hurried back home, in order that he might transport to Florida a crew of men sufficiently large to handle the work.

It is related that Tony, who had long worked for this contractor in the Twin Cities, told his crony one night that the boss wanted him to go to Florida.

"I wouldn't go there if I were you," said Tony's friend.

"Why not?" asked Tony.

"Summer's coming on and it gets terribly hot down there—more than 100 in the shade. I wouldn't work in a place where it gets as hot as that."

"I guess you're right," said Tony thoughtfully. "I'll tell the boss the trip is off as far as I'm concerned."

Two days later Tony, trudging toward the depot, lugging a big suitcase, met his friend.

"Where you headed for?" demanded the friend.

"Florida," said Tony, beaming.

"But I thought you said you wouldn't go to no place where it got to be 100 in the shade."

"Say, lissen, fella, the boss fixed it up for me," said Tony.

"Whaddy ya mean fixed it for you?"

"I told him I wouldn't go to no place where it got to be 100 in the shade, and he said: 'Don't you worry, Tony. You come right along to Florida. I'll see to it personally that you don't have to work in the shade.'"—Exchange.

## Should Have Cash or Credit

"A responsible contractor should have either money or credit in the amount of 40 per cent of the face of the contract to be undertaken. This credit or cash should be unincumbered and over and above any money necessary to finance his other work, should he have any."—George H. Jennings.

## Berkeley Builders Organize

The Berkeley Builders' Exchange, recently organized, has taken a lease of the entire second floor of the former Armstrong School, University avenue, Berkeley. The structure in future will be known as the Builders' Exchange build-

ing. Besides having spacious offices and a meeting and banquet hall, the Exchange will have several small offices which will be sub-leased to various members of the Exchange.

### Dollar Buying Power Increases

The buying power of the dollar is considerably greater now than it was during the peak of high wages in 1920. This we are told by a great life insurance company. Secretary Hoover of the Department of Commerce, in his annual report, calls attention to this same condition, attributing the reasons therefore to the partial elimination of waste in industry. Secretary Hoover gives praise where praise is due, that is to the producers and manufacturers, who have joined in the movement looking towards the elimination of unnecessary products, the standardization of sizes and the study of production that will further reduce waste. Waste in building has always been a big item of expense to contractors and one that has been passed along to the owner. When much of this waste can be eliminated the cost of building will be reduced with the result that prospective builders will look with favor upon better materials, better workmanship and better design, knowing that a saving in one place will pay for the extra expenditures.—Store.

### What Would You Do?

As a practicing architect, after you had been commissioned to design an important structure and had devoted your best efforts to the problem entrusted to you, if after the plans and specifications had been prepared and checked and you had invited supposedly reputable contractors to estimate the work, and in the due course of events had recommended the award of the contract to one of the contractors invited by you to bid, and if, after the contract had been duly executed, the said contractor who had in his employ men registered as architects had concluded to re-design your building without your knowledge or any co-operation on your part and who then had submitted the revised plans to your client with the statement that the building as so re-designed could be constructed several per cent cheaper than the building which you had designed, what would you do?

Would you continue to invite this contractor to figure in your office, or would you "tip off" the circumstances to your acquaintances and friends in the profession? Would you not feel that the contractor was guilty of the most unethical practice and should be barred from figuring in every reputable architect's office? —Bulletin Illinois Society of Architects.

### Seattle Architects' Opportunity

The editor of The Washington State Architect, the official journal of the Washington State Society of Architects, is perturbed to learn that heading the list of architects in the Seattle classified telephone directory is the name of a man who is not a licensed architect and who, under the excuse of a paid advertisement, is set forth to the world as "the leading designer and builder of fine homes."

We have not before us a copy of the Washington licensing law, but it seems safe to assume that it prevents any man advertising himself as an architect who has not duly passed the board. If this assumption is correct, it would seem as if there was a ready means to make the gentleman withdraw his advertisement. Whatever his abilities may be as an architect, he evidently is a keen business man and knows the value of well directed advertising. Architects may ethically advertise. The Institute withdrew its objections some years ago. The men in Seattle can, if they like, beat this interloper, if he is indeed such, at his own game. Why do they not do it?—American Architect.

### There Are Architects and Architects

In opening the recent exhibition of the Liverpool School of Architecture Ramsay MacDonald, among other things, said:

"Architecture is to the town dweller the most intimate of all the arts. The architect must surround people with influences that compel them to look upward. He must put beauty into the streets and inspiration in the houses. The architect is not doing his duty by simply providing shelter.

"The training of the architect does not end with the knowledge of the composition of brick and stone. It must include a training to grasp the life and spirit of art and of people.

"No man can build a house for another unless he understands men. Domestic architecture consists in embodying the communal spirit."

Mr. MacDonald predicted the day when architects would "know their business; and in order that they might know it the public should give them sufficient encouragement."

We hear a lot about ethics and the "unwritten code." Can there be any more dangerous lack of ethics,—the proper professional attitude toward clients,—than to permit the substitution of materials or submit to the specification being treated as "a scrap of paper?"

It would seem that the appropriate committee of The American Institute of Architects had a duty to perform in this instance.

### New Grading for Plumbing Fixtures

Important changes in the manufacture and grading rules of vitrified sanitary ware became effective December 1 as the result of a conference of manufacturers and distributors with government representatives at the U. S. Bureau of Standards. The grading rules do away with Grades A and B, substituting the classifications "regular selection" and "culls." They also provide for accurate definitions which will facilitate the grading, so that the quality can be determined readily.

The conference brought together the representatives of 27 companies. The discussion of the grading rules brought to light a sentiment that any run of kiln which fell below "regular selection" should be sold as "off grade" or scrapped. It was pointed out that each piece of ware put through the kiln costs the same to manufacture and that the proposal would prevent any unscrupulous distributor from selling a Grade B as a Grade A, and leaving an impression in the mind of the purchaser that he was getting a Grade A at a low price. It was further indicated that the proposed classification would be the same as that followed in grading porcelain ware. The change was adopted by each individual present.

The conference voted to recommend that the United States Government specifications for plumbing fixtures be held up pending the extension of the program. This will not be done until the simplification committee of the industry has compiled results of a questionnaire which will deal with dimensional standards.

As a protection to the buyer, the meeting voted that each manufacturer will mark each crate in which "cull" ware is to be shipped with two splashes of red. This will be applied to the small end of such crates, so that they will be visible readily and will indicate to the distributor, or to the user the grade he is getting.

As a further step toward elimination of waste in this industry, steps were taken to survey the variety of items and the demand of each produced by each manufacturer. This will serve as the basis for possible eliminations of obsolete varieties or of those seldom in demand; and will pave the way for a more compact list which will meet all needs.

Because the change of grading rules will involve a complete change of labels by all manufacturers, a sub-committee of manufacturers was appointed comprising Messrs. H. S. Maddock of Thomas Maddock's Sons Co., Trenton, N. J.; George E. Hoffman, of the Trenton Potteries Co., and W. C. Chamberlin of the Standard Sanitary Manufacturing Co., of Pittsburgh, Pa.

The conferees took immediate steps to notify all distribution centers of the

changes in grading, and in grading rules; and to cause the preparation of 100,000 copies of the new rules, which are to be put into the hands of the plumbing trade, architects, contractors and others who have an immediate and direct interest in the action taken.

### Bishopric Sound Deadener

Manufacturing of a sound deadening wall base has been begun by the Bishopric Manufacturing Co. of California, according to an announcement by Mr. J. W. Ford, Jr., president of the company. This product is an addition to the Bishopric line which already included Bishopric base, Bishopric stucco and Bishopric composition flooring.

The new product is called Bishopric insulating base. It has been manufactured in the Eastern plant for 18 years. But because of increased demand for this product on the Pacific Coast, production is under way in Los Angeles to supply several western states.

Tests made recently in local laboratories prove that Bishopric insulating base has remarkable sound deadening qualities. The Raymond G. Osborne Testing Laboratories found that the tick of a clock could be heard through a section of Bishopric insulating base for a distance of only 10 feet.

Another test was made by Prof. Vern O. Knudsen, instructor of physics at the University of California, Southern Branch, and a national authority on acoustics. Prof. Knudsen, who is invariably consulted on the sound deadening specifications for all the important buildings of Southern California, found that Bishopric insulating base was superior to seven other sound insulating materials which are widely used.

"The time has come," says Mr. Ford, "when people realize that sound deadening is quite as necessary in modern construction as plumbing and heating. I predict that the use of sound deadeners in wall construction will increase not only in office buildings but in home construction as well. Nothing is more disagreeable and inconvenient than walls which transmit sound and nothing is easier to overcome, if proper attention is paid to this problem when plans are being drawn."

### Passing of John Barrett

Mr. John Barrett, 69, retired pioneer San Francisco contractor and father of J. Frank Barrett of the contracting firm of Barrett & Hilp, died in San Francisco, Dec. 24, following a brief illness. He was a charter member and one of the organizers of Carpenters' Union No. 22, a member of the San Francisco Council, Knights of Columbus, and of the Woodman of the World.

### Heating Installations Show Increase

A noticeable increase in the use of gas steam radiators for heating apartment houses is reported by Mr. A. J. Hartfield of the Pacific Gas Radiator Company, whose statistical department keeps an accurate check on all gas heating installations in Los Angeles.

In one week alone, Mr. Hartfield pointed out, his company installed 145 gas steam radiators in three different buildings, as follows: 6128 Wilshire boulevard for E. R. Rockwell, 67 gas steam radiators; Third and Vermont streets for the Austin McFadden Amusement Co., 31 gas steam radiators, and 1626 North Harvard boulevard for Arthur Le Brun, 47 gas steam radiators.

"More healthful heat is the reason for the increasing popularity of the gas steam radiator," Mr. Hartfield says. "The public likes convenience of gas fuel. These two factors are economically combined in gas steam radiators."

### Commercial Club Improvements

Extensive alterations and improvements are being made to the San Francisco Commercial Club from plans by Mr. Frederick Whitton, 369 Pine street, San Francisco. The alterations are on the 12th and 13th floors of the Merchants Exchange building, San Francisco.

### Architect Makes Announcement

Architect Allen Ruoff announces that he has opened new offices in the Cahn, McCabe building, 716 South Spring street, Los Angeles; the firm of Ruoff & Munson with offices in the Story building having been dissolved. Mr. Munson will retain the old offices.

### Huntington Beach School

Plans are being prepared by Architects Allison & Allison, Hibernian building, Los Angeles, for a group of high school buildings for the Huntington Beach Union High School District to cost \$400,000.

### Stockton Hotel

A three-story Class C hotel is to be erected in Stockton for Mr. Samuel Giovannoni from plans by Architect Peter L. Sala, Exchange building, Stockton.

### Sacramento Cannery

The American Can Company is having plans prepared by its engineering department for a million dollar cannery at Sacramento.

### Addition to Piedmont Church

Architect Albert Farr is preparing plans for an addition to the Piedmont Interdenominational Church, estimated to cost \$25,000.

### Side-Light On Term "Responsible"

THE City of St. Louis recently had a unique experience in connection with awarding a contract for construction of a reservoir. When the lowest bidder's offer was refused, the matter received quite extensive attention in the public press. As a result of this, the cause of "not the lowest bidder, but the best" received much thought in the public mind.

The situation, according to Constructor, was this:

The Board of Public Works asked for bids on the reservoir construction. The lowest of twenty bidders was a company that previously had never bid on a job. This bid was \$1,564,882.

The company making the lowest bid had only recently been organized when it made its offer, and was composed at the time of its organization of the Assistant Water Commissioner of St. Louis, the engineer in charge of the Water Commissioner's office, a salesman for a St. Louis bond company, the secretary of a fraternal organization and an attorney.

It was only after the bids had been opened that the fact became known that the two employees of the city were members of the company making the lowest bid. When this knowledge worked its way out, the two officials resigned their positions, this taking place shortly before the work was to be awarded.

The Board of Public Works, in rejecting the offer of the lowest bidder, stated that because of the inexperience of three officers of the company they could not be held as "responsible" within the meaning of the law, although they appeared to be well backed financially.

In its verbal statement the Board said, in part, as follows:

"Their (the company's officers) verbal statements indicate that the company can borrow or raise funds sufficient to carry on the work. The company was organized in July to bid on this work. It has no offices, or rather considers the office of its secretary its temporary office.

"It possesses no equipment whatever, and has not executed any construction job. The company has no organization whatsoever.

"In determining the responsibility of the bidder, the board must look beyond the mere ability to secure sufficient funds to carry on the work. The Missouri Supreme Court has stated that the word 'responsible' has a broader meaning than the mere pecuniary one. It involves also judgment and skill, and thus imposes discretionary duties upon this board.

"None of the men named knew enough about the matter to estimate the cost, but other parties were employed to make the estimate and prepare the bid. They

contend that they can command capital to purchase both equipment and service. They said they had no arrangement with anyone to conduct the work, and were unable to inform the board what men would have charge of the work.

"They were somewhat in the position of brokers, who, having obtained the contract, will turn over its execution to others. The board is entitled to get in touch with the men who are actually to perform the work. The three men named, by their own admission, are without experience, judgment or skill."

Other bidders, it is stated, complained that he had questioned them, in his capacity with the Water Commissioner's office, concerning details of their plans and that they had given him information about their methods and kindred subjects which they would not have been willing to give to an open competitor.

In an editorial published as the situation came to a close, the St. Louis Post-Dispatch, under the heading "A Bid Properly Rejected," said, in part, as follows:

"The whole experience has been unpleasant. So far as we know, it is unique in the city's history. It is not likely to be repeated."

**Architects for Federal Buildings**

The suggestion of Charles Peter Weeks in this magazine two months ago, that the Washington authorities be asked to use their influence and to encourage the employment of outside architects to design some of the more important Federal buildings to be erected by the United States government during the next two or three years, has been very favorably received. Architectural journals, as well as the building trade press, have all commented on the matter in terms of approval. In the December number of Stone, published in New York City, appears the following, which is substantially a reiteration of Mr. Week's ideas:

"The Federal Government, according to reports, contemplates expenditures of \$50,000,000 in Washington and \$100,000,000 in other cities for public buildings. While it is generally agreed that the Bureau of Architecture in Washington should provide for the standardization and direct the construction of these buildings, the drawing of the actual plans should, as a matter of courtesy, be entrusted to competent architects in the various cities where the buildings will be erected. Here is an opportunity for the architectural profession through the American Institute of Architects to see that these buildings are designed after the most approved ideas and thus assure the public of monumental structures that will be a lasting tribute to their art and things of beauty that may well be taken as examples of the best of American architecture."

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## What's Wrong With This Picture?

By FRANK N. WATSON

Secretary, Texas Branch, A. G. C., in Constructor

**A**FTER several months' consideration, the directors of Blank Company decided that expansion of the business demanded larger quarters and empowered their president, Mr. Surefire, to proceed with arrangements for buying the property at the corner of Main and St. Paul, on which they had option, and erecting thereon a four-story, reinforced concrete building to house the business of the company.

The next day, Surefire telephoned three different architects, with whom he was acquainted, asking them to drop by his office to discuss the matter. Mr. Roe of the widely known firm of architects, Roe & Doe, was first to appear. After outlining the needs of the company, Surefire requested Roe to prepare sketches and a cost estimate for the proposed structure as soon as possible. The same procedure was followed with the other two architects, Mr. White of White and Company, and Mr. Black, who operated without the aid of a partner or "& Co."

In a few days, Surefire was furnished preliminary sketches, with estimate of cost attached, by each of the three architects, and after numerous conferences with the architects and members of his directorate, Surefire finally decided on the firm of White & Company, since their sketch seemed to be most artistic, practical, and their estimate of \$75,000.00 the lowest.

In due time, White announced that plans and specifications were ready and submitted a list of twelve general contractors he thought should be invited to bid on the job. The list included five of the largest and most favorably known contractors in the city, four smaller contractors of recognized ability who were on their way to the top, and three whose many years in the contracting business had been largely a series of hair-breadth escapes from bankruptcy and compelled by necessity to keep in work on the same principle that a man's legs, when he starts falling, seek to run his body into equilibrium. White, who prided himself on his high ethical standing, knew that these three were consistently low bidders and their work would have to be closely watched for defects and "skimps," but they could be depended on to force hard competition and, in the interests of his client and the fact that his cost estimate had been shaved to the quick, White realized he needed their peculiar services.

During the next few days, Surefire, at the request of one of his directors, a close business acquaintance and a personal call from a contractor he had never heard of before, phoned White to add three more names to the list of bidders. One of them White knew to be a "pirate,"

but of course Surefire was the client and his wishes had to be respected.

On the appointed day at 2 P. M., Surefire, assisted by White, received sealed proposals from the fifteen general contractors, which, after being privately opened and tabulated, read as follows:

Bidlow .....	\$ 80,000
Skinum .....	85,000
Peddlebids .....	90,000
Plugger .....	92,000
Tryhard .....	93,000
Some-Solace Co. ....	95,000
U. S. Const. Co.....	95,600
Trublew Co. ....	97,000
Safe & Sans.....	98,500
U. S. Const. Co.....	95,600
Square & Die.....	101,400
Lotsa Work Co.....	105,000
Borrowbid Bros. ....	107,000
I. M. Notrying.....	109,000
Wirepuller & Co.....	110,000

Surefire expressed considerable dissatisfaction that even the lowest bid ran over the estimated cost, but White assured him that several minor changes could be made in the plans that would bring the price within the estimate, and suggested they call in the three lowest bidders for revised figures on the proposed changes. As a result of these interviews, the three low bids finally stood as follows:

Skinum .....	\$72,000
Bidlow .....	75,000
Peddlebids .....	76,000

Surefire, well pleased with the results of their "good trading," instructed White to proceed with drawing up the contract. However, prior to Skinum securing a surety bond, delayed by reason of absence from the city of his brother-in-law who had to sign with him as indemnitor, Surefire happened to mention the name of his prospective contractor at the Club. One of Surefire's friends related an experience with Skinum that indicated his general lack of fitness for the job.

A hurry-up call from Surefire brought White to the office, but after White explained that the surety bond would fully protect Surefire's company against Skinum's irresponsibility and architectural supervision would assure faithful adherence to plans and specifications, Surefire's fears were allayed and the contract executed.

After many delays in the work occasioned by failure of the architect to furnish details as fast as required and by Skinum's lack of construction ability, the job was completed. Skinum was able, through some of the sharp tricks Dame Experience had taught him, to reduce his loss to a nominal sum; charged the loss, as usual, to bad luck, and went after the next job still harder.

*Architectural Settings for Outdoor Easter Worship  
in the West*

*The*  
ARCHITECT &  
ENGINEER



FEBRUARY 1926

*Published in San Francisco  
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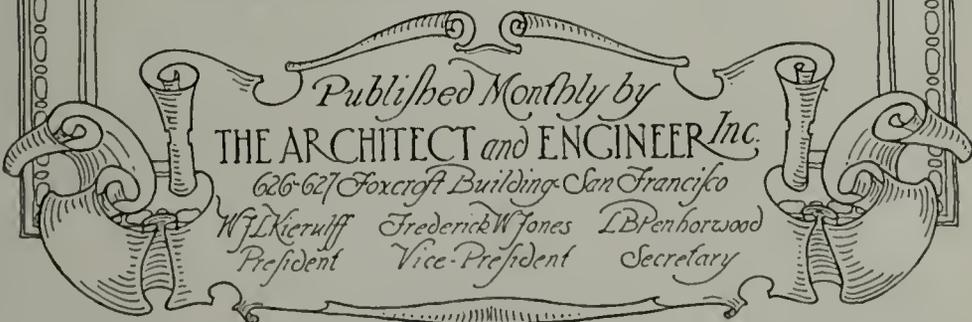
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THE PRAYER BOOK CROSS, IN GOLDEN GATE PARK, SAN FRANCISCO. THIS CROSS WAS consecrated January 1, 1894, as a memorial of the service held on the shores of Drake's Bay, about St. John Baptist's Day, June 24, 1579, by Francis Fletcher, Priest of the Church of England, Chaplain of Sir Francis Drake, Chronicler of the service. The first Christian service in the English tongue on the Pacific Coast. The first use of the Book of Common Prayer in our Country. Here are held the Annual Memorial Services of the establishment of the House of Churchwomen in the Diocese of California, of which that of Oct. 25, 1925, was the twentieth. The cross, built of Colusa sandstone, is 57 feet in height and has been designed or inspired by the Iona Cross. It is the gift of Mr. George W. Childs, of Philadelphia. Coxhead & Coxhead, Architects. Photographed by Willard E. Worder.

# THE ARCHITECT AND ENGINEER

FEBRUARY  
1926

Vol. LXXXIV  
No. 2



## Architectural Settings for Outdoor Easter Worship In the West\*

By EMERSON KNIGHT, Landscape Architect

“THE groves were God’s first temples” and through the centuries and even thousands of years it has been the reverential impulse of man to worship directly under the sky. In California and Hawaii, in Arizona and New Mexico, climate creates unusual opportunities for gratifying the wish to commune with nature and God—by the sea, in the desert or the forest, and on the mountain top. In California and Hawaii, man has already provided suitable structural development for communal gatherings for such purposes.

The Easter Sunrise Service is the one event of the year in religious worship that has gained the most ground thus far although some crosses are planned for services wherein the land is to be blessed in the spring and a festival of Thanksgiving is to be revived in the harvest season. Less than twenty years ago a few fervent souls gathered on the summit of Mt. Rubidoux on Easter morning for the inspiration of the simple ceremonial at sunrise and were much moved by the inspiring scene. This custom grew in favor until we now have a score of places in California where groups, ranging from a few hundred up to many thousands, give thanks and rejoice over the meaning of the cross. These services, being nonsectarian in character, attract a wide range of people of many creeds. Outdoor worship is conducive to deeper spiritual feeling and brings with it a saner philosophy, a wider point of view, the freedom and renewal of the spirit, health and community fellowship. It points the way to that loftier brotherhood toward which we all aspire.

In considering the most notable Easter Services established in the open to date, we should first mention that of Mt. Rubidoux, an event internationally recognized and appreciated, dating from 1907 and being the first of its kind of which the writer can find any record. In magnitude the service in The Hollywood Bowl ranks first with an attendance of 50,000 in 1925. As a memorial of love and in the matters of fitness,

\*Copyrighted 1926, by Emerson Knight, 9 Geary street, San Francisco.

This article is in effect a sequel to the one entitled, “Outdoor Theatres and Stadiums in the West” by the same author and published in The Architect and Engineer, August issue of 1924.

practical use and endurance, the Nature Theatre on Mt. Helix, completed and first used on Easter, 1925, brings a new message of the blending of architecture with nature. The service most closely related to the symbolism of man's passing is that of Forest Lawn Memorial Park, at Glendale, near Los Angeles. Its Tower of Legends which the audience faces is one of monumental dignity and beauty. Perhaps one of the most unique services both from its history and the natural site chosen is that held on Punchbowl, in Honolulu. This site, now used for Christian worship, was once the scene of the pagan festivals of the aboriginal inhabitants.

What do these many crosses signify upraised on high, solitary hills and scattered over a wide range of the west? A reverence for Nature and an understanding of Christ, his life of love and sacrifice and his glorious resurrection, thrill the many who make pilgrimage in the early morning to these pure and lonely heights. There is a sense of the kinship of man and an idealistic community spirit exemplified in these vast gatherings.

Most people now seem content to have a cross, be it never so rude, to which to aspire and climb where songs of Thanksgiving and of praise may be sung. Many of these crosses are used but once a year, most of them at Easter, yet to the many their symbolism awakens comfort and hope throughout the seasons. Some of the crosses are of wood, very poorly proportioned and of more or less temporary construction. These are not satisfying to the many thoughtful persons who look far into the future, and who would prefer to have erected permanent crosses of enduring masonry; suitable architectural stages to accommodate the speakers, soloists and choruses; dressing rooms and conveniences, and proper, comfortable seats sufficient in number to provide for the probable number of worshippers. Such developments may lead to such ceremonial sites being used for sacred pageants, or for any worthy type of plays or concerts, because the outdoor theatre movement is certain and powerful throughout the west.

Now this development of the Easter Sunrise Service is only in an embryonic stage, but it is quite natural to believe that as a result of our favorable climate and of the great love of nature instilled in our people, both the cross for sunrise services and the nature theatre will assume a place of vast significance and of beautiful influence within the next half century. It is a refreshing and an ideal tendency, one that will certainly result in men and women of finer calibre and of nobler nature.

The sites chosen for Easter Sunrise Services have thus far been so widely different in topography, environment and atmosphere that the problems of the cross, and of the seating, stage and other features have demanded entirely individual solutions. Unless highly trained men in the fields of architecture, engineering and landscape architecture take hold of such problems the results along practical lines are likely to be unsatisfactory and along esthetic lines virtually a failure. One has only to glance over the views accompanying this article to feel convinced that in general the design of the cross is weak, that some are placed in undesirable situations, that many are decorated unfittingly and a number are poorly lighted. The same can be said of all other phases of the setting for the services. This is not written in a spirit of criticism or discouragement but rather in a sincere attempt to face unpleasant facts presented in existing conditions. Great changes and greater improve-

ments will come when the average standard of taste is so raised that the public itself will demand better things. We believe in the people who so cherish high symbolism that they are willing to climb to high places of purity in the early hours before dawn to witness a beautiful sunrise and a ceremony in accord with Nature's mood.

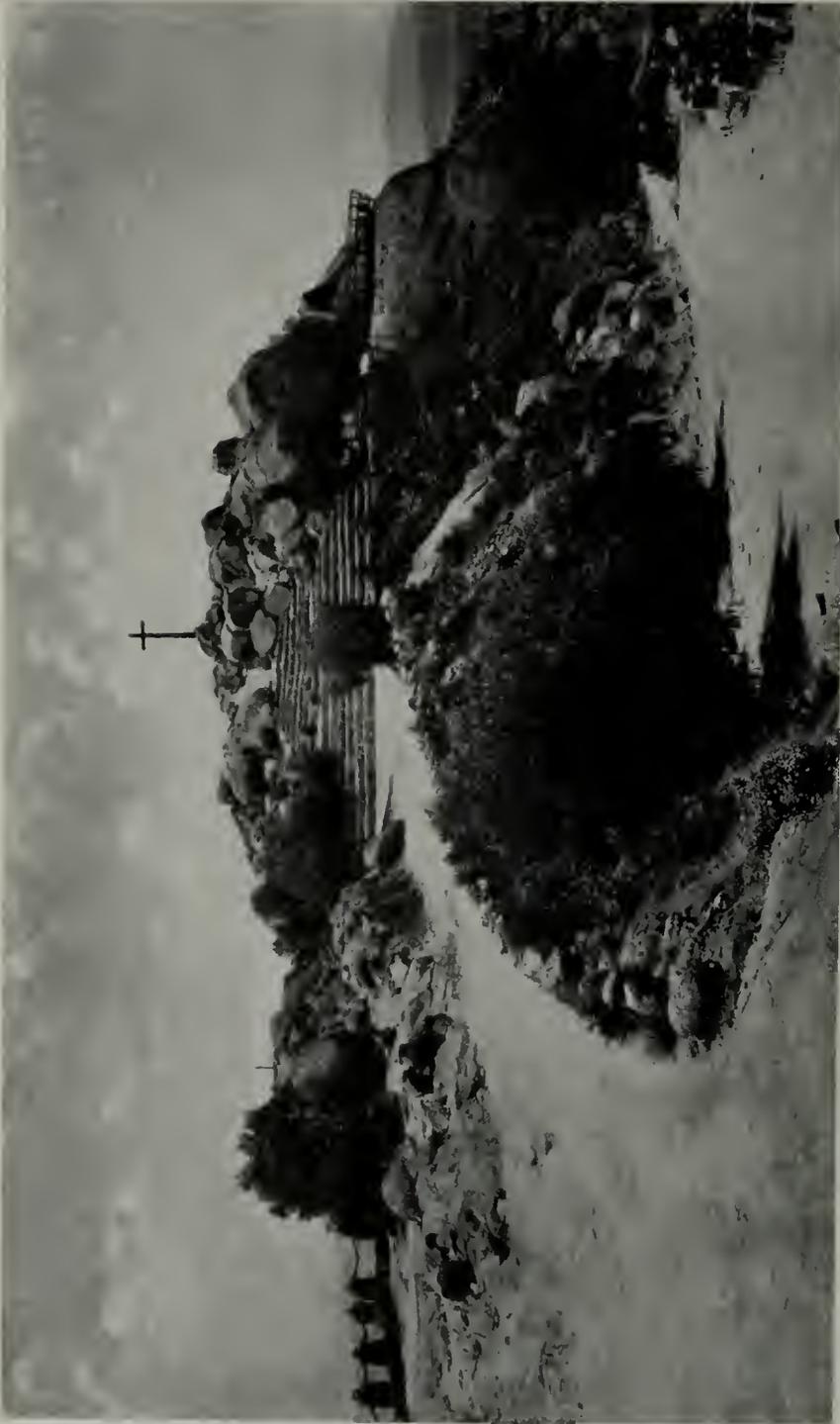
NOTE—Special appreciation is tendered to Mr. John R. Moss, of the Bureau of News of The Pacific Electric Railway, in Los Angeles, to Mr. C. G. Milham, executive secretary of the All Year Club of Southern California, and to Mr. Frank Carmody of Californians Inc., San Francisco, for their kindly co-operation in securing views and data.

The Los Angeles Times, on the morning after Easter in 1925 published accounts of a number of Easter Sunrise Services in addition to those illustrated in this article, of which the writer was unable to obtain views or data.



THE CROSS ON THE SUMMIT of Mt. Rubidoux, near Riverside, California. This cross is in memory of the Mission Days and Father Junipero Serra. The manner in which the steps are built in the granite summit of the peak reveals the sincerity of the designer who sought to follow truly in Nature's footsteps.

CROSS ON SUMMIT OF MT. Rubidoux, near Riverside. All here is in accord with the sublime mountain summit. Photograph by Avery Edwin Field, received through the courtesy of Mr. Frank A. Miller, Master of Mission Inn, Riverside.



THE ENVIRONMENT OF THE CROSS ON THE SUMMIT OF MT. RUBIDOUX, NEAR RIVERSIDE, California, where Easter Sunrise Services have been held annually since 1907. This view clearly shows the arrangement of the seats in relation to the cross, and the rugged grandeur of the mountain top with its wealth of massive boulders nobly grouped by Nature.

Photographed by Avery Edwin Field, received through the courtesy of Mr. Frank A. Miller of The Mission Inn, Riverside.



MT. RUBIDOUX WITH ITS WORSHIPERS, MANY OF WHOM MAKE A NIGHT-LONG VIGIL ON the peak of Mt. Rubidoux, near Riverside, California, to witness the inspiring resurrection services held Easter at sunrise. The cross, standing white and radiant, is a symbol of hope for many miles. Keystone Photo Service. Photograph received through the courtesy of Mr. John R. Moss, of the Bureau of News, Pacific Electric Railway, Los Angeles.



THE MULTITUDE ON THE SUMMIT OF MT. RUBIDOUX, AT THE EASTER SUNRISE SERVICES held in 1925. About 25,000 attended, to witness the rising of the sun and listen to the voice of music in an impressive ceremony in the open air. The summit is 1,837 feet above the sea and is almost entirely of solid granite. Photograph received through the courtesy of Mr. Frank A. Miller.



ANOTHER VIEW OF THE MULTITUDE ON THE SUMMIT OF MT. RUBIDOUX AT THE EASTER Sunrise Services held in 1925. This shows the secondary or lesser peak which is complementary to the higher peak on which the cross stands. This cross erected in about 1907 is rough hewn and commemorates the Mission Days and Father Junipero Serra.  
Photograph received through the courtesy of Mr. Frank A. Miller of The Mission Inn, Riverside.



**EASTER SUNRISE SERVICE ON PUNCHBOWL, IN HONOLULU, T. H. A CEREMONY HELD** on the rim of an extinct volcano. "It is the outgrowth of an idea fostered by a God-fearing and charitable little Englishman who gathered about him a group of friends and held what was believed to be the first Easter Sunrise Service held in America. Johnny Martin was the man and the date 1911." (Quotation from W. O. Cogswell, of *The News of Hawaii*). The first service, as near as the writer has been able to learn, was that on Mt. Robidoux in 1907. The attendance here in 1925 was 6000.

Photograph by The Williams Studio, Honolulu, received through the courtesy of the Matson Navigation Company, San Francisco.



EASTER SUNRISE SERVICE ON PUNCHBOWL, IN HONOLULU, T. H., 1925.  
Photograph by Edgeworth, Honolulu. Photograph received through the courtesy of the Hawaiian Tourist Information Bureau of San Francisco.



THE CROSS ON PUNCHBOWL, HONOLULU, T. H., FLOODLIGHTED AS SEEN BY RESIDENTS of Honolulu at night. The immense symbol is lighted by a searchlight whose beams are projected from the foot of the crater, and far into the heavens, greatly magnified, appears the shadow. Eyes of several races turn toward the heavens at these times.

Photograph by Smith. Photograph and information furnished by Mr. W. O. Cogswell, The News of Hawaii, through the courtesy of the Hawaiian Tourist Information Bureau, of San Francisco.



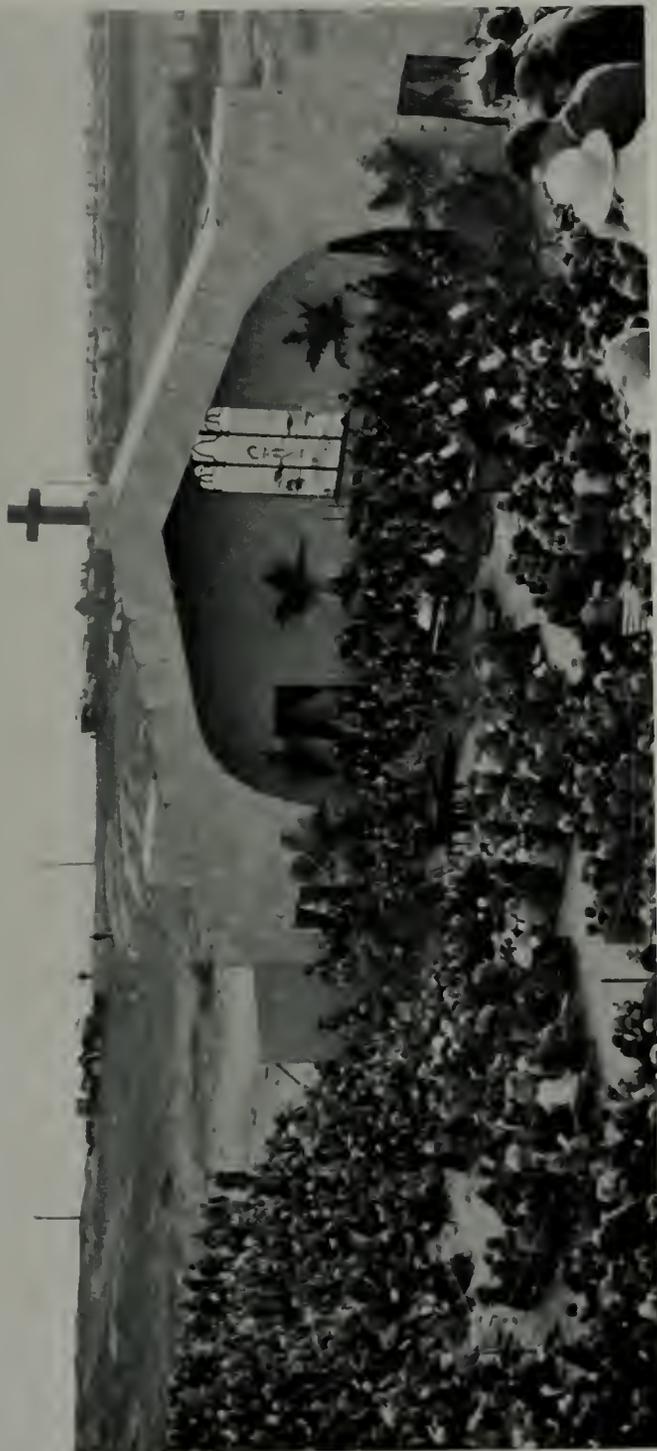
EASTER ROCK, ON MT. LOWE, IN SOUTHERN CALIFORNIA, WHERE EASTER SUNRISE Services have been held regularly since 1916. William H. Knight, a profound astronomer and father of the author of this article, took a keen interest in this ceremonial and made it a custom to give talks on the stars, beside this rock, on the night before Easter.  
 Photograph received through the courtesy of Mr. John R. Moss, of the Bureau of News, Pacific Electric Railway, Los Angeles.



A REMARKABLE PHOTOGRAPHIC IMPRESSION OF MT. RUBIDOUX RESULTING FROM AN exposure of about one hour and twenty minutes before sunrise on the morning of Easter, in 1925. Excepting for the flood lighting near the cross all other light patches and streaks emanated from the automobiles which ascended the mountain, discharged passengers and descended in steady procession during the interval.  
 Photograph by Fairchild of Riverside, received through the courtesy of Mrs. De Witt V. Hutchings of The Mission Inn, Riverside.



**EASTER SUNRISE SERVICES AT EAGLE ROCK, LOS ANGELES, WERE FIRST HELD IN 1916.** The Eagle Rock Chamber of Commerce assisted a group of people in starting the ceremony and the city aided by paying part of the expenses. They have often had a multitude as large as 15,000. Information courtesy of Mr. Alfred Heineman, architect, of Los Angeles. Photograph furnished by Mr. John R. Moss, of The Bureau of News, Pacific Electric Railway, Los Angeles. Thompson & Bingham, Photographers.



EASTER SUNRISE SERVICE AT PALISADES DEL REY, NEAR VENICE, CALIFORNIA, where 40,000 attended in 1925. Sponsored by the Bay Cities Musical Association, an organization including Santa Monica, Venice and Ocean Park. The first service was given in Venice. At Del Rey, the Los Angeles Philharmonic Orchestra played at the ceremony and chief among the prominent artists was Tito Schipa.

Data courtesy of Dickenson & Gillespie and Mr. Alfred Heineman. Photograph by M. F. Weaver, received from Mr. John R. Moss, of The Bureau of News, Pacific Electric Railway, Los Angeles.



**EASTER SUNRISE SERVICE ON CATALINA ISLAND, IN 1925. THE OBSERVANCE OF EASTER** Sunrise from the summit of Buena Vista Park was started under the auspices of the Mary Williams Club in Avalon, in 1917 and every year more and more people have participated in the ceremony at this point, overlooking the ocean. Last year, for the first time, the Easter Sunrise Service was directed by Uncle John Daggett, Manager of KHJ Station of The Los Angeles Times. It was attended by 1500 to 2000 people. The poor design of the cross and the crude stage are forgotten when one contemplates the noble effect of the trees and the water. A truly admirable and inspiring setting.

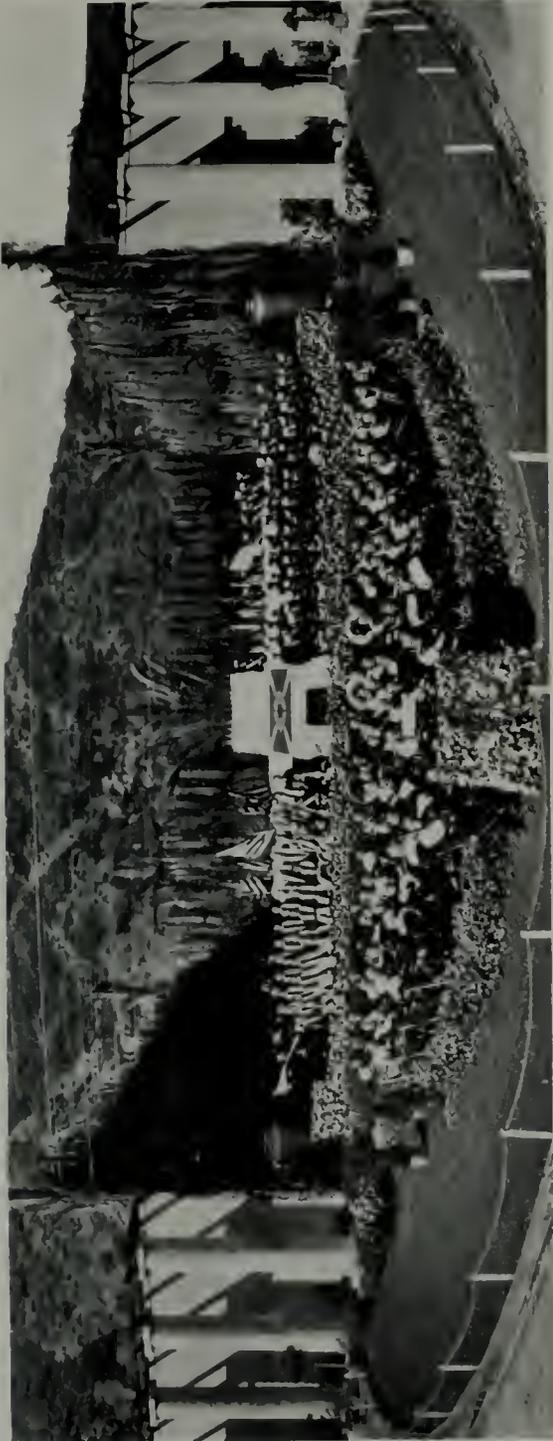
Crescent Photo.



EASTER SUNRISE SERVICE ON CATALINA ISLAND, 1925. VIEW ACROSS THE RESERVOIR at early dawn, silhouetting the cross and the multitude against the ocean and sky. Information and photograph furnished through the courtesy of Mr. J. N. Stewart, Vice President and Traffic Manager of The Santa Catalina Island Company.



**EASTER SUNRISE SERVICE IN HOLLYWOOD, CALIFORNIA, IN 1925. ATTENDANCE, 50,000.**  
 "The Easter Service in the Bowl is accomplished through community effort. Sponsored chiefly by the Hollywood Community Chorus, the great body of 2,000 people who meet together weekly to sing, in the High School, the Service is also a service on the part of our unselfish citizens. Some gather lilies to deck the stage and the 'Altar of Lilies' from which our ministers send the Easter Message; some arrange the music; our own Community Orchestra, open to any musicians, of any age, rehearse and prepare for weeks, and give us excellent music; soloists give their time and love; it is all a work of love on the part of this whole community."  
 The above, quoted from a letter of Miss Marion Bowen, representing the Hollywood Bowl Association. Photograph received through the courtesy of that association. Keystone Photo Service.



KNIGHTS TEMPLAR IN HOLLYWOOD BOWL FOR EASTER SERVICE, EASTER AFTERNOON, 1925. The screen of palm leaves forming the background presents a stiff and artificial appearance. A plantation of eucalypti, presenting a wall of living green would lend grace and charm, revealing colorful trunks and flexible limbs whose foliage would respond to any wandering wind and offer a true foil for those upon the stage.  
Photograph and data received through the courtesy of the Hollywood Bowl Association, by Miss Marion Bowen.



**EASTER SUNRISE SERVICE AT INSPIRATION POINT, IN BIDWELL PARK, NEAR CHICO, California.** In previous years there have been grazing sheep on the hills surrounding this spot, giving strongly the resemblance to a typical Biblical scene, thus rendering the service more impressive. The Easter Sunrise Service is sponsored by the Chico Rotary Club. Information received through the courtesy of Elma Cure, Assistant Secretary of The Chico Chamber of Commerce. Photograph received through the courtesy of William J. O'Connor, formerly of Chico, and Mr. F. E. Coombs, of Gladding, McBean & Company, San Francisco.



**EASTER SUNRISE SERVICE AT AUBURN, CALIFORNIA. THE FIRST EVENT OF THE KIND** there was held on Easter, 1919, with an attendance of about 3000. Each year the interest has increased until in 1925 the multitude was estimated as over 7000. This service is held on Acolia Heights in Auburn, where it has a most beautiful setting. The cross is erected on the summit and overlooks for hundreds of miles the rugged peaks and canyons of the Sierra Nevada Mountains.

Information and photographs received through the courtesy of Mr. P. B. Goss, Secretary-Manager of the Placer County Chamber of Commerce. Photograph by McCurry.



**FOREST LAWN MEMORIAL PARK EASTER SUNRISE SERVICE, AT GLENDALE, CALIFORNIA. SERVICES HAVE BEEN held here since 1922. They came about because of the belief of Mr. Hubert Eaton, General Manager of Forest Lawn Memorial Park, that Easter Services were particularly fitting in a cemetery. He worked in preparing the plans for the services with the Chamber of Commerce and city officials in Glendale, and the Forest Lawn Observatory has come to be in essence a Glendale community affair. Last Easter more than 10,000 persons were on the mesa for the services. The audience area will accommodate 25,000 and the Tower of Legends at its focus is most nobly placed. This tower affords a striking example of the esthetic and permanent architecture of a utilitarian structure, as the tower houses a steel water reservoir, sixty-five feet in height. (The sculptural groups on the tower symbolize Religion, Genius and Progress. See cover design). Charles H. Kyson, Architect. Finn Froelich, Sculptor.**

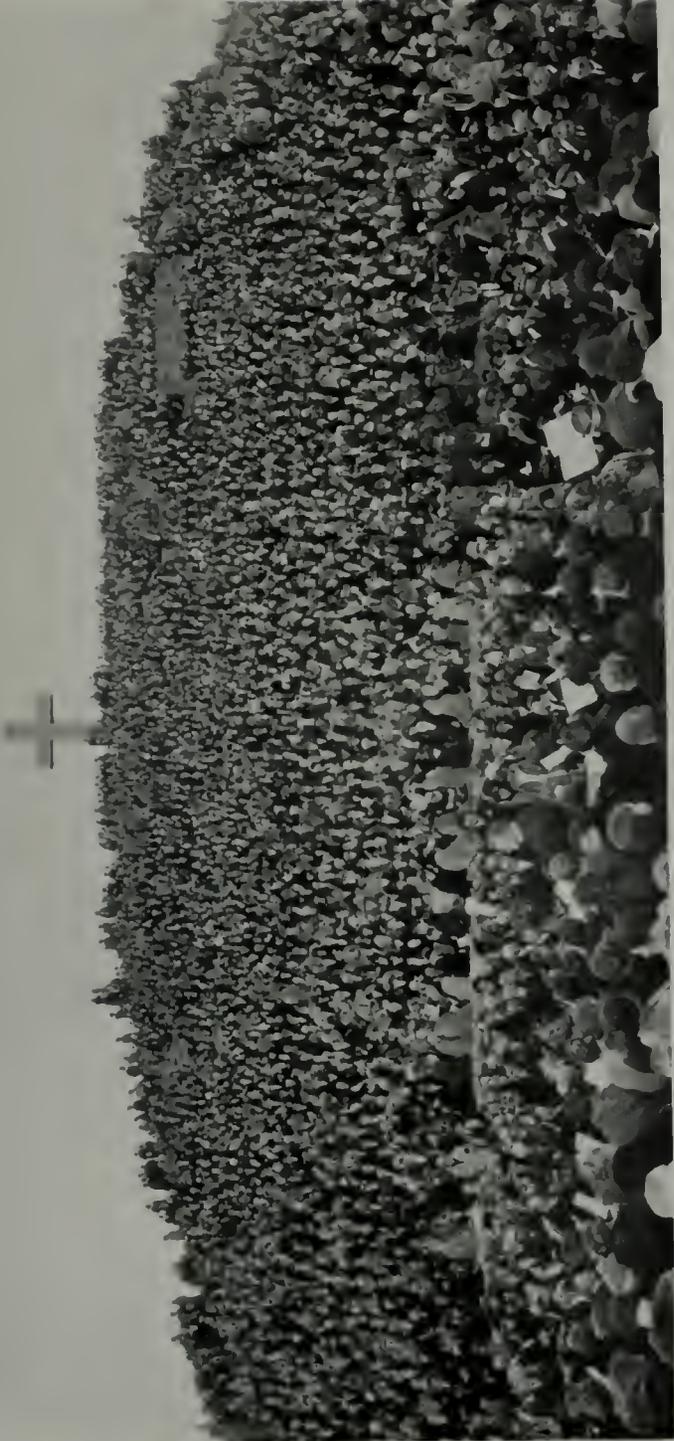
Information and photograph received through the courtesy of Mr. C. G. Milham, Executive Secretary of The All Year Club of Southern California.



**EASTER SUNRISE SERVICE ON MT. DAVIDSON, SAN FRANCISCO, CALIFORNIA, 1924. IN 1925 ABOUT 20,000 ATTENDED.**  
 Under the auspices of the citizens of San Francisco, and the Chairmanship of Mr. James G. Decatur. The cross was enshrined in a forest on the summit of a peak 900 feet in elevation but easily reached by a series of well built trails leading up from several directions. Automobiles were parked some distances below so that the old custom of pilgrimage in an actual climb to the summit was preserved. The great wooden cross was lost by fire on Dec. 16th, 1925. To quote Mr. Frank J. Grunk, "This cross was neither worthy of the sacred emblem itself nor of the great community which it overshadowed. The ardent enthusiasts who succeeded in raising this original cross considered it merely a temporary affair, to be replaced by a monumental cross and base, that would be a permanent expression of San Francisco's devotion to the spiritual." The Mt. Davidson Easter Sunrise Association has recently commissioned Mr. Emerson Knight to make studies of the problems of the proposed new cross, its environs and approaches.  
 Photograph by Gabriel Moulin.

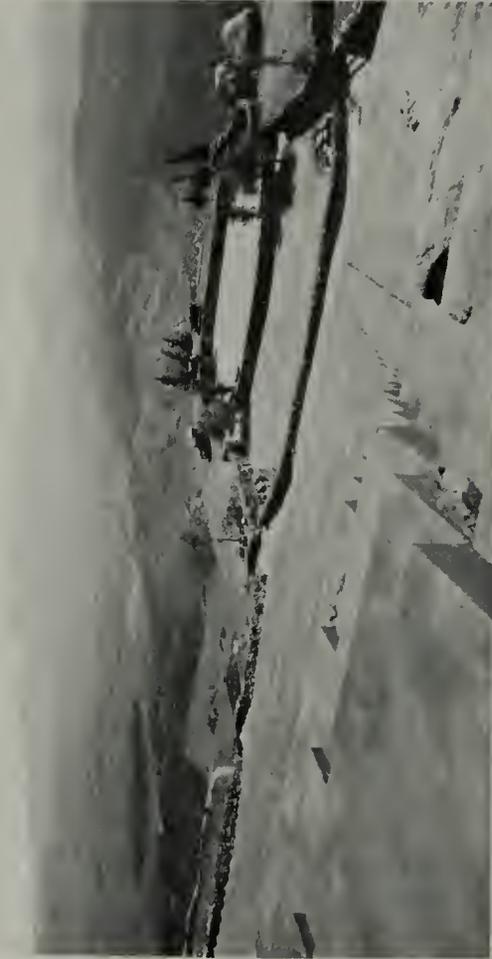


THE SUMMIT OF MT. HELIX WITH THE MULTITUDE ASSEMBLED FOR THE EASTER Sunrise Service of 1924, before the construction of the present noble structure. Observe the crude construction of the stage and the diminutive cross, seemingly further dwarfed by the scale of the audience and the mountain top. The view from this summit is impressive and inspiring and was much loved by Mrs. Mary Carpenter Yawke who revered nature, the stones of the mountain and sunsets. Her son Cyrus Carpenter Yawke and her daughter Mary Yawke White were moved to have a nature theatre built to commemorate their mother and to be used primarily for Easter Sunrise Services. Subsequent photographs portray the development of the theatre.



THE MT. HELIX THEATRE, ON THE SUMMIT OF MT. HELIX, NEAR SAN DIEGO, SHOWING the multitude of 5000 assembled at the Easter Sunrise Service in 1925. At the upper right is shown the north box, of natural stone, whose seats, also of natural stone, have a capacity of about fifteen persons. This box was built especially for the owner, Mrs. F. M. White and her guests.  
Requin & Jackson, Architects, Emerson Knight, Landscape Architect. Photograph by Bunnell, received through the courtesy of Mrs. F. M. White.

THE MT. HELIX THEATRE,  
on the summit of Mt.  
Helix, near San Diego.  
View facing east and  
showing the seating with  
its outcropping boulders  
to sustain the natural  
effect, the orchestra with  
its two quadrant boxes  
and their stone seats, and  
the stage with great  
natural boulders on the  
right.



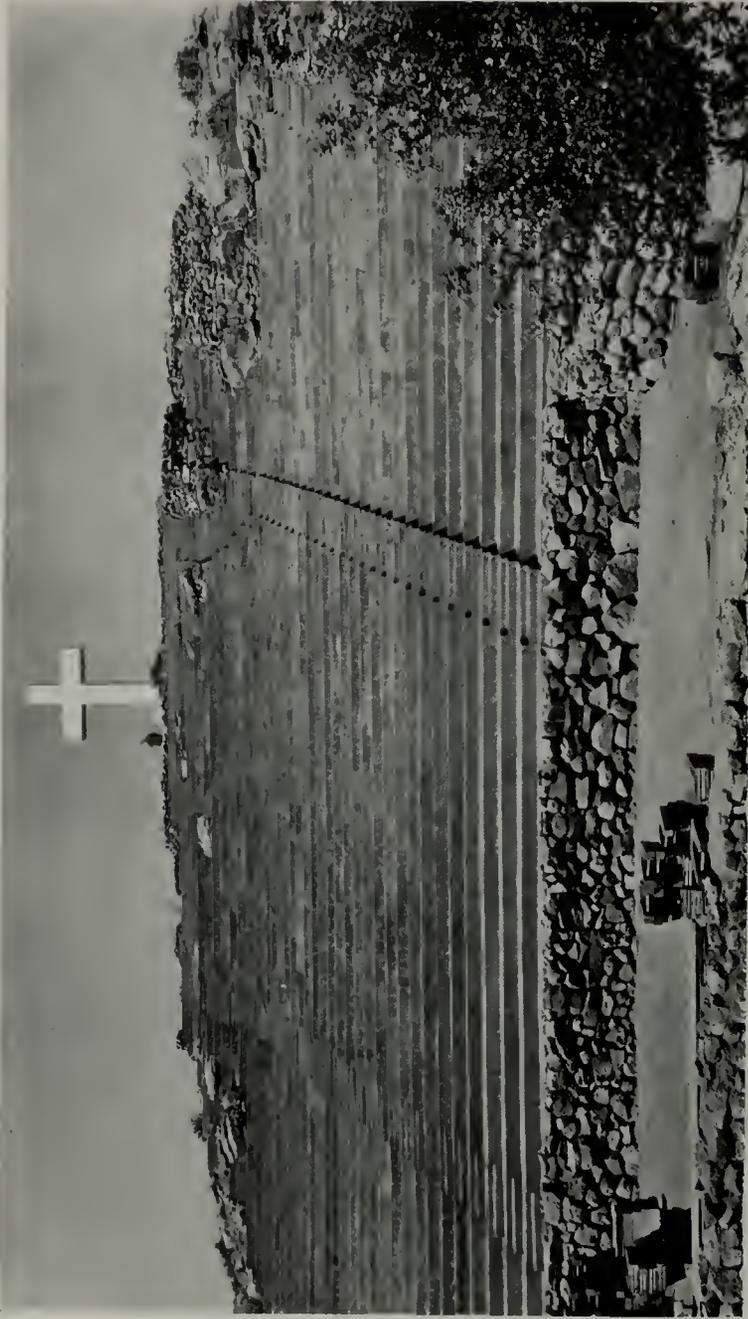
The bare slope shown  
at the right of the or-  
chestra has since been  
replaced by the new south  
wing, which together  
with its seating is shown  
in another view.

Requa & Jackson, Ar-  
chitects. Emerson Knight,  
Landscape Architect.  
Photograph received  
through courtesy of Mrs.  
F. M. White.

Note: Mr. Knight was called into consultation on this project by the architects and owners, in its earliest stages before any of the work was done, which permitted the happiest and most intimate co-ordination of the planning in all directions; among his conceptions were those respecting the general seating; including the preservation of the convexity of the site by means of higher seats in the center section, also the added south wing, the boxes, the cross and the memorial tablet. In many instances it is the failure of both owners and architects to provide for such whole-hearted co-operation that has prevented the highest fulfillment of ideals. In the present case, the structural architects, having rare skill in the art of design and being thoroughly in accord with the preservation of existing natural beauty, by their development of the project and personal supervision of all the work, both fulfilled their own ideals and sympathetically interpreted those of the consultant.



**THE MT. HELIX THEATRE, ON THE SUMMIT OF MT. HELIX, NEAR SAN DIEGO, SHOWING THE MULTITUDE OF 5000**  
 assembled for the Easter Sunrise Service in 1925. The orchestra and chorus are seen in the orchestra pit and on the stage beyond. The theatre having just been completed, the plantings shown were temporary, being established in boxes. At the left beyond the audience, some hundreds of feet below, the large number of parked cars may be seen. When the planting scheme is matured these will be effectually screened and they are far enough away so as not to disturb the audience. The superb distant panorama of valley and mountains is here partially revealed. The vista will finally be broken up into a series of panels or pictures by means of the trees planted.  
 Requa & Jackson, Architects, Emerson Knight, Landscape Architect. Photograph by Bunnell received through the courtesy of Mrs. F. M. White.

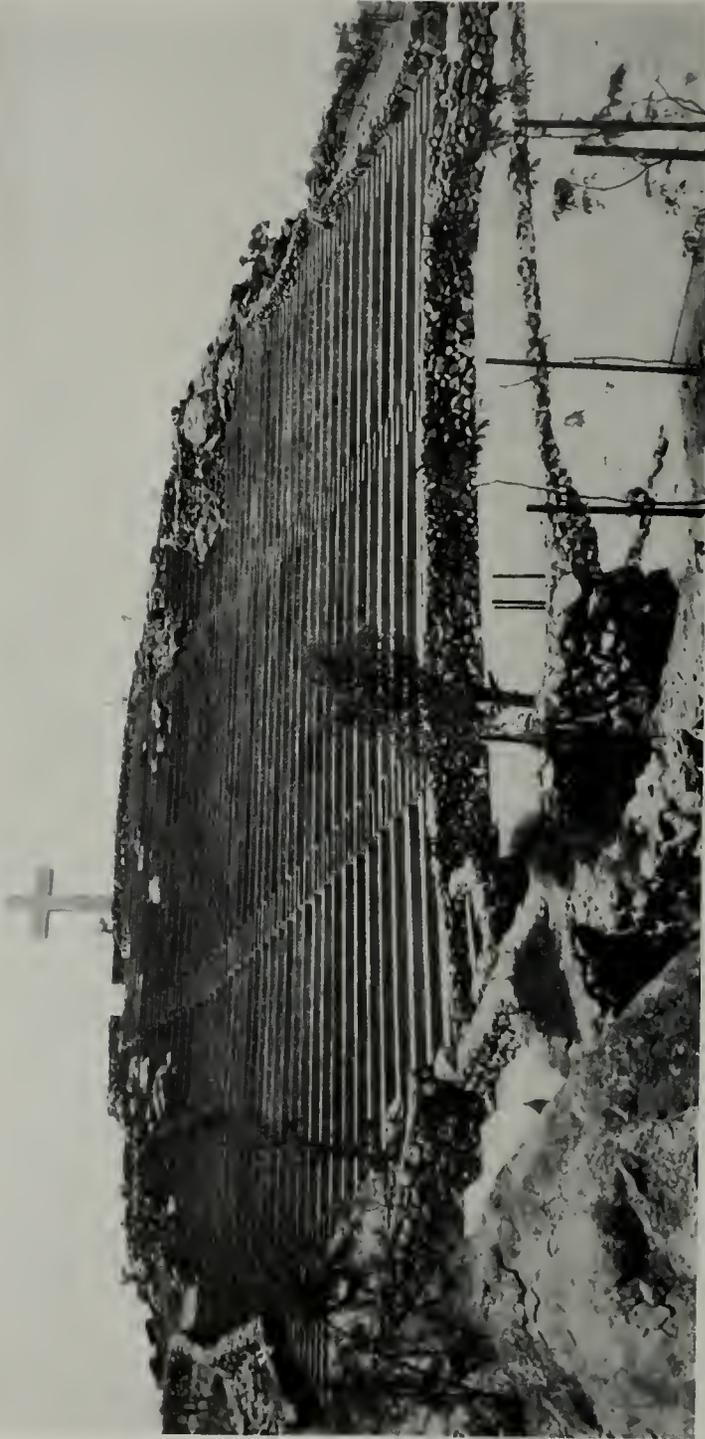


THE MT. HELIX NATURE THEATRE, ON THE SUMMIT OF MT. HELIX, NEAR SAN DIEGO. View westward from the stage. The speakers and singers on the stage face the cross, and the audience the rising sun, because the major axis of the theatre scheme lies due east and west. The concrete seats have been colored a rich, golden brown to conform with the natural stone outcroppings on the mountain top.

Requa & Jackson, Architects. Emerson Knight, Landscape Architect. Photograph by Sensor Studio, received through the courtesy of Mrs. F. M. White.



THE MT. HELIX THEATRE, ON THE SUMMIT OF MT. HELIX, NEAR SAN DIEGO. VIEW westward over the stage and seating before planting was done. The rear wall of the stage is here shown with its doors and windows (not yet in place) leading to dressing rooms and storage space. The two curved ramps or passageways leading to the stage are revealed, one of which passes between the original group of huge boulders which add so much character to the ensemble.  
 Resqua & Jackson, Architects, Emerson Knight, Landscape Architect. Photograph received through the courtesy of Mrs. F. M. White.



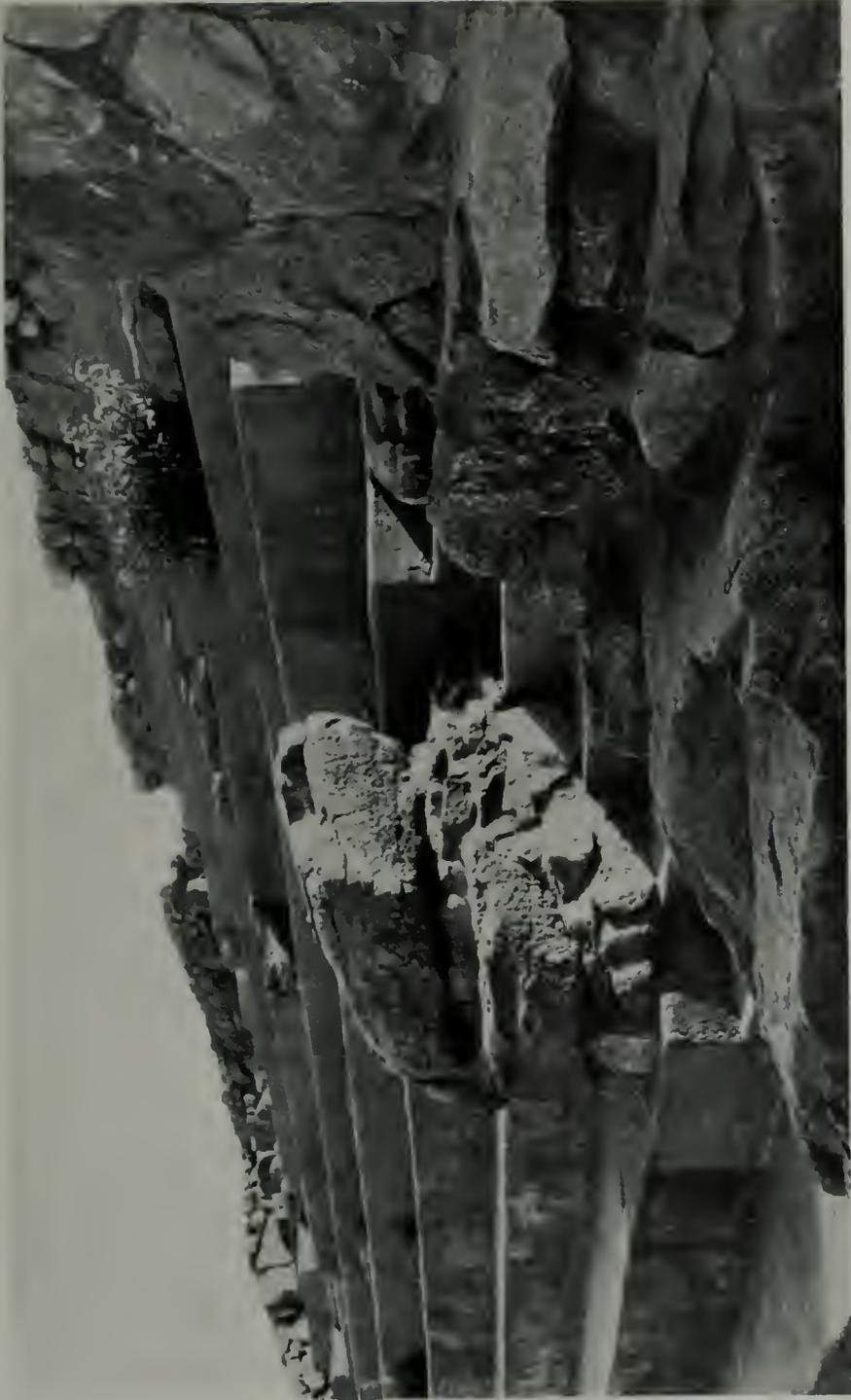
THE MT. HELIX THEATRE, ON MT. HELIX, NEAR SAN DIEGO, CALIFORNIA. GENERAL VIEW OF THE SEATING FROM the southeast. This clearly reveals the actual convexity of the area devoted to the seats, the seats of the center section being one foot higher than those of the side sections, notwithstanding which the arc form of the seats counteracts the feeling of convexity. The transition from the higher center section to those at the sides is effected through the aisles by means of two six-inch steps. Where the upper portion of the seating is steeper the transition units are higher. Thus a vast amount of excavation of the natural mountain top has been saved. The rough walls which flank the side aisles are of just the right height for comfortable seats, thus providing for a considerable overflow in the audience. The outcropping boulders are also used freely as seats. The effect of enclosure will be gained after the plantings made since last Easter are matured into convincing forms. Requa & Jackson, Architects, Emerson Knight, Landscape Architect. Photograph by Mr. Richard S. Requa received through the courtesy of Mrs. F. M. White.



THE MT. HELIX THEATRE, ON THE SUMMIT OF MT. HELIX, NEAR SAN DIEGO. VIEW from the northwest looking southeast across the auditorium to the orchestra and stage shown on the left and to the south wing of seats above the orchestra pit. Note in the foreground how the steps have been harmonized with the natural outcropping boulders and observe the group of huge boulders rising back of the stage and orchestra, left just where they were found.  
Messrs. Requa & Jackson, Architects. Emerson Knight, Landscape Architect. Photograph by Mr. Richard S. Requa and furnished through the kindness of Mrs. F. M. White.



THE MT. HELIX THEATRE, ON THE SUMMIT OF MT. HELIX, NEAR SAN DIEGO. VIEW southward across the theatre, showing the concrete seats with outcropping boulders and native sumach, the south box and parapet wall together with the superb background. Photograph by Mr. Richard S. Requa furnished through the kindness of Mrs. F. M. White.



THE MT. HELIX THEATRE, ON MT. HELIX, NEAR SAN DIEGO, CALIFORNIA, SHOWING the manner in which the natural boulders and native shrubs were allowed to become a part of the picture comprising the seating area.  
Requa & Jackson, Architects, Emerson Knight, Landscape Architect, Photograph by Mr. Richard S. Requa received through the courtesy of Mrs. F. M. White.



THE CROSS ON THE SUMMIT OF MT. HELIX, 1500 FEET ELEVATION, JUST ABOVE THE Mt. Helix Nature Theatre, near San Diego, California. This massive cross, entirely of reinforced concrete, is three feet square in section and stands 35 feet above the summit. A circular seat of natural stone gathered nearby entirely surrounds the cross which is lighted at night by means of six powerful flood lights.

Requa & Jackson, Architects. Emerson Knight, Landscape Architect. Photograph by Mr. Richard S. Requa furnished through the kindness of Mrs. F. M. White.



THE CROSS ON THE SUMMIT OF MT. HELIX TOGETHER WITH THE CONCRETE AND STONE stairway approach from the Mt. Helix Nature Theatre just below it. The preservation of natural beauty was the constant aim throughout the design.  
Requa & Jackson, Architects. Emerson Knight, Landscape Architect. Photograph by Mr. Richard S. Requa furnished through the courtesy of Mrs. F. M. White.



THE MT. HELIX NATURE THEATRE, ON MT. HELIX, NEAR SAN DIEGO, CALIFORNIA.  
A view of passage and stairway among the boulders on the north side of the seating area. A portion of the winding road leading to the summit is seen in the distance, and beyond lies the valley and mountain vista.  
Requa & Jackson, Architects. Emerson Knight, Landscape Architect. Photograph by Richard S. Requa received through the courtesy of Mrs. F. M. White.



MOUNT HELIX NATURE THEATRE, ON THE SUMMIT OF MOUNT HELIX, NEAR SAN DIEGO. View looking south across the audience space just below the stone boxes. The bold curvature of the seats complements that of the adjoining rock parapet masses.  
 Requa & Jackson, Architects. Emerson Knight, Landscape Architect. Photograph by Mr. Richard S. Requa, received through his courtesy.



RETURNING FROM THE MT. HELIX NATURE THEATRE ON THE SUMMIT OF MT. HELIX, near San Diego, after the dedication and Easter Sunrise Service, April 12, 1925. Taken from the vicinity of the parking area for automobiles. The trail was studied and built for easy gradients and interesting views, with seats at the turning points.  
 Requa & Jackson, Architects. Emerson Knight, Landscape Architect. Bunnell photograph



THE MT. HELIX NATURE THEATRE, ON MT. HELIX, NEAR SAN DIEGO, CALIFORNIA. Work on the theatre proper was begun in November, 1924, and the construction was virtually completed by Easter in 1925. This view is of the plantings made since Easter at the rear of the stage with the monster boulders close by.

Messrs. Requa & Jackson, Architects. Emerson Knight, Landscape Architect. Photograph by Mr. Richard S. Requa received through the courtesy of Mrs. F. M. White.



THE MOUNT HELIX NATURE THEATRE, ON THE SUMMIT OF MOUNT HELIX, NEAR SAN Diego. Showing the Memorial Tablet and the boulder on which the bronze plate is placed. The monument is situated on the terrace at the summit and also upon the major axis of the theatre and cross. Facing the tablet one also faces the rising sun and looks over the theatre to the vista of mountain and plain.

Messrs. Requa & Jackson, Architects. Emerson Knight, Landscape Architect. Photograph by Richard S. Requa received through the courtesy of Mrs. F. M. White.



**PILGRIMAGE RETURNING TO THE PARKING AREA BELOW THE MT. HELIX NATURE Theatre after the Dedicatory Easter Sunrise Service, April, 12, 1925.** Owing to the situation of the parking space for the audience of 5000, a few hundred feet below the summit, confusion, noise, and the odor of exhaust gases are eliminated near the theatre. When the road to the theatre is used for those who are not able to make the climb, the driver returns it to the parking field. Another object in keeping the cars conveniently removed from the mountain top is that of preserving the original panorama in its perfect beauty for the observer.

Photograph by Bunnell, received through the courtesy of Mrs. F. M. White, of San Diego, California.



**EASTER SUNRISE SERVICE ON PEACE HILL, AT PACIFIC PALISADES, NEAR SANTA Monica, California, where services have been held for four consecutive years.** The hill commands a wide sweep of land and sea.

Data furnished by Oren B. Waite, Director of Education, at Pacific Palisades. Photograph received through the courtesy of Mr. John R. Moss, of The Bureau of News, Pacific Electric Railway, Los Angeles.



Cragmont Rock Park, Berkeley, California, developed from the plans of Professor J. W. Gregg, Division of Landscape Design, University of California, Berkeley. To quote Mr. T. M. Grabow, Superintendent of Parks, Berkeley: "For a number of years previous to 1921, the Rock has been used jointly by the churches of Berkeley in the observance of Easter services, 2000 to 3000 people in attendance. This was one of the reasons why the purchase of the Rock by the City of Berkeley, was facilitated, in addition to the fact that it was an excellent look-out point commanding the city and the bay below. After the purchase of the Rock, plans were carried out for the improvement of the rock so as to allow more level area on the top, and to better accommodate the large crowd in attendance at Easter services. The Rock has been used regularly for these gatherings up to date."

Photograph kindly loaned by Mr. Grabow.

## Specifying the Painting and Finishing Work

By J. C. BOLLENBACHER, A. I. A.,  
in American Architect

**H**OW often does the architect, in the ordinary routine of his professional practice, solve successfully and carry through to a satisfactory completion the very important work of painting and finishing? We venture—not often.

The finished building is seldom, if ever, altogether satisfying to the architect. It is always true that the architect, who designs the building and studies out all the problems in connection with it, included in the drawings, specifications and supervision, will realize fully its shortcomings but he will not, of course, admit them publicly. Not a small number of these imperfections are due—in part at least—to an inferior paint job. In no other branch of building work is there such a large percentage of failures. A plausible reason for this fact is that the human element enters into painting and finishing so extensively—both into the specifications and the manufacture of materials as well as their application. It is only reasonable to expect, therefore, even when the highest quality and the greatest possible quantity of technical knowledge, honesty and skill are exercised throughout, that the result will only approach but, like the asymptote, never reach perfection.

Nature's own building materials have in themselves innumerable defects, some of which, it is true, have and are capitalized for their artistic value but most of which detract from the practical performance. Examples are numerous of the use of improperly or unwisely selected natural building materials which are totally unfitted for exposure to the action of the elements and the wear and tear incident to a building's occupancy. What then should one expect of man-made and man-applied products, such as paints and varnishes? Should one be surprised on finding in the finished work many evidences of partial failures of labor or materials or both? The degree of imperfection varies inversely, of course, with the amount and kind of intelligence and skill that have been exercised all along the line in getting the result—in the specifications, manufacture and application.

Let us concern ourselves here with the architect's specifications. The architect's responsibility for the final result will be considered and the most effective methods by which he can secure the greatest success in this very important branch of the work. The architect is not responsible for the manufacturers' products, but most certainly should he be held to the exercise of a trained judgment in making proper selections. Neither is he strictly a guarantor of the proper performance of the painting contract. His duty to his clients and to the public, however, requires that the architect possess and use wisely and honestly a certain technical knowledge of this branch of his work as well as of the thirty or more other branches that enter into the construction and completion of a modern building.

The architect is not presumed to have an intimate knowledge of the technology nor experience in the manufacture of paints and varnishes. He or his specification writer must necessarily depend upon the reputation of the manufacturer for producing materials which will actually fulfill the claims that are made as to effects and service. Without the honest and dependable manufacturer the architect's plight in respect to this branch of the work would be practically hopeless. Happily the specification writer finds many good manufacturers in the field

who apparently care more for their reputation for integrity and the production of high grade materials than they do for ill-gotten gains through the sale of cheap and dishonest materials. The experienced specification man will adopt a safe and sane policy as to the manufacturers whose materials he mentions and will not take unnecessary chances gambling with the products of the less reputable paint and varnish houses. It is a common experience that the saving, which the owner may expect from the cheapening of the quality of materials that enter into the painting and finishing specifications, is never a permanent economy as refinishing is required so soon.

The question has long been argued without conclusive results whether, so far as the purchaser of building materials is concerned, the architect's specifications should leave the door open, closed or provided with a check to be adjusted by the architect after the contract is awarded. The concensus of architectural opinion gained through wide experience in the execution of building contracts seems to tend toward the third method for private work.

In public work, most statues require an open specification. There are obvious reasons why the contractor likes the open variety best. Reference to government standards facilitates the writing of open specifications and makes it unnecessary for the architect to write into his specifications inaccurate formulas which to the technical man are clearly the result of a lack of knowledge. The supervision of the work under an open specification usually results in a series of conflicts between the architect and the contractor as to the interpretation of the meaning of the document.

A closed specification is probably justifiable only on the most extravagant work where cost is not the limiting consideration. This type of specification is the manufacturer's choice providing, of course, his products are required to the exclusion of his competitors. It is the occasional job where the amount of money to be expended is the secondary and not the primary consideration and the architect then appreciates his good fortune in having a brief relief from the sordid problem of high building costs.

The architect's objective, however, is usually to build well at the least cost and he finds the "door check" variety of specification conforms best to his purpose. The function of a door check is to close the door quickly and noiselessly without slamming and the speed and positive action of the check can be adjusted. So is it true of an open-closed specification, the architect being the adjuster. It is a compromise between the two extreme types and combines many of the advantages and fewer of the disadvantages of each. In such a specification, the materials of each kind should be specified briefly and definitely as to grade and quality and the choice between similar products of different manufacturers should be limited to not less than three. The architect should investigate carefully and use his best judgment in naming the several brands with due regard to the importance of having the competing products approximately of the same grade and quality and suitable to the work in hand. In formulating their estimates from such a specification, the bidders have no difficulty in understanding the requirements and in arriving at a fair price for this work. This actual choice between the brands must be made by the architect before the materials are ordered.

In a painting and finishing specification it is desirable that the following items be covered definitely and concisely. The form of this outline or agenda insures completeness with the least possible repetition of descriptive matter. It is included here with the hope that it may contain some helpful suggestions to the specification writer.

#### AGENDA FOR PAINTING AND FINISHING SPECIFICATIONS

##### General

- Reference Note to General Conditions
- Scope of Painting and Finishing
- Work Not Included
- Examination of Other Specifications
- Plant
- Samples

##### Materials and Workmanship

- Approvals and Deliveries
- White Lead Paint
- Flat Oil Paint
- Varnish and Rubbing
- Enamel
- Shellac
- Prepared Wax
- Putty
- Colors
- Stains and Staining
- Filling
- Sandpapering
- Priming
- Workmanship
- Painters' Acceptance

##### Application and Distribution

- Surfaces to be Finished
- Preparation of Surfaces
- Exterior Woodwork
- Exterior Metalwork
- Interior Woodwork
- Kind of Wood Trim
- Trim "A" Finish
- Trim "B" Finish

Here the different operations required in getting the finish should be listed.

- Trim "C" Finish
- Trim "D" Finish
- Trim "E" Finish
- Beams and Cornices
- Wood Ceilings
- Interior Metalwork
- Piping and Duct Work
- Radiators & Connections
- Wood Floor Finish
- Cement Floor Finish
- Floor Markings
- Decorating
- Lettering
- Retouching
- Protection and Cleaning
- Guarantee

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## Sprinklers as Fire Preventives

In one Pacific Coast city fire losses of \$800,000 out of a total of \$1,800,000 in the last two years would have been prevented if sprinklers had been "on the job" in the basement, according to the fire marshal. The city is considering an ordinance requiring the installation of sprinkler systems in all basements where manufacturing or mercantile business is carried on. The cost of sprinklers in the cases cited by the fire marshal would have been a small fraction of the total fire loss of \$800,000.

## Uncertificated Architect Cannot Recover Fee for Architectural Services

THE Supreme Court of the State of Washington has ruled that an unlicensed architect cannot recover his fee for architectural services rendered but he may collect compensation for superintendence, provided he contributed such service during the erection of a building designed by him. The full text of the decision follows:

"The language of the act manifestly expresses the legislative intent that it shall be unlawful for one not holding a license certificate to assume the professional title of architect, and as such enter into a contract to render architectural services. Now, that is just what one Travis did with reference to the construction of this building.

"He not only held himself out to Wise and wife as being an architect possessing architectural skill and learning prior to the making of his contract of services with them, but he prepared plans and specifications in such detail as is usual for the construction of buildings of the dimension and cost of the one in question. The several sheets of the drawings of the proposed building, of which the specifications were a part, were signed by Travis as architect.

"We think there is no escape from the conclusion that the contract for architectural services between Travis and Wise and wife, upon which Sherwood seeks recovery, was illegal and void and wholly unenforceable, leaving Travis and Sherwood, his assignee, without legal right of recovery thereon.

"We think it needs no argument or citation of authorities to demonstrate that this statute, providing for inquiry into the learning and skill of the applicant, and prescribing penalties for the assuming of the title of architect, and contracting as such without a license certificate, was enacted for the protection of the public and the prevention of improper persons assuming the title of architect, and contracting for services as such. \* \* \*"

But, it was contended, among other things, that the statute requiring architects to obtain license certificates was unconstitutional. In reply to this the court said:

"We think that architecture is generally recognized as a profession, and that its practice involves mental rather than manual skill, having to do with things that concern the safety and well-being of the public in this prominently building age, and that therefore the legislature may provide for the licensing of those who desire to assume the title of architect, and hold themselves out to the world and contract for their services as such. We cannot see any constitutional objection to this law. \* \* \*"

"We are not holding that an owner may not employ a builder to construct a building for him without the services of an architect, but are only holding at this time that one who holds himself out to be and assumes the title of architect, and contracts for his services as such, without being licensed as this law requires, cannot recover compensation for such services, because in so holding himself out, and in so contracting, he violates this law. \* \* \*"

In conclusion the court affirmed the judgment of the trial court in all things, holding that while Travis, or Sherwood, his assignee, could enforce payment for the work performed by Travis in superintending the construction as carpenter foreman of the building, there could be

no recovery for architectural services rendered by Travis under his contract. This for the reason that he was not licensed as required by the Washington statute when the contract was entered into.

\* \* \* \*

## Economic Pressure and the Tall Building

A BRITISH VIEW

EUROPEAN reaction to the tall building is decidedly intriguing to American students of architecture and economics, more especially because we are not wholly convinced in our own minds as to the permanent place in architecture and life which this type of structure will occupy. That economic pressure and necessity may eventually retard and perhaps scatter urban populations, thus removing the "necessity" for the tall office building, is the belief of some. This view is advanced in a recent article in "The Architect", London, in presenting to its readers illustrations of some larger structures in this country, the Hotel Sheldon, New York, in particular.

Remarking this hotel to be "a very successful example of the class of mammoth structures which we learn to associate with America," "The Architect" questions whether the necessity for such structures will continue.

We sometimes wonder whether even in America the necessity for enormous blocks of buildings is likely to be a permanent phase and whether they will be found to be permanent income-producing propositions, declares the author. Intense industrial development has a tendency to outstrip demand, coupled with the fact that the more backward countries are rapidly learning to supply their own wants and no longer offer the same field for the consumption of experts as they did. The world may yet find its greatest requirement to be the production of foodstuffs, which is made yearly more difficult by the greater inclination of the population of most countries to turn their attention to industrial occupations.

The New England States have been abandoned as agricultural areas for the Middle West; and in its turn the Middle West is rapidly becoming less profitable to the farmer than the more virgin fields of Western Canada. Mr. Mackay Edgar has sounded a warning note on the subject of the coming exhaustion of mineral wealth of the United States. The great buildings of America are the landmarks of a country which is enjoying an unprecedented prosperity due to the richness of its natural resources and its ability to supply less developed communities with the goods they require. But to a less marked extent than that here the jaws of the vise are slowly tending to close. On the one hand the riches in the form of natural resources are becoming less, and on the other the demand for manufactured goods is bound to be more and more restricted as time goes on by the development of other nations. We have seen the results of this process here since the middle decades of last century, when England was still the greatest manufacturing centre of the world.

We can almost foresee a time when in every country the greatest of all requirements will be the production of foodstuffs within its own area, coupled with manufacturing activity which will be confined to the production of goods for internal consumption. If this be so, the enormous growth of cities and the increased size of buildings may prove to be a temporary feature in the world's history, and instead of a continual increase of scale we may see a progressive diminution, not

indeed down to a mediaeval standard, but to a lesser one than enthusiasts of progress are inclined to think likely.

In any case, our buildings even in London can never reach American standards, for the United States is more nearly equivalent in its extent and resources to the whole of Europe than to any one European country. It is true that this country is the predominant partner in a great confederation of states together forming an empire, but it is equally true that the energies of the individual parts chiefly express themselves locally and that the British Empire for obvious reasons can never have the commercial unity of the United States.

Some nations in the past have, as in the case of Holland, chiefly paid their way as "middlemen" and centres of exchange, but in the future this is bound to be less and less the case.

The close attention and admiration with which American architecture is regarded here has, we think, a tendency to make architects prone to believe that American models can well be imitated by us, which we believe to be a delusion and sometimes a snare. But even in America development may within the lifetime of many, cease to be carried on at a geometrical ratio and fall back to a gradual arithmetical one, and it is more than possible when this happens that the newer buildings of America will be smaller rather than larger than their prototypes, and that what we now see going on may be the last laps of the ascent rather than the prelude for greater ones. France and Belgium, where every acre is cultivated, rather than other countries with their deserted country sides, may be the real prototypes of the conditions to come in the future.

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## Brick Makers Foresee Continued Activity

A RECENT check on future orders for common brick in about twenty of the largest construction centers indicate that 1926 will not fall behind the past year in volume of construction. Commenting on this the monthly digest issued by the Common Brick Manufacturers' Association of America says:

"In only a few cities is there an indication of over-building, and that is confined to limited classifications. Small houses are in strong demand everywhere. There is a big program of school and institutional building for the current year. The brick men are looking for their gains, in the future, in residential construction, where there is a decided tendency toward brick. The misconception which so long prevailed that the house of brick costs more than less enduring types is gradually being dispelled."

\* \* \* \*

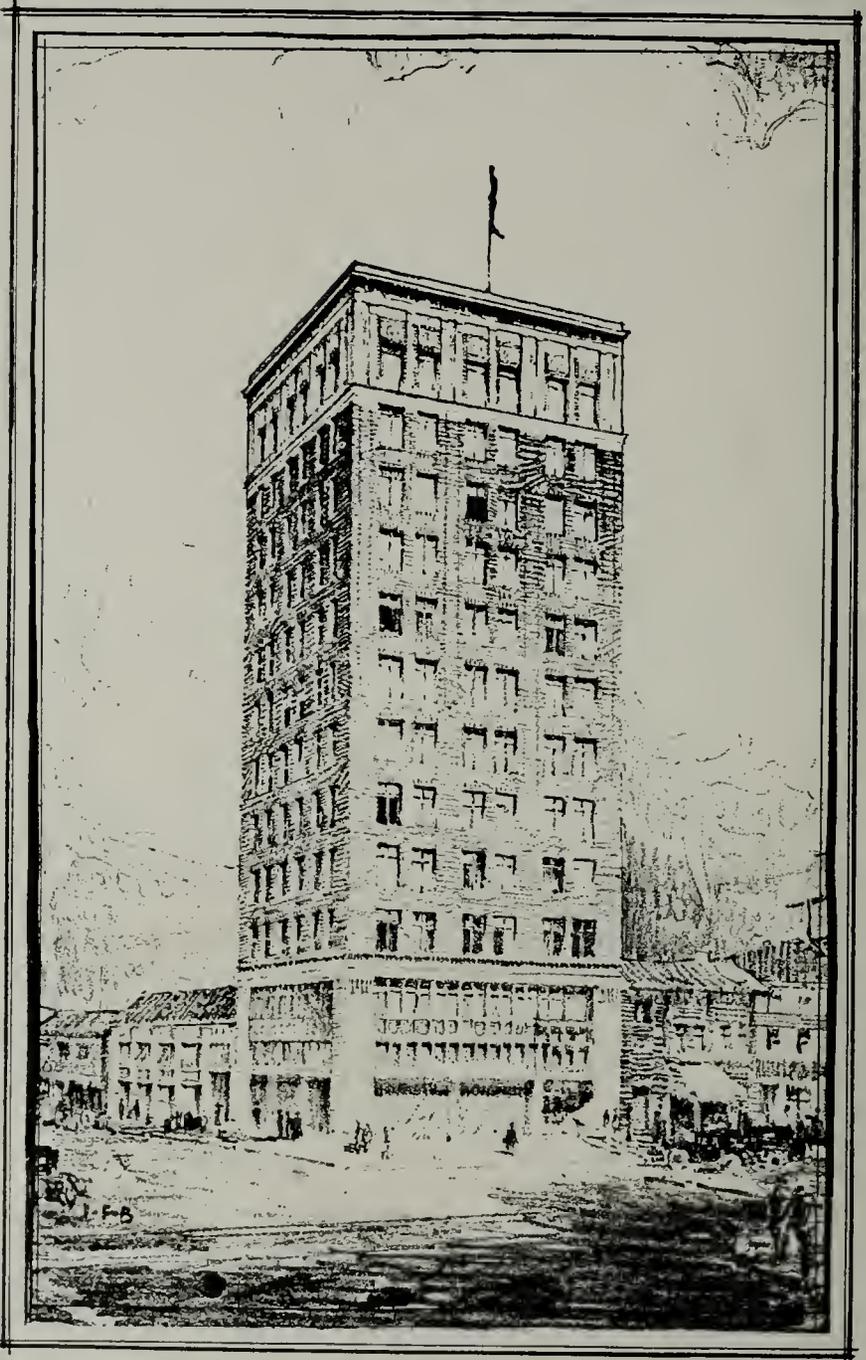
## Building Material Prices Remain Stable

There are no indications of any pronounced changes in the prices of building materials this spring. The demand, with the exception of seasonable fluctuations, has been uniform. There is prospect of a large volume of house building in the Northwest. Indications point to continued activity throughout 1926 in the building industry.

\* \* \* \*

## Cheapest Sometimes Most Costly

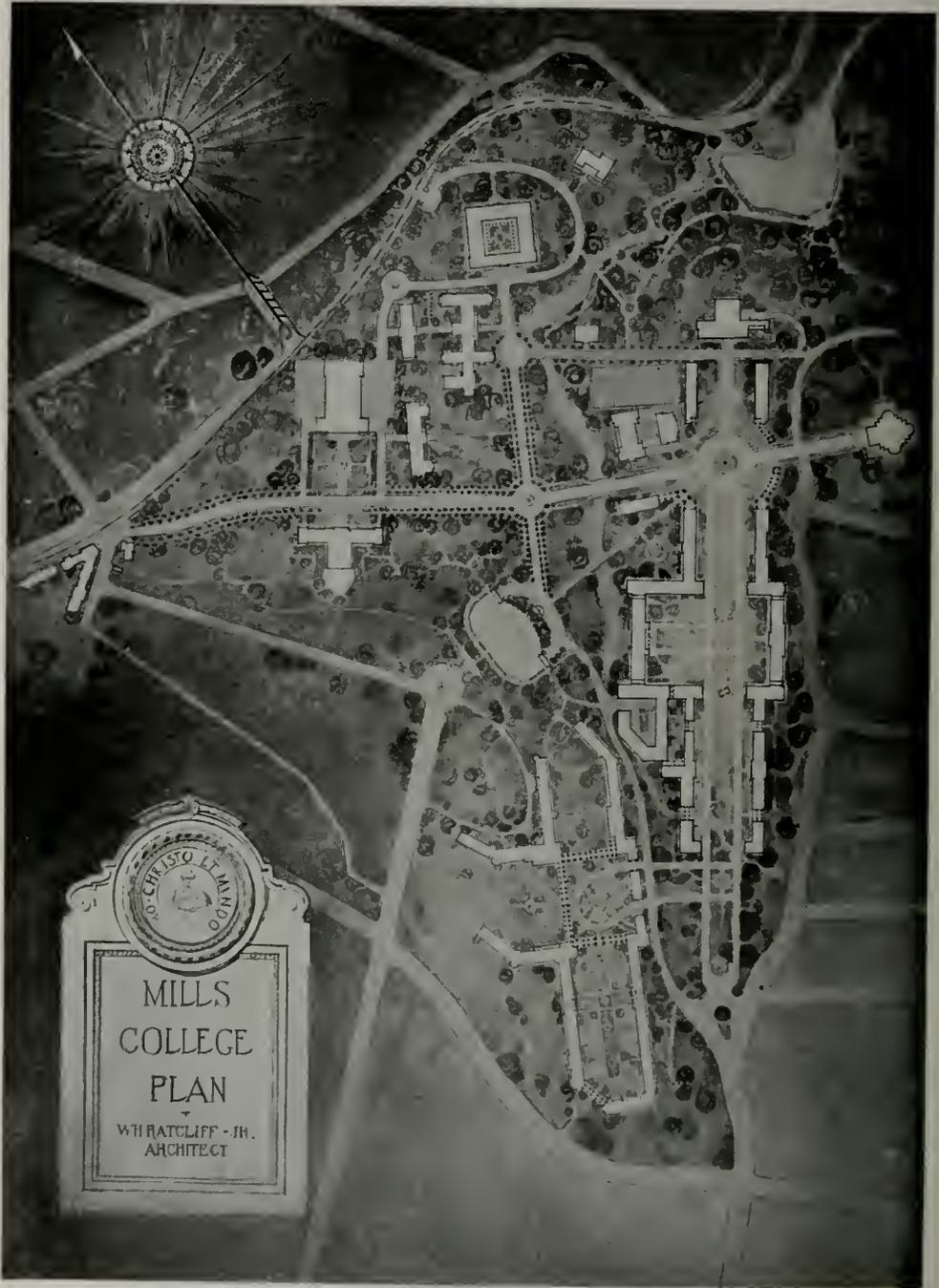
The lowest bidder may be the most expensive one.



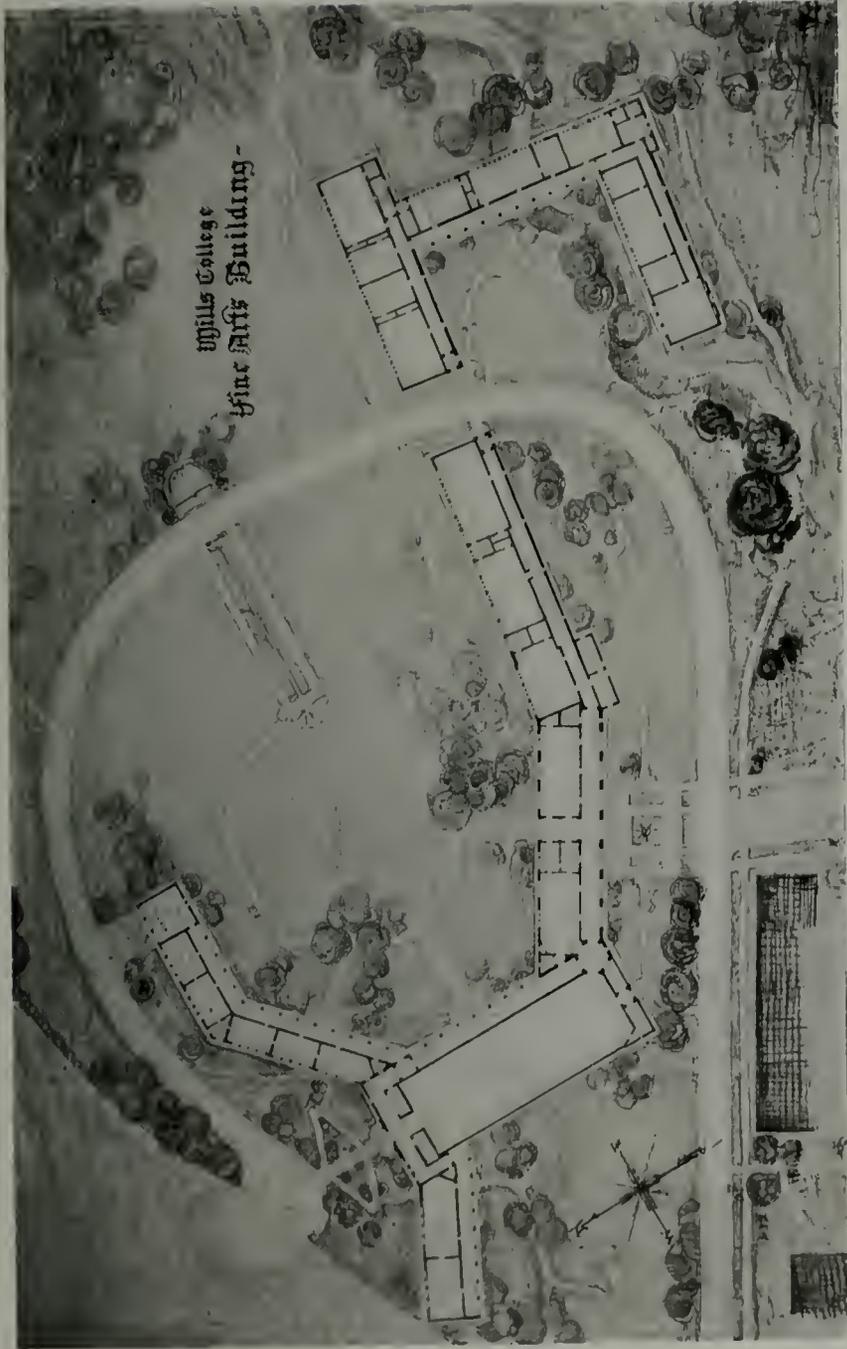
OFFICE BUILDING FOR MERCANTILE TRUST COMPANY, BERKELEY  
W. H. RATCLIFF, JR., ARCHITECT

PORTFOLIO  
*of* RECENT WORK *of*  
W. H. RATCLIFF, Jr.  
*Architect*  
BERKELEY, CALIFORNIA





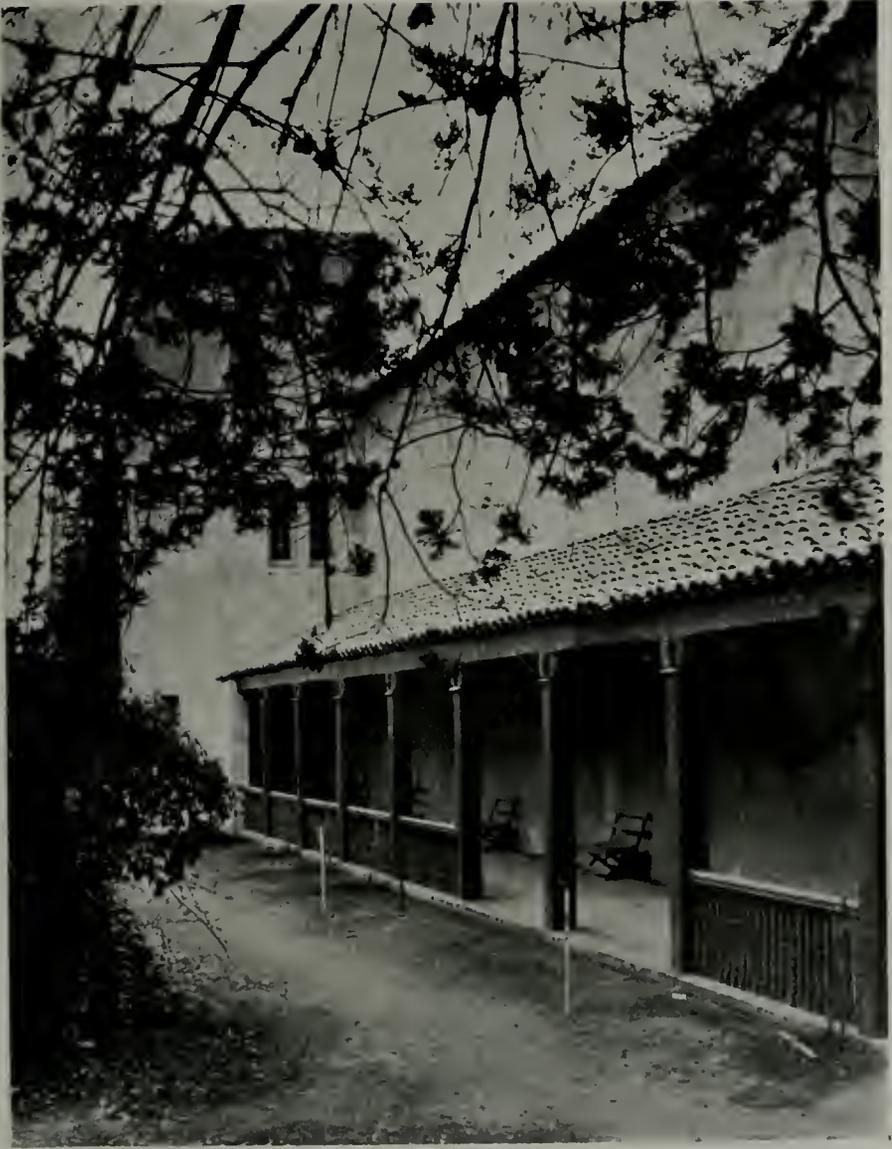
PLAN, MILLS COLLEGE CAMPUS, OAKLAND  
W. H. RATCLIFF, JR., ARCHITECT



PLAN, FINE ARTS BUILDING, MILLS COLLEGE  
W. H. RATCLIFF, JR., ARCHITECT



ENTRANCE TO FINE ARTS BUILDING, MILLS COLLEGE  
W. H. RATCLIFF, JR.,  
ARCHITECT



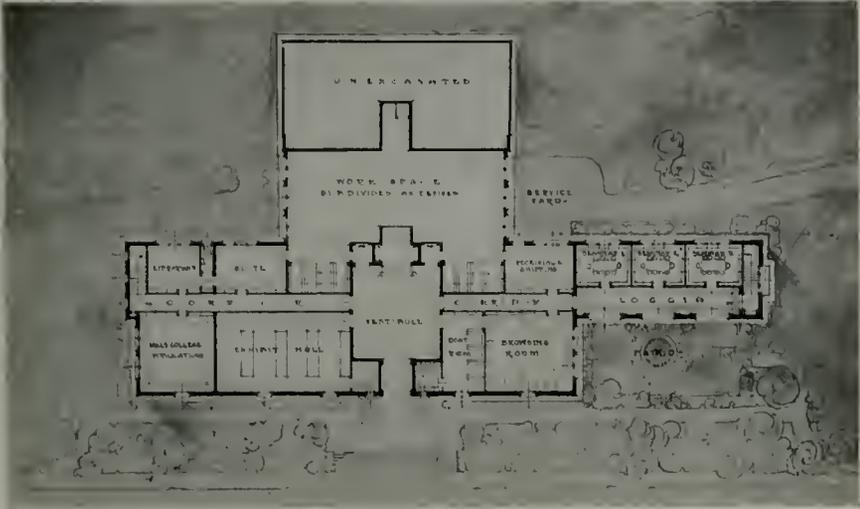
FINE ARTS BUILDING. MILLS COLLEGE  
W. H. RATCLIFF, JR., ARCHITECT



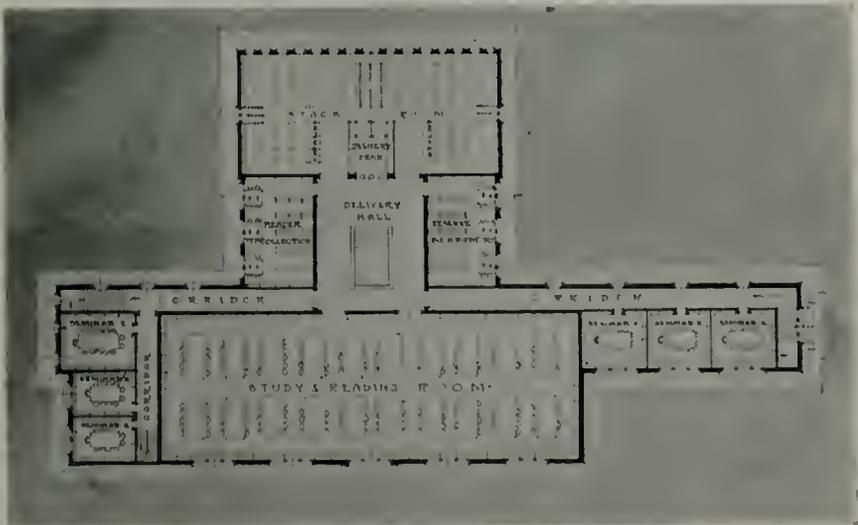
TOWER, FINE ARTS BUILDING, MILLS COLLEGE  
W. H. Ratcliff, Jr., Architect



AUDITORIUM, MILLS COLLEGE  
W. H. Ratcliff, Jr., Architect



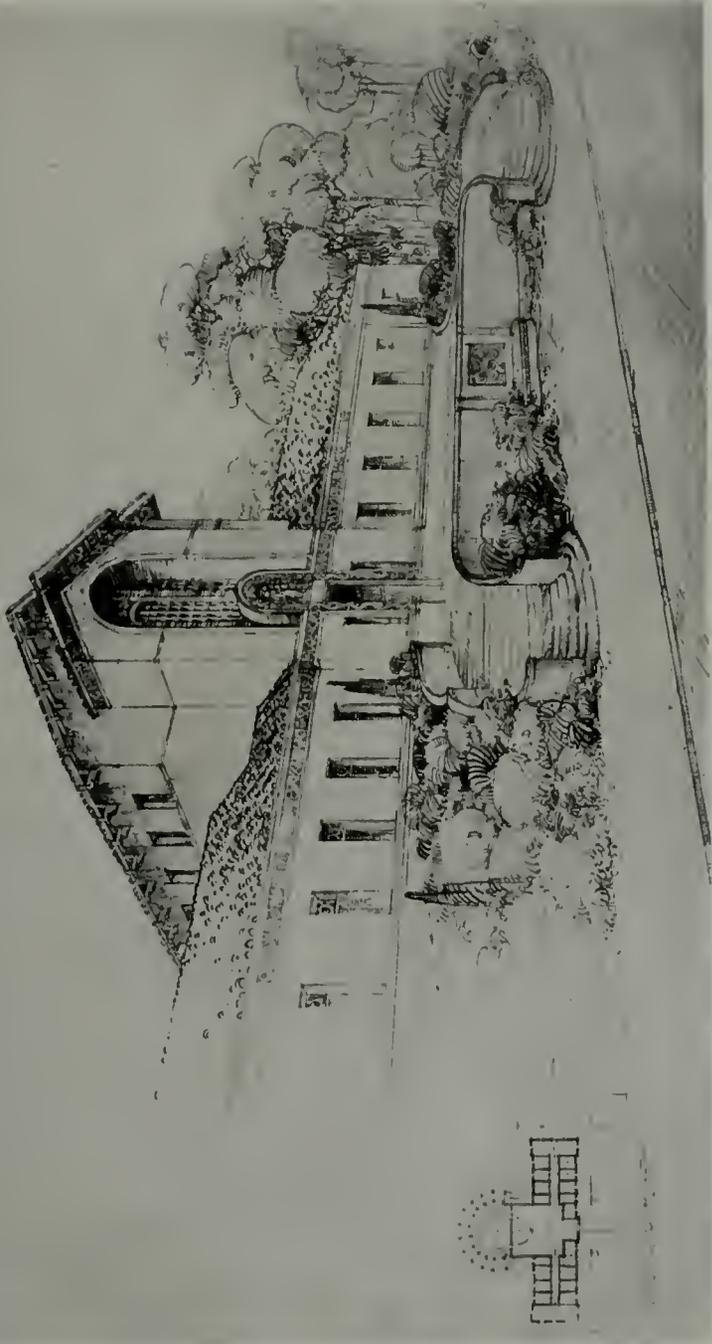
GROUND PLAN, LIBRARY, MILLS COLLEGE  
W. H. Ratcliff, Jr., Architect



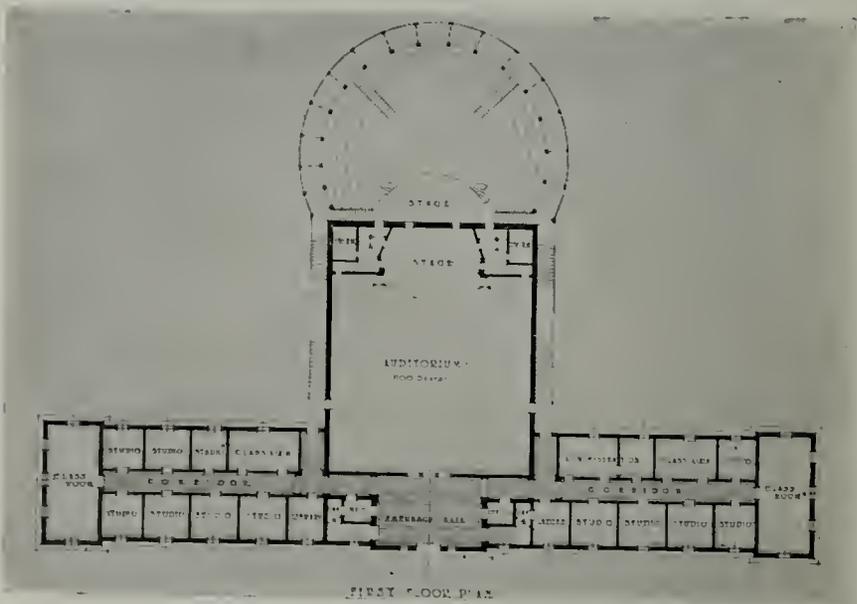
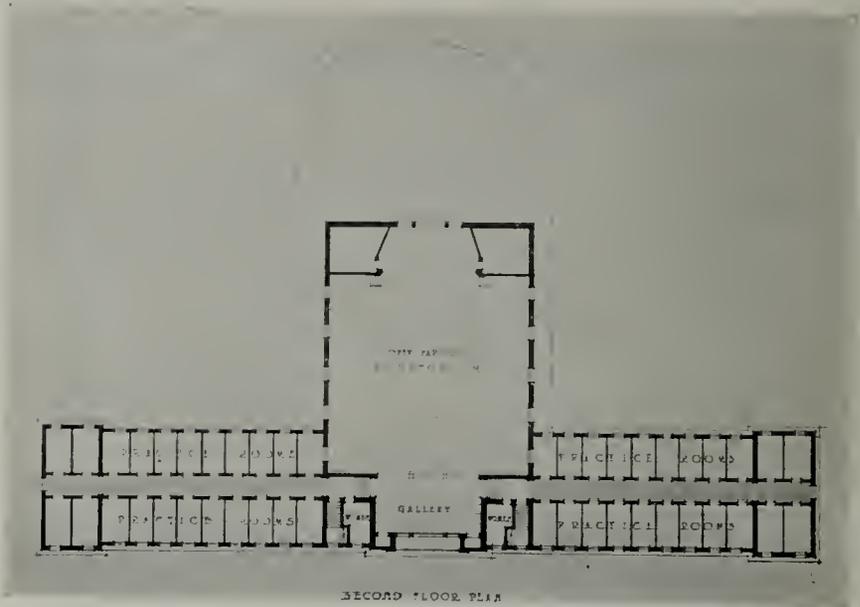
SECOND FLOOR PLAN, LIBRARY, MILLS COLLEGE  
W. H. Ratcliff, Jr., Architect



LIBRARY BUILDING, MILLS COLLEGE  
W. H. RATCLIFF, JR., ARCHITECT



MUSIC BUILDING, MILLS COLLEGE  
W. H. RATCLIFF, JR., ARCHITECT



FIRST AND SECOND FLOOR PLANS, MUSIC BUILDING, MILLS COLLEGE

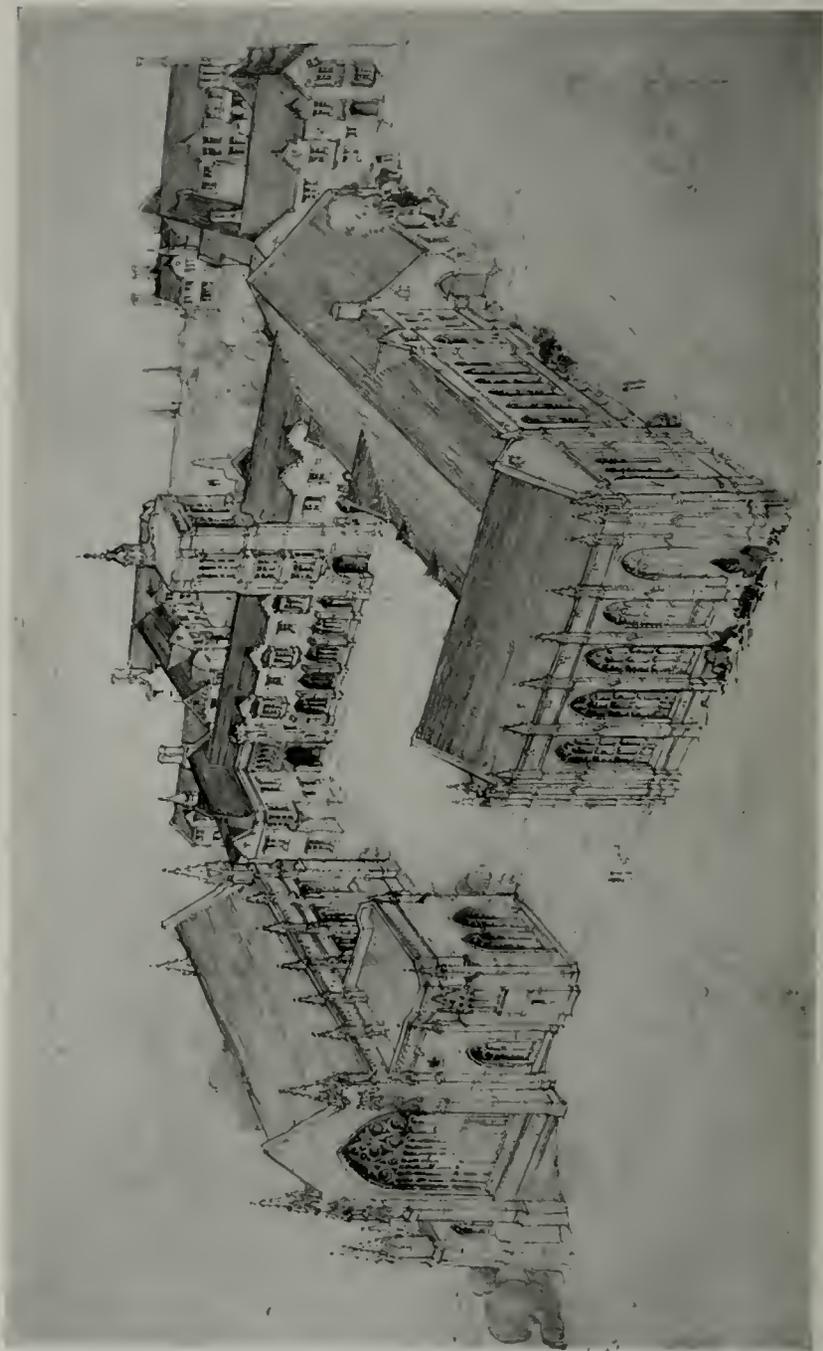
W. H. Ratcliff, Jr., Architect



ARMSTRONG SCHOOLS OF BUSINESS, BERKELEY  
W. H. Rateliff, Jr., Architect



CAMBRIDGE APARTMENTS, BERKELEY  
W. H. Rateliff, Jr., Architect



PACIFIC SCHOOL OF RELIGION, BERKELEY  
W. H. RATCLIFF, JR., ARCHITECT



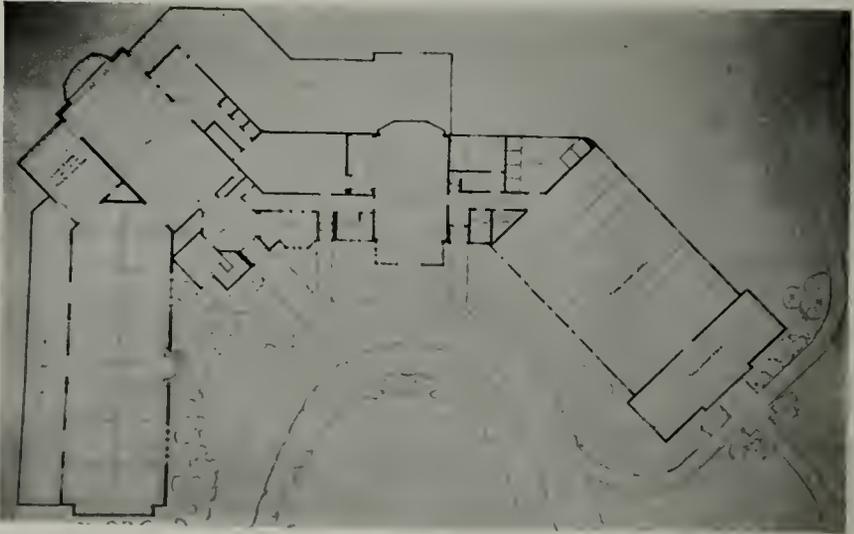
DORMITORY, PACIFIC SCHOOL OF RELIGION  
W. H. Ratcliff, Jr., Architect



PACIFIC SCHOOL OF RELIGION, BERKELEY  
W. H. Ratcliff, Jr., Architect



BERKELEY COUNTRY CLUB, BERKELEY  
W. H. Ratcliff, Jr., Architect



PLAN, BERKELEY COUNTRY CLUB, BERKELEY  
W. H. Ratcliff, Jr., Architect



INTERIOR, BERKELEY COUNTRY CLUB, BERKELEY  
W. H. Ratcliff, Jr., Architect



LINCOLN AND EDISON SCHOOLS, BERKELEY  
W. H. Ratcliff, Jr., Architect

## The San Francisco Bay Bridge Project

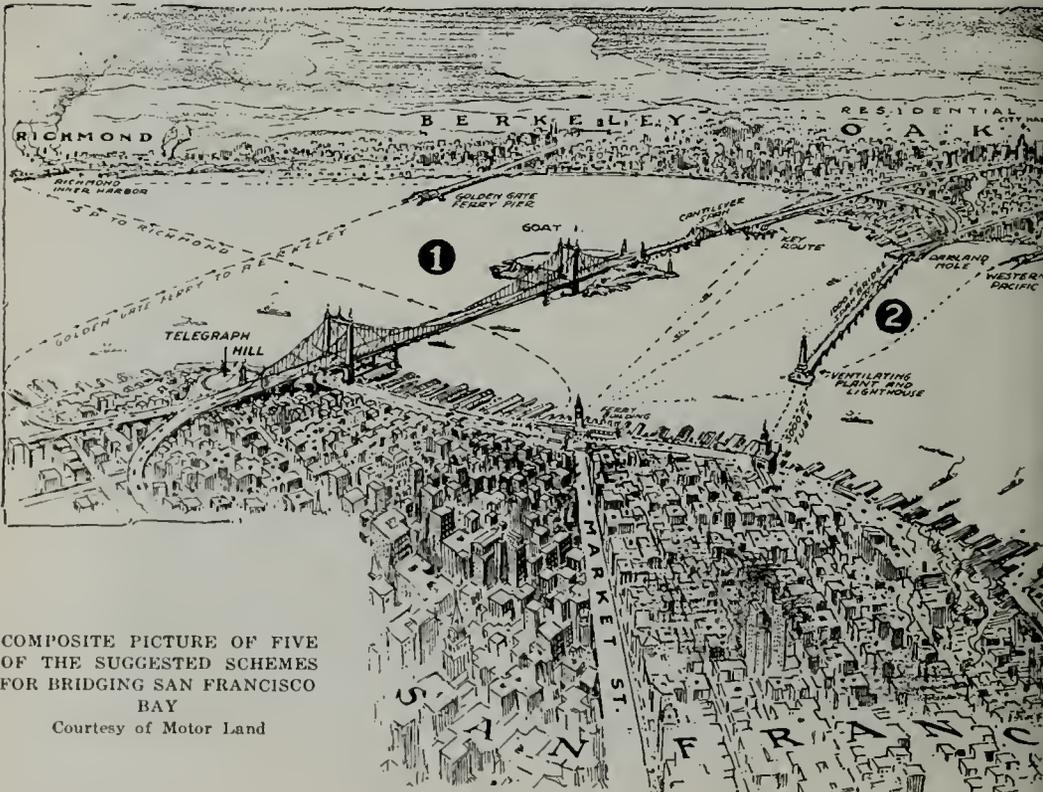
“BRIDGE THE BAY” activities of the past year culminated in December in a series of hearings in San Francisco at which were represented officials and civic leaders of San Francisco and several of the East Bay cities, engineers of the War and Navy departments, and engineers urging the adoption of eighteen separate projects for a trans-bay bridge.

The hearings ended in an apparent deadlock. Army engineers, who had ruled in 1921 that no bridge could be built north of Hunter's Point but that they would not oppose a tube if it were at least 3000 feet long and at least fifty feet below the level of low tide, relaxed their former rigid stand to the extent that they were agreeable to a re-hearing before Major John W. N. Schultz, war department engineer in charge of the district.

The navy engineers have announced opposition to any bridge plan except that over Goat Island, which army engineers oppose.

And there the deadlock stands.

The army's position is that any bridge north of Hunter's Point including the Goat Island project, will seriously hamper defense plans for San Francisco and the bay region. The navy's position is that the piers and approaches for any of the bridges except that proposed over Goat Island will interfere with tidal flow to such an extent that alluvial deposits will occur in the bay, present a new problem in navigation and hamper the use of San Francisco bay for naval operations. The navy



COMPOSITE PICTURE OF FIVE  
OF THE SUGGESTED SCHEMES  
FOR BRIDGING SAN FRANCISCO  
BAY

Courtesy of Motor Land



most comprehensive survey will be called for by government engineers who will go into the matters of tidal flow, anchorages, traffic requirements, defenses, etc.

Speaking of the Telegraph Hill site for which the navy had shown a preference, J. V. Davies, consulting engineer, New York City, said at the hearing that the foundations would be at a depth exceeding the limit for air pressure, that a bridge-head on top of Telegraph Hill was unsuitable and that the length of the approaches required would be prohibitive. He said further that to withhold approval of some feasible crossing on San Francisco bay would be "a stifling of the port of San Francisco in its foreign and domestic commerce."

Tunnels, on which there has been less restriction as to location, could be built on short, direct routes, but the cost would be higher, about twice the cost of the cheapest bridge project. Proponents of the bridge project in question declared themselves able to finance their \$20,000,000 structure and proceed with construction, showing a feasible financial plan with tolls from only the present auto ferry traffic. In contrast to

### THIRTEEN SAN FRANCISCO BAY BRIDGE AND TUNNEL PROJ

Proponents	Engineers	Type of Structure Proposed	Location	Channel Crossing (135 Ft. Above Water Level Unless Otherwise Noted)
"Victor Tubes" James M. Oliver	Davies and Modjeski	Combination bridge and tube (one R. R.; two vehicular tubes)	Foot of Folsom St., San Francisco to S. P. Oakland Mole	3,000-ft. channel 50 ft. clear depth
Bay Cities Bridge Co. (A. J. Hanford)	John G. Little	High level steel trusses	Foot of 16th St., S. F., to foot of Pacific Ave., Alameda	One 1,000-ft. span Two 590-ft. spans
A. H. Bergstrom	John B. Leonard	High level steel trusses, double-deck	Hunter's Point to Webster St., Alameda	Six 510-ft. spans
"Sunshine Transbay Boulevard Bridge" J. E. Birmingham	Joseph B. Strauss	Steel trusses, Y on East end serves both Oakland and Alameda	7th and Mission Sts., via elevated to Hunter's Point, thence to Alameda near estuary	1,050-ft. cantilever span near S. F., side; 900-ft. cantilever over estuary
Allan C. Rush	Allan C. Rush	"Interlocking cable suspension bridge"	Foot of Mission St., to Key Route Mole via Goat Island	2,400-ft. spans 200 ft. above water level
.....	R. S. Chew	Three-truss double-deck cantilever	Telegraph Hill to Goat Island, thence parallel to Key Mole	One 1,850-ft. span 180 ft. above water, similar to Quebec Bridge
.....	Chas. E. Fowler	Double-deck cantilever (suspension alternative)	Telegraph Hill to Goat Island, thence parallel to Key Mole	Three 2,000-ft. cantilever spans, piers 250 ft. wide, 235-ft. clearance
.....	Ed. A. Bertram	High level steel trusses	Foot of Folsom St., San Francisco, to S. P. Oakland Mole	Six 1,500-ft. spans Two 1,000-ft. spans
O. A. Ellis	O. A. Ellis	Two tunnels	4th and Harrison Sts., S. F., to 7th and Cedar Sts., Oakland	200 ft. or 300 ft. below water level
Construction Co. of North America	A. J. Cleary & J. J. Walsh	High level steel trusses, double-deck	Rincon Hill, S. F., to S. P. Oakland Mole	1,050-ft. cantilever span. Three 600-ft. spans; one 550-ft. span
New York and San Francisco Development Co.	W. C. Earle	High level steel spans	Hunter's Point to Bay Farm Is., Alameda	Four 750-ft. clear cantilever spans
"Air Line High Bridge"	Roy C. Hackley	High level cantilever	Pier 26 on S. F. side of S. P. Oakland Mole	Two 1,800-ft. cantilever spans; 1,000-ft. span over estuary
.....	Couchet and Rosenwald	Tunnels	Foot of Harrison St., S. F., to S. P. Oakland Mole	50-ft. clear depth for a length of 1 1/2 miles

the low cost of this bridge, the Telegraph Hill-Goat Island structure with approaches and terminals, was estimated to cost \$72,000,000.

## Passing of Architect Sylvain Schnaittacher

San Francisco architects were shocked and grieved February 12th by the sudden death of Sylvain Schnaittacher, regional director for the Western States of the American Institute of Architects. Mr. Schnaittacher, in the latter capacity, had been one of the active entertainers of the Institute officers on the occasion of their visit to the Pacific Coast only a few weeks ago. He accompanied the delegates throughout their stay here. His death followed an operation on the brain at the University of California hospital. His most recent work in architecture was the design of the new Jewish temple Emanu-El in association with Architects Bakewell & Brown.

Before becoming regional director of the American Institute of Architects, Mr. Schnaittacher served as secretary and later as president of the San Francisco chapter. During and since the administration of Governor Gillett, Mr. Schnaittacher served as a member of the State Board of Architects of California, Northern California, most of the time as its secretary. Mr. Schnaittacher was 51 years of age.

### ECTS PRESENTED AT RECENT WAR DEPARTMENT HEARINGS

Other Main Spans	Roadway Width Number of Tracks Total Length of Crossing	Estimated Cost (Dollars)	Remarks
High bridge, including one 1,000-ft. span	40-ft. roadway; to El. Ry. tracks; 1,800 ft. shore to shore	60,000,000 to 70,000,000	15 min. from Market St. to 7th and Broadway, Oakland, 3 3/4 % grades
Forty-eight 250-ft. steel trusses	38-ft. roadway; B. & C. include tracks 27,750 ft.	A—20,000,000 highway B—30,000,000 highway and El. Ry. C—50,000,000 highway, El. Ry. and Steam R. R.	Have plans for combined bridge and tube if high bridge not approved
200-ft. clear spans, towers 50 ft. wide	60-ft. roadway; 4 tracks; Total length, 6 mi.	35,000,000	R. R. figured for Cooper's E-70
20,400 ft. in deck spans	54-ft. roadway; 3 rapid transit tracks; Total length, 12 mi.	65,000,000	20 minutes for the trip
.....	Width, 114 ft.; El. and Steam R. R. tracks		
Two 1,700-ft.; one 1,380-ft.; one 635-ft.; eight 200-ft.	Two 40-ft. roadways Six R. R. tracks	72,000,000, including terminals and approaches	Cost estimate includes elevated tracks on Kearny St. and Grant Ave.
Two 1,350-ft. approaches	Six traffic lanes Four R. R. tracks	Suspension, 40,000,000 Cantilever, 50 to 75,000,000	Suspension alternative would have three spans, two 2,425 ft. and one 4,850 ft.
Fourteen 715-ft. spans	Six traffic lanes; 2 El. Ry., 2 Steam R. R. tracks. Length 21,000 ft.		
(Depth to be according to foundation conditions)	Two lanes of traffic; two R. R. tracks. Tunnel length, 5 1/2 mi.	12,000,000	4 1/2 % grades
Chiefly 200-ft. clear spans with 50-ft. towers	60-ft. roadway; 4 tracks		
Forty-three 250-ft spans	Length, 6 1/2 miles	40,000,000	
Chiefly 400 to 700-ft. spans	50-ft. roadway; two R. R. tracks (Provision for two more tracks)		
	26-ft. roadway Two or more 18-ft. R. R. tubes Total length 25,000 ft.	25,000,000 to 35,000,000	0.4 1/2 % grade on West end 0.9 % grade on East end

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### A QUESTION OF EDUCATION

Is it the public or the architect that needs education?

Doubtless this question sounds almost profane to those who are constantly recommending as a cure for architectural woes the 'education of the public.' I have three men in mind whose success justifies the question. These men are Charles Platt, George Washington Smith, and Addison Mizner. Not one of them was an architect in the beginning, yet all of them have produced beautiful buildings and have exercised an influence in architecture that is far-reaching and of great benefit. What architect has not a copy of Platt's book in his library? Smith's work is spreading over California like poppies from a single flower; and Florida is rich in the work of Mizner. Why have these men suc-

ceeded without architectural training when the school men have failed?

Platt started out to be a landscape gardener. His studies led him to Italy where he found the house an essential part of the garden. Terraces, walls, balustrades, fountains, lawns, trees, flowers, vases and houses were the units to work with. When he visualized a garden he saw a house. They were one, the garden a part of the house, the house a part of the garden. Then he began to study the details of houses. He discerned the same subtle picturesque beauty in the houses that he had found in the gardens. He started building gardens and houses in this country. He did not have to rub the noses of the public into his work and say, "This is beautiful, now like it!" Commissions came tumbling in until his name is as well known as that of McKim, Meade and White.

George Washington Smith, a painter, built himself a house in Santa Barbara. The intuition of the artist painted in his imagination a picture to harmonize with his surroundings. A picture of sunny days casting eucalyptus shadows on winding roads, of purple mountain backgrounds, of blue skies and bluer ocean, of cactus plants and hedges; and a house of romantic history, with patios, tiles, large wall surfaces, blue doors, grilles, balconies. He built this house, this garden, and the public bought it from under his very feet and he had to build another home for himself.

Likewise, Addison Mizner of San Francisco. Although a dilettante artist he had a true sense for color and form. He used to help the ladies design their dresses. He took these qualities of the artist to Florida, and there, with a true sense of the beautiful and a vivid imagination, he saw a completed picture of house, garden and nature. He saw the picture so clear-

ly that it took on substance and became a home. Other commissions quickly followed until to-day, his middle name should be "Florida."

\* \* \*

Now in face of these examples what can we of the profession of architecture say? In accenting the word "profession" I am reminded of a remark of the late Willis Polk. A number of us were gathered around a table in the Palace Hotel grille one noon. Polk came in and said, "Is this the Architects' luncheon? Someone said "Yes." He replied, "Well, where are the architects?"

We could use the usual alibi that 'we are so busy seeing that the plumbing is all right, that nothing has been left out of the specifications, that the practice of architecture is such a complicated thing that beauty has had to suffer,' or we might blame the female client with her God-given gift of interior decorating induced by her vanity and encouraged by all the correspondence schools on "How to be an interior decorator without half trying," supplemented by the Ladies Home Journal, House and Garden, House Beautiful, etc., etc., etc., etc.

The above excuses are justifications for homicide, but they do not justify the lack of art in our work. Our real trouble is that we have no genuine art training. What of art is there in "The Orders?" What, in any of the things we learn in Architectural schools? We are not taught to analyze a beautiful house, a garden, to see what makes it beautiful. We think it is a trick, the use of a bit of tile, a grille, a hedge, a fireplace. It is not. To acquire this sense of beauty we must study old beautiful things until they become a part of our art consciousness. We must note the plain wall surfaces to accentuate the decorative bits. We must study the proportions, above all, we must study color, memorize

color, and when our intuition is thus properly trained, our imagination wet with the fresh colors of our inspiration, we can get a design on paper that when built will also be a work of art—a work of art that the public will appreciate.

CHARLES PETER WEEKS.

#### *BUILDING COSTS MAY DROP*

Building costs will be more inclined to seek lower levels than to mount during 1926, according to indications drawn from statistics just compiled by the Associated General Contractors of America. Whether the downward tendency of these costs, manifested perceptibly in 1925, will continue depends upon wage scales that will prevail during the coming year, the experts declare.

It is pointed out that costs dropped during 1925 to the lowest mark they had held in three years, and this despite the fact that the year saw all existing records for volume of construction broken. During this period, the average of wages paid in the construction industry showed practically no change.

A study of the newly-compiled statistics shows the average of prices paid by general contractors for the basic building materials was four per cent lower in December than during the opening months of 1925.

With the housing situation fairly well met in many sections of the country, expectation that a decline in speculative building operations will put in its appearance during 1926 is being expressed. This anticipation, coupled with the growing conservative attitude of industry in general, leads to the conclusion that 1925 will stand as the peak year.

Success in the campaign for increase of construction operations during the winter months is shown by the December figures which topped all marks for volume of

construction set by that month in previous years.

The volume of construction in 1925 was approximately 8 per cent greater than that in 1924, the next highest mark in the history of the country.

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*GIVE US BETTER INSPECTION*

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That there must be something radically wrong with the operation and enforcement of our municipal building laws in California, or else they are in themselves inadequate to insure safety first, is the conclusion reached by engineers who have investigated recent accidents in San Francisco and Pasadena; also the earthquake in Santa Barbara. Human lives were sacrificed in all three instances and the outcome of investigations convinces one that had our building inspectors exercised greater care in checking up on the operations of those engaged in the construction work, there would have been no failures.

Referring to the steps that are being taken to revise the building laws in San Francisco so that there may be no repetition of the Santa Barbara disaster, the Industrial Association reports a communication has been forwarded to the Board of Public Works by a special committee of investigation, consisting of delegates from the American Society of Civil Engineers, the San Francisco Chapter of the American Institute of Architects, the American Association of Engineers, The Builders' Exchange and the Industrial Association.

The committee first recommends that the building code of San Francisco be revised in order to incorporate therein the necessary provisions in regard to earthquake stresses and also to provide for a general codification of the present building laws.

In regard to the checking of plans, the committee recommends that a chief engineer and a suffic-

ient number of engineering assistants be appointed to insure that proper checking and examination of the structural elements of all plans submitted to the Board of Public Works may be had before any building permit is issued. In addition, the committee suggests that these engineers should be employed in connection with such field inspection of structural elements as may from time to time be necessary. Because of the very large volume of construction in San Francisco involving structural elements, the committee recommends that these engineers should be employed on a full time basis.

Extensive consideration was given to the question of the testing of materials, since investigation discloses the fact that some materials are being used in San Francisco at the present time which do not conform to approved engineering practice. The committee therefore recommended that inspection be required of all rock, sand, and gravel delivered in the city and that none of these materials be incorporated in any job without a certificate from the Board of Public Works stating that the material is satisfactory.

The committee also recommends that test sheets be required for cement, structural steel, reinforcing steel, masonry, brick, and in fact all recognized and generally used structural materials. Such test sheets indicating that the material meets with approved standards would be necessary, if the committee's procedure is adopted, before any of these materials could be incorporated in a building.

One of the most important recommendations of the committee concerns itself with the suggestion that no structural elements whatever shall be covered up until a certificate of inspection has been posted on the job.

The committee further recommends the immediate employment of not less than six general inspect-

ors to be added to the present force of the Board of Public Works.

In order to secure the most practical application of the building laws and to be in a position continually to advise the Board of Public Works on changes in building practice, an advisory board is also suggested, to consist of an architect, a structural engineer and a contractor, each to be recommended by the recognized societies of these professions, together with the chief inspector and chief engineer of the Bureau of Building Inspection.

**The Man Market as Presented to the Employer Who Demands Trained Employees**

**S**ERVING as a medium for the employer who demands employees with trained minds the Alumni Bureau of Occupations at the University of California placed 224 graduates and former students of the University during the year 1925. The Bureau is conducted by the Alumni Association and there is no charge for placement made to members of that body. Graduates of other universities who desire to register are charged a placement fee of ten per cent of the first month's salary. Because the Bureau is not maintained as a commercial enterprise, it is possible to pay more attention to the securing of the right man for the right place. Graduates of all departments are registered and available for interview and consideration.

At the present time there are registered among others: a chemist with three years' experience in the state food and drug laboratory, a College of Commerce graduate with nine years' experience in the import and export business and several electrical and mechanical engineers. Among the women are secretaries, laboratory technicians and advertising copy writers.

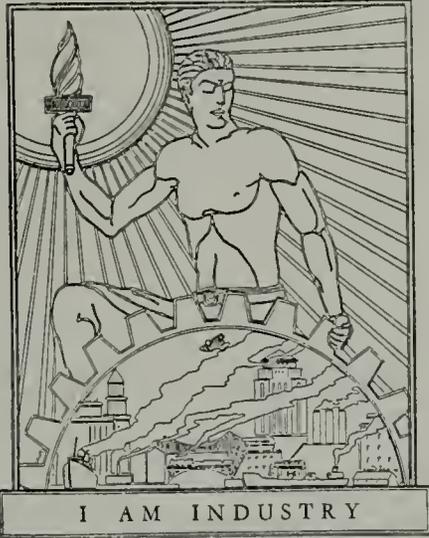
The Bureau also handles the part-time employment of students. It is estimated that between 75 and 85 per cent of the students at the University of California are partially or wholly self-supporting. Employment for these men and women varies from manual labor and housework to commercial and technical work, as, accounting, stenography, linotype operating, pharmacy and drafting. Those who are seeking the office or industrial positions arrange their schedules to leave half of each day free.

In all industrial organizations the purchasing agent knows the market. The success of his work depends upon the value of the raw materials or the equipment he buys for his organization. A knowledge of source of supply is neces-

sary for a comparison of goods. On the other hand, not every employment manager or office manager exercises the same care in securing men and women for positions within the organization. Too often the new employees are picked up, here and there; if they fit their "job," so much the better.

For every job or position there are definite qualifications just as there are specifications for every bid submitted by the purchasing agent. There should be men and women fulfilling those requirements as there are markets for all goods and the only question is to secure them as soon as possible.

Employers who need careful and intelligent assistance in their employment problems may secure this co-operation by writing or telephoning to the Bureau.



*THIS prose poem was written by Mr. Bennett Chapple, director of publicity for the American Rolling Mill Company, and president of the National Advertisers' Association. It appeared in the January issue of Class, and was read at the largest meeting devoted to industrial advertising ever held in Chicago:*

I am Industry.  
 My eyes light the way of civilization.  
 My footsteps are the march of progress.  
 My arms encircle the universe.  
 I sweep the dizzy heights with aeroplanes.  
 I dig the earth for its treasures.  
 My song is the hum of whirring wheels.  
 My laugh is in the happy hearts of men who toil and sweat, unafraid.

I am Industry,  
 Creator of a new day and age.  
 I reach on toward new glories, new understandings, and new achievements.  
 So long as men have faith and courage and vision, I shall live.  
 Without these, I am but the husk of circumstance.

# With the Architects

Building Reports and Personal Mention

## Architects for Fresno Schools

The following architects have been selected to prepare plans for new school buildings and additions under the \$1,-800,000 bond issue, for the City of Fresno:

R. C. Felchin Company, Edison technical school, \$200,000; Ernest J. Kump & Co., Winchell school, \$120,000; Swartz & Ryland, additions to the Heaton school, \$57,000; W. D. Coates, Jr., gymnasium for the high school, \$100,000; Chas. E. Butner, addition to the John Muir school, \$30,000; R. D. Hotchkin, addition to the Chester Rowell school, \$30,000; Trewhitt-Shields & Traver, addition to the Technical high school, \$50,000.

## Bank Alterations

Architect Smith O'Brien, 742 Market street, San Francisco, has prepared plans for alterations to the interior of the Humboldt Bank. The trust department is to be enlarged and provision is to be made for a library and lunch room for the employees.

Mr. O'Brien has taken bids for a men's shelter building to be erected on Natoma street, San Francisco, for the Archbishop of San Francisco Diocese. This structure is to be erected with funds donated by a philanthropic San Francisco business man.

## Lithograph Plant

Plans are being prepared in the office of Messrs. Couchot & Rosewald, 60 Sansome street, San Francisco, for a two-story and basement reinforced concrete manufacturing plant for the Traung Label & Lithograph Company, 962 Battery street, San Francisco. The building will cover ground area, 275x137x61 feet, and will be equipped with three freight elevators, automatic fire sprinklers and steel rolling doors.

## Berkeley Theatre

Architect John A. Marshall, Jr., 5658 College avenue, Berkeley, is preparing plans for a Class A office and theatre building to be erected at Claremont and College avenues, Berkeley, for the Beach-Krahn Company at an estimated cost of \$200,000. There will be six stores, ten offices and an auditorium to set 1800 persons.

## Richmond Church

Architect James L. McCreery of Berkeley, has been commissioned to prepare plans for a \$20,000 church at Richmond for the Grace English Lutheran Society.

## Architect Baumann Busy

New work in the office of Architect H. C. Baumann, 251 Kearny street, San Francisco, includes a two-story Class B reinforced concrete garage to be built in Sacramento for Mr. H. Berry; a six-story Class C store and apartment building at Filbert street and Van Ness avenue, San Francisco, for the Marion Realty Company; a three-story brick veneer apartment house on Chestnut street, San Francisco, for Mr. O. A. Nelson; a three-story frame and stucco apartment house on Alhambra street, San Francisco, for Mr. Thomas Quistad and a three-story frame and brick apartment house and stores on the southeast corner of 24th and Capp streets, San Francisco, for Messrs. Sheehan & Woolfrey.

## Architect Wins Prizes

Mr. Angus McL. McSweeney, 3245 Octavia street, San Francisco, has been awarded prizes totaling \$1,550 in a national competition for the design of moderate cost, fireproof, concrete and masonry houses and bungalows, according to word received from New York.

McSweeney's entry received the highest standing in the house and bungalow classes combined, carrying a \$1,000 award; first prize in the two-story house class, with a \$500 award; and an honorary mention, with a \$50 award; in the bungalow division.

Twenty-eight awards were made in all among competing architects from all parts of the United States.

## Industrial Plant

Architect Walter C. Falch of San Francisco, has completed plans for a one-story and mezzanine reinforced concrete industrial plant on Folsom street, near Fourth, San Francisco, for Mr. George McMillan. Mr. Falch has also made plans for a one-story reinforced concrete store building at Fell and Gough streets, San Francisco, for Mr. J. E. Eberlee.

## No Place to Build

The veterans' memorial building for Oakland is like the dove that went out from Noah's Ark and found no place to light, according to Mr. Henry H. Meyers, Alameda county architect. Meyers reported to the meeting of the county Board of Supervisors in Oakland that he was perfectly willing to draw plans for the structure, but he would have to know where the site was to be before he could start.

**Architects' Relation to the Public**

Referring to the relation of the architect to the public, Mr. David C. Allison, retiring president of Southern California Chapter, A. I. A., said in his annual address:

"At no time in our history has the challenge to the architect been so great as it is here at present, and never has it been more important for us, as practitioners, to comprehend fully our responsibility to the public, and to realize that our obligation involves the efficient handling of large sums of money, as well as the creation of creditable-looking buildings. It is important to our profession that each one of us be competent to prepare the necessary documents and superintend the buildings entrusted to us, for to the group of people constituting the clientele of each we stand as the profession. The esteem in which the profession of architecture is held by the public at large is built up from the consensus of experience of our clients with us as individuals. Any architect leaving a client with a bad taste in his mouth, resulting from a faulty piece of construction or a flimsy administration of a project entrusted to him, has injured the profession in the eyes of the public in exact ratio to the incompetence displayed.

"I believe that better plans and better architectural service are being given today in Los Angeles than ever before, yet the increasing volume and complexity of our problems are growing all the while.

"I am more and more convinced of the fact that the one lasting and effective medium for publicity to the architect is in service to the client and in that alone. The public can be educated to appreciate better looking architecture, but nothing will teach him so quickly as experience the advantage of the help of a competent architect. He always gets a conception of this advantage directly, in the proportion that he is given the service, and it so intimately affects his pocket-book and frame of mind that he does not forget it in his next building venture or in advising a friend. The ultimate esteem in which the public holds the architect, as a fully rounded man, competent to carry responsibility, rests entirely with the architect himself."

**Architects Endorse "Open Shop"**

At the annual meeting of Southern California Chapter, A. I. A., a resolution was presented by Architect John C. Austin and adopted that "it was the sense of the meeting that the open-shop principle be endorsed in its fullest meaning and that the architects should extend to the marble contractors their fullest co-operation and support."

**Architectural Notes from Portland and Seattle**

Henry C. Bertelsen has been made chairman of a committee of Spokane architects who are to act as an advisory board to the sub-committee on capacity, cost and architecture of the civic auditorium committee of the Chamber of Commerce.

\* \* \*

Paul Richardson, associated with A. H. Albertson in the Henry building, Seattle, has been spending some time in Los Angeles, where he is making a detailed study of hospitals and their construction.

\* \* \*

Carl L. Linde, architect in the Western Bond & Mortgage building, Portland, has also opened an office in the Seaboard building, Seattle. Mr. Linde now has over a million dollars worth of construction to supervise in Seattle.

\* \* \*

David C. Lange, Little Rock, Arkansas, has been named University of Idaho architect to succeed Rudolph Weaver who resigned from that position to become head of the department of architecture of the University of Florida.

\* \* \*

A special meeting of the Montana Chapter of Architects was held at the New Finlen hotel, Anaconda. The meeting was called by F. A. Fisher of Denver, regional director of the society. G. B. Shanley of Great Falls, president of the Montana Chapter, presided. Other architects who attended were: Fred Wilson of Bozeman, R. C. Hugenen of Missoula, J. G. Link of Billings and Walter Arnold of Butte.

\* \* \*

The North Pacific Branch, Small House Service Bureau, A. I. A., held its annual meeting in Portland January 18. Reports of progress, plans for the new year, policy concerning the proposed incorporation under the laws of the state of Washington and election of officers, made the meeting an interesting one.

\* \* \*

Some of the Seattle architects who are very busy include Henry Bittman, who is designing a \$600,000 Labor temple; Frank Baker, a fire station to cost \$150,000; V. W. Voorhees, a ten-story \$500,000 hotel; Stephen, Stephen & Brust, an apartment and store building; C. G. Field, a theatre and apartment building; Carl Linde, eleven-story \$750,000 apartment building and A. H. Albertson, the new Orthopedic hospital.

**Tulare Theatre**

Plans are being completed by Architects Miller & Pflueger of San Francisco, for a \$250,000 moving picture theatre and store building at Tulare, for the Tulare Theatre Company.

## P E R S O N A L

Charles Derleth, Jr., dean of the College of Civil Engineering, University of California, has resigned the chairmanship of the Arch Dam Investigation Committee of Engineering Foundation but will continue as a member of the committee. Charles D. Marx, professor emeritus of civil engineering, Leland Stanford, Jr. University, has been appointed chairman in place of Mr. Derleth.

Architect Louis W. Simonson, who was recently granted a certificate to practice architecture in California, is a graduate of the University of Pennsylvania, receiving his degree of B. S. in Architecture in 1910. Mr. Simonson comes to California from Baltimore, Maryland. He will practice at Monterey.

Messrs. Wesley W. Hastings and Leslie Skow are now associated for the practice of architecture at 10 Bonifacio Place, Monterey. They will be pleased to receive catalogues and building material literature.

The firm of Leonard F. Starks & Co., architects of Sacramento, will hereafter be known as Starks and Flanders, the latter having been made junior partner of the firm. San Francisco friends of Mr. Flanders, who was formerly associated with Weeks & Day, will be pleased to learn of his success since moving to Sacramento.

Architect Theodore Starrett, has moved his office from 426 Western Mutual Life building to 214 Detwiler building, Los Angeles, and is interested in receiving catalogs of building materials.

Architect Frank L. Stiff has moved his office from 1251 Fourth avenue to 214 Detwiler building, Los Angeles.

Architect Arthur W. Angel has moved his offices from 3404½ Whittier boulevard to larger quarters at 3400 East Fifth street, Los Angeles.

Architects Allison & Allison have moved from the fourteenth floor to the tenth floor of the Hibernian building, Fourth and Spring streets, Los Angeles. The new offices occupy the entire wing on the Fourth street side of the building.

Architect H. E. Burkett has moved from the Commercial building to 406-A Pacific Southwest Bank building, Long Beach.

Architect M. L. Barker has moved from 1555 N. Western avenue to 6667 Hollywood boulevard, Los Angeles.

Architect Clifford Truesdell, Jr., who has just returned from a year of foreign travel, announces that he has opened an office at 5512 Harcourt avenue, Los Angeles.

Mr. S. C. Weld for 26 years with Crane Company, and for a long period manager of the San Francisco office, has

## THE ARCHITECT AND ENGINEER

retired and will go to his ranch near Fresno. Mr. Weld is succeeded by Mr. J. E. McCreedy, since 1908 manager for the Crane Company at Vancouver, B. C.

### Four Types of Draftsmen

A distinguished eastern architect says there are four types of draftsmen whom the experienced architect picks out in a very short time:

(a) The honest, serious, conscientious man who buries himself in what he is doing and barely budges from his table.

(b) The man who rarely leaves his table, but makes a pretense of being busy and thinks he gets away with it.

(c) The man who is nearly always at someone's else table for any one of a dozen bad reasons.

(d) The man who is thoroughly interested in his own work, but is also interested in the job as a whole, who isn't afraid to leave his own table if he wants to or needs to for any one of a dozen good reasons, who knows in a general way what is going on in the office and yet manages to get his own work done.

A pretty canny analysis of the average drafting room. What!

### Santa Barbara Hotel

Architects Sauter & Lockard, 1206 State street, Santa Barbara, have let a contract to Anton Johnson for \$170,000 to build a four-story and basement reinforced concrete store and hotel at Cota and Estada streets, San Barbara. Mr. Neal Callaghan is the owner.

### Architects Move

Architects Miller & Pflueger have moved from the Lick building to new offices on the sixth floor at 580 Market street, San Francisco. Their change of address was necessitated by the razing of the Lick building to make way for the new Hunter-Dulin building.

## C O M P E T I T I O N S

### BUNGALOW AND APARTMENTS

A competition open to architects throughout the country for plans for a bungalow and apartment house to be built at Niles Center, Illinois, has been announced. The program calls for plans for a two apartment building and a modern bungalow. One thousand two hundred dollars in prizes are offered and to the winner of each plan also goes the job of supervising the construction of the prize winning buildings. The first prize for each structure is \$300; second and third prizes are \$200 and \$100 respectively on each building. The competition closes March 20, 1926. Complete information may be obtained from the Professional Adviser, E. C. Lowe, 636 Church street, Evanston, Ill.

**Obituary**

ALBIN H. JOHNSON

Mr. Albin H. Johnson, of the firm of Frederick H. Meyer and Albin H. Johnson, died at his home in Piedmont, January 27th. Mr. Johnson had been in poor health for a number of years but he continued the practice of his profession to within one week prior to his death. He was 47 years of age and a native of Oakland. He had been associated with Mr. Meyer for nearly twenty-five years and previous to that time was with the firm of Cunningham & Politeo. Mr. Johnson was a man of fine character and a designer of ability. He is survived by a widow.

ALICK LUNDSTRUM

Architect Alick Lundstrum, 57 years old, died from heart failure at Yakima, where he had resided since 1913, coming from Joliet, Ill. During 1916-20 he served as county commissioner. As an architect Mr. Lundstrum designed many public and private buildings, including the large storage plants of the Horticultural Union and W. E. Roche Fruit Company. Shortly before his death the county commissioners accepted his designs for a \$30,000 county hospital.

ANTON REIF

Architect Anton Reif died at his home, 5134 Sunset boulevard, Los Angeles, January 28 of stomach trouble. He had been in ill health for some time. He was for many years in the office of Architect A. L. Haley, but for the last ten years or more had practiced independently. Mr. Reif was 77 years of age. Two sons, Architect Herbert Reif and Otto Reif, and a daughter, Mrs. Orme of Honolulu, survive.

**Class A Theatre**

The Capitol Investment Company, a subsidiary of the Bancitaly Corporation, are to erect a \$2,000,000 theatre at the gore of Market, Hayes and Larkin streets, San Francisco, for the Fox Film Corporation of New York City. Upon completion of the theatre which will be the largest in San Francisco, seating 5200 persons, the balance of the lot will be improved with an eighteen-story Class A hotel, the estimated cost of which is \$3,000,000. Plans are to be prepared by Architect Thomas R. Lamb of New York City and H. A. Minton, architect for the Bank of Italy, San Francisco.

**Bakersfield Bank Building**

Preliminary plans have been approved for a six-story bank and office building at Bakersfield for the Security Trust Company. The drawings are being made in the office of H. H. Winner Company, 55 New Montgomery street, San Francisco. Construction of the new building is expected to start early this spring.

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## San Francisco Chapter, A. I. A., Pays Tribute to the Late AUGUST G. HEADMAN

**I**N the passing of Mr. August G. Headman at the age of 42 on October 28, 1925, the San Francisco Chapter of Architects and the profession of Architecture have lost a man of singular capacity in his chosen profession.

He was taken from his work in his prime and died when manhood's morning almost touched noon and while the shadows still were falling far towards the west.

As a young man, Mr. Headman was full of ambition and enthusiasm and this youthful enthusiasm never left him. After receiving his education in the San Francisco public schools, he entered the profession at the age of 16 as a student draftsman through the offices of Salfeld and Kohlberg and Havens and Toepke. In the evenings he attended the Mechanics Institute Art classes, the Hopkins Art Institute and the Humboldt Evening Technical school. Recognizing the need for a greater architectural training among the student draftsmen, he organized the San Francisco Architectural Club on September 28, 1901, and brought to the new organization an enthusiasm and inspiration which soon made itself felt in a higher standard of architectural draftsmanship and artistic design. This organization ever since has been one of the leading architectural clubs in the United States. To the younger members Mr. Headman was ever counselor and friend and gave to them freely of his time.

His perseverance, study and hard work made it possible for him to go east four years later and enter the University of Pennsylvania. He graduated from the Department of Architecture in 1907 after which he worked for Walker & Gilette in New York and then went to Paris and studied at the Ecole des Beaux Arts after which he made a sketching trip through all of Western Europe, studying its architectural monuments.

Upon his return to San Francisco, he went into partnership with Perseo

Righetti. In 1914 he withdrew and established himself in independent practice which was extremely varied in character, both commercial and public buildings and a grist of apartments and dwellings all of which, however simple, showed a sincerity and a picturesque charm.

Mr. Headman was a facile draftsman of unusual skill and an architect of distinction who had the rare combination of an artistic temperament coupled with executive ability. His high ideals and fine character were an inspiration to all who knew him and his ability and integrity were a never failing source of strength and assurance to those with whom he worked and those whom he served. Few architects have labored more conscientiously and intelligently for the upholding of the traditions of faithful service and devotion to the client and the community.

Our loss is irreparable but it is not complete; his spirit lives on in the memory of his friends, his architectural monuments, and in the abiding joy of many years of sweet association.

In his death, we, as a body and as individuals, have suffered a loss beyond expression. Our loss is second only to that of those to whom he occupied a still more intimate family relationship.

Resolved—That the members of the San Francisco Chapter of the American Institute of Architects, in Chapter assembled, extend to his widow and the other members of his family, their sincere sympathy, and be it further

Resolved—That these resolutions, together with the preamble expressing our love and appreciation, be spread upon the minutes of the San Francisco Chapter and a copy thereof be sent to his family.

COMMITTEE,  
ERNEST H. HILDEBRAND,  
MORRIS M. BRUCE.

John Reid, Jr., President.  
Albert J. Evers, Secretary-Treas.

Some of the buildings designed and executed by the late August G. Headman are the eight-story Native Sons of the Golden West building, Mason street, near Geary; Portola school, Spring Valley school, Washington street near Hyde; B. Schloss Apartments, southwest corner of Geary street and Fifteenth avenue; Crystal Laundry, J. Alice, Cleaning & Dyeing Works, Ruggles auto sales room, Van Ness avenue at Eddy street, six-story Monroe Apartments, Geary street near Leavenworth; six-story Petersen Apartments, O'Farrell street near Jones; Studio Apartments, Sutter street at Taylor; Tiscornia Garage, Pacific avenue; Umbesen, Kerner and Eisert office building, Montgomery street, near Sutter; Ralph Sanborn residence, Jackson street near Cherry; Delta Sigma Delta Fraternity building, Parnassus avenue, near Willard; Roth Hotel, Berkeley; First mention in the competition of the New San Francisco City Hall; Bonestell residence, Alherton; six-story Hotel Summerton, Geary street near Mason; six-story Essex Hotel, Larkin and Ellis streets; Crowley residence, West Clay Park; six-story Hotel Maryland, northeast corner of Geary and Taylor streets; Masonic building, San Luis Obispo; six-story Baldocchi Apartments, Bush street near Powell; Pathological building, New City and County Hospital; six-story Crowley Apartments, Bush street near Stockton; six detached residences for Mr. Carlo Matraia, Lyon and Vallejo streets, San Francisco.

# With the Engineers

## Simple Rules for Cutting Heating Costs

A RECORD of 33 $\frac{1}{2}$ % saving in the fuel costs for heating and ventilating the Portland (Ore.) public schools during the past three years has directed attention to the methods used to accomplish these amazing results. How remarkable they are will be appreciated from the cost figures for fuel in Portland's schools in the years 1920-1921-1922, which amounted to \$325,495, and the figures for the past three years, which totaled \$240,190. This represents a saving of more than \$80,000.

While these costs were being reduced, there was an increase of 5584 in the number of pupils, or enough to fill eight school buildings of 24 rooms each.

The key to the savings accomplished in Portland is furnished by Mr. A. C. Lomer, the Board of Education's heating engineer, in an interview published in the "Portland Oregonian."

"Nearly everyone can cut fuel costs," stated Mr. Lomer, "from the owner of the big office building to the small householder. But a system must be used.

"We keep a daily report of our heating plant operation. We use two thermometers—one outside the building for atmospheric temperature, one inside the plenum chamber through which the heated air leaves the plant. Temperatures are taken at 7, 9, 11 and 1 o'clock. Now let us presume that on Monday the outside temperature is 50° and the plenum temperature 100° and that the building or home is warm and comfortable. On Tuesday the outside temperature is 50° and the plenum temperature is 110°. The difference shows the waste of heat on Tuesday, so you can cut down your fire.

"Soon you will know just how much temperature to have in your hot-air chamber for a given outside temperature, and along with that how much fuel to use. Nearly everyone wastes fuel as it is.

"Our building custodians (we don't call them janitors) have many of them put this system into use in their own homes and are cutting down fuel costs. They have two thermometers, one outside the house and the one inside, and they look at the outside one first, because that tells them just how much fuel to use.

"The report also enables us to check up on heating hours, when to fire up in the morning, given a certain outside temperature, and when to bank the fires for the rest of the day.

"We use two kinds of coal—nut and steam coal. We start with the nut coal; that gives quick heat. Then at the proper

time, as shown by the record, we bank with the cheaper steam coal which holds the heat nicely. By using the two kinds of coal people can cut down fuel costs.

"It is often a good idea in mild weather to brick up the grate surface. Furnaces are designed for the maximum operations and people usually use the maximum facilities for the mild weather as well as the severe. By bricking up a part of the grate surface you can often save quite a bit of fuel. It keeps out the cold excess air when you have a small fire.

## Employment Office for Engineers

An employment office for professional engineers has been opened in San Francisco for the benefit of all concerns employing men requiring technical training and experience. This service is fostered by the four nationally known engineering societies: The American Society of Civil Engineers, the American Society of Mechanical Engineers, The American Institute of Electrical Engineers and the American Institute of Mining and Metallurgical Engineers, and is an extension of the work already carried on very successfully in New York and Chicago.

The San Francisco office is under the supervision of an advisory council composed of the following organization representatives: F. H. Fowler, chairman, A. S. C. E.; Fred George, A. I. E. E.; Wilbur H. Grant, A. I. M. M. E.; E. C. Hutchinson, Engineers Club; Warren McBryde, A. S. M. E.; and L. H. Duschak, secretary, A. C. S. Newton D. Cook is manager of the service. Offices are located at 57 Post street, San Francisco.

It is intended to make this office the clearing house for information about engineering opportunities on the Pacific Coast and in foreign countries bordering on the Pacific.

## Lectures on Earthquakes

The Seismological Society of America and the California Academy of Sciences jointly offer to the public a series of five free lectures on "Earthquakes and Self-Protection," to be given on the third Tuesday of each month to May inclusive, in the auditorium of the Pacific Gas and Electric Company at 245 Market street, San Francisco. The purpose of these lectures is to give the public authentic information regarding the activities of the earth, the forces at work, and the mechanism through which they work, as they are now understood in the present state of scientific knowledge, together

with the deductions which may reasonably be made as to desirable research in seismology and practical applications to ensure greater safety for our communities. The speakers will be Prof. Bailey Willis of Stanford University, Prof. Perry Byerly of the University of California and Henry Dewell, C. E. Most of the lectures will be illustrated with lantern slides.

#### Large Pipe Made from Steel Plate

A most interesting piece of engineering has just been completed at Portland, Oregon. Growth of the city necessitated the laying of seven miles of new steel gas mains—three miles of it 30 inches in diameter and the rest 24 inches in diameter. Freight rates to the Pacific Coast on pipe of this diameter make its cost prohibitive. It is so bulky that only a small amount entirely fills a freight car. After canvassing the situation thoroughly, the engineers decided to reduce this item of freight by ordering an equivalent amount of flat boiler plate cut to the proper size and shipping it from the eastern mills by way of the Panama Canal. The plates were then formed and made into pipe by oxy-acetylene welding in Portland. The gas company itself did not do the actual oxwelding, but let the contract to the Steel Pipe and Tank Company. Fabrication of pipe lengths in the shop began April 15th and was completed August 1st. The field work which involved joining the lengths into a continuous line by welding, was finished about October 1st.

#### The Pasadena Crash

At a meeting of Los Angeles Section, American Society of Civil Engineers, at the Elite cafe, Murrell Butler, city bridge engineer, and Walter Putnam, structural engineer, submitted a report on the collapse of the grandstand at Pasadena on New Year's Day, attributing the accident to faulty construction from an engineering standpoint and improper materials. Messrs. Butler and Putnam had been appointed a committee to investigate the failure of the structure. Architect C. E. Noerenberg, E. M. Scofield of the Scofield Engineering Construction Company and J. J. Backus, manager of the building and safety department, participated in the discussion which followed. Raymond A. Hill, new president of the section, presided.

#### Why the Problem Was Not Solved

A Chicago teacher, we are told, gave a pupil a problem for home study which was in substance: "How long would it take a certain number of men, working ten hours a day, to complete a certain job?" The next morning the pupil handed the teacher a note written by the boy's father, saying:

Dear Sir—I refuse to let my son James do his sum you gave him last night as it looks to me like a slur on the eight-hour system.

#### Madison Square Garden Passes

*McKim, Mead & White, Architects*

It is interesting to note that in the demolition of Madison Square Garden, an opportunity was afforded to investigate weathering qualities of building materials, and the durability of methods of construction of thirty-five years ago, says the Washington State Architect. The findings include:

Masonry uniformly in good condition.

Workmanship and materials of the best.

Contours of moulded terra cotta upon removal were evidently as accurate as when placed.

Joints in unusually good condition, no disintegration or loose pointing.

Wrought iron pipe encased in mortar, showed practically no rust.

Stairways of iron with slate treads and landings, which had been severely used, show but negligible wear to a half-inch on the edge, but in no case sufficient to impair use.

White glazed tiles and mosaic in good condition.

Stamped metal lath in good condition, and securely keyed.

Structural steel in good condition, and but slightly rusted in places.

It is believed that there is no reason why the Garden, as built, could not have served for hundreds of years insofar as the building is concerned.

The New York Life Insurance building, Cass Gilbert, architect, is to cover the site.

#### Legal Service Bureau

The American Association of Engineers is now planning to establish a legal service bureau to furnish legal advice to engineers and to undertake research work in connection with problems of engineering law. Where simple questions only are involved, the services will be rendered gratuitously to members of A. A. E., but where the submitted problem is complicated and extensive research is involved a reasonable charge will be made to cover the cost of the service, in order that the bureau may ultimately become self-sustaining. It is believed by officers of the Association that this legal bureau for engineers will fill a national need.

#### Lightning Estimators Wanted

This was the advertisement which a town board of supervisors published in the local paper:

The board of supervisors of the Town of Wood River will meet at the home of Enock Wistrom, on the 24th day of Aug., at 2 o'clock in the afternoon, to let contract for ditching and grading on new road. Further particulars concerning the work will be made known at the meeting. The board reserves the right to accept or reject any or all bids.

#### TOWN BOARD OF SUPERVISORS.

A correspondent of The Engineering News-Record wonders why the board considered it necessary to make "further particulars" known at all.

# Field of the Contractors

## Associated General Contractors Adopt Important Resolutions at Portland Convention

THE following are the important resolutions adopted at the recent convention in Portland, Oregon, of the Associated General Contractors of America:

### SURVEY BONDS

WHEREAS, this condition has been business pertaining to surety bonds on construction projects have reached the point where the ability to obtain a bond or the actual procurement thereof is not sufficient assurance of the completion of the project by the firm or individual bonded; and,

WHEREAS, this condition has been brought about by the frequent bonding by surety companies of irresponsible contractors; and,

WHEREAS, failures thus resulting do not tend towards the economical expenditure of either public or private funds for construction; and,

WHEREAS, no real effort has been made by the surety companies as a whole to correct the existing conditions which have become intolerable; and,

WHEREAS, this condition has been recognized and severely criticised at a joint conference on construction practices, consisting of committees from American Association of State Highway Officials, American Institute of Architects, American Institute of Consulting Engineers, American Society of Civil Engineers, American Society of Mechanical Engineers, American Society of Municipal Improvements, Associated General Contractors of America, Highway Industries Exhibitors Association and National Association of Casualty and Surety Agents, now, therefore, be it

RESOLVED, that we, the Associated General Contractors of America in convention assembled, do hereby recommend to owners either public or private that so long as the present methods prevail in this branch of the surety business that serious consideration be given to the use of other forms of guarantee for construction projects.

### LIEN LAWS

WHEREAS, certain state laws originally enacted to protect the rights of workmen against employers have been so amended and expanded that they now provide special protection to various business interests at the expense of home owners and the building public; and,

WHEREAS, operation of these laws automatically establishes in the industry a false credit structure enabling unscrupulous or incompetent concerns in the various industries to prey upon owners and upon responsible business men; and,

WHEREAS, operation of these laws not only fails in the purpose intended by those responsible for their enactment but also inducts and maintains in construction irresponsible persons who bring discredit upon the entire industry; therefore be it

RESOLVED, that the mechanics lien law insofar as it protects the rights of workmen is just and proper, but that the so-called mechanic lien law as now upon most of the statute books gives special protection to certain business interests, is contrary to principles of American government and should be modified; and be it further

RESOLVED, that members of the association are urged to establish contacts with responsible groups in the other industries of construction to discuss the effect of the lien laws upon those industries and to gain their support in modifying these laws, to the end that all groups serving in construction may establish higher standards of business conduct and service.

### ACCIDENT PREVENTION

WHEREAS, accidents in the construction industry each year result in suffering and loss of life to workmen, decreased efficiency, loss to employers, and unnecessary cost of construction; and,

WHEREAS, accident prevention can be promoted more effectively through education of the working force than by the enactment of a multiplicity of safety laws; and,

WHEREAS, rules of standard practice for accident prevention in building construction have been approved by the executive board and the building division of the association; therefore be it

RESOLVED, by the Associated General Contractors in convention assembled that these rules of practice are approved and recommended to the membership for immediate application in their own business; and be it further

RESOLVED, that the membership is urged to continue the study of safety methods, endeavor persistently to educate their employes in accident prevention,

and compare results with each other so that the frequency and severity of construction accidents may be reduced to the minimum.

#### CONSTRUCTION BY PUBLIC FORCES

WHEREAS, numerous federal, state, county and municipal bodies acting contrary to accepted principles of American government and under pretext of economy are increasingly engaged in the construction business to the exclusion of private industry; and,

WHEREAS, the United States chamber of commerce after exhaustive investigation has issued a report corroborating the results of other impartial investigations and the opinions of leading engineers and statesmen, viz., that construction of public projects by governmental forces is unsound economically and leads to waste, inefficiency and extravagance and multiplication of governmental employes, and is not in public interest; therefore be it

RESOLVED, by the Associated General Contractors of America in convention assembled that full information as to the cost and wastefulness of projects built by public forces be given to the public wherever possible; that this association co-operate with other industries in revealing the purposes and results of these public business ventures and that the enactment of laws requiring operations conducted by public forces to be fully accounted be undertaken in the various states.

#### RELATION OF GOVERNMENT TO INDUSTRY

WHEREAS, more than a hundred leading industries represented by associations met in Washington Dec. 10, 1925, to deliberate upon the encroachment of government upon the legitimate field of private industry and there adopted a statement of principles setting forth proper relationships between government and industry; therefore be it

RESOLVED, that the Associated General Contractors of America in convention assembled approve the statement of principles issued by the conference on government in industry.

#### ARBITRATION

WHEREAS, the use of a proper arbitration clause in construction contracts has been found after long experience by the American Institute of Architects and by leading engineers of the country to reduce controversies and delays in progress of work resulting therefrom, to avoid friction in construction operations, to minimize the need for litigation and to produce a more co-operative relationship between the contracting parties; and,

WHEREAS, the Joint Conference on Standard Construction Contracts representing the major engineering, architecture and contracting societies have recently issued standard forms of contract for building and for engineering construc-

tion containing an arbitration clause; therefore be it

RESOLVED, that the Associated General Contractors of America approves these documents and recommends their use, particularly with the arbitration feature, in both public and private construction.

#### COMPENSATION OF ENGINEERS

WHEREAS, public construction departments of the federal government and political subdivisions find it increasingly difficult to retain a sufficient number of experienced engineers to administer their construction projects; and,

WHEREAS, the public interest demands that such projects be administered only by experienced and capable men working under compensation commensurate with their abilities; therefore, be it

RESOLVED, that members of the Associated General Contractors of America should use their influence locally and nationally to direct the attention of the public to the usually inadequate compensation of engineers and the necessity for proper adjustment.

#### OFFICERS FOR 1926

New officers were installed at the closing session of the convention. They are: President, J. H. Ellison, vice-president Winston-Dear Co., Minneapolis; vice-president-at-large, Natt McDougall, vice-president and secretary A. Guthrie & Co., Portland; vice-president Zone 4, Geo. S. Watson, president Watson Co., Dallas, Tex.; directors to serve three years, Dist. 1, James E. Cashman, Burlington, Vt.; Dists. 2-3, Walter A. Gahagan, Brooklyn, N. Y.; Dist. 10, D. B. Fegles, vice-president and manager Fegles Construction Co., Minneapolis; Dist. 12, Robert J. Potts, Potts & Prentice, Waco, Texas; Dists. 14-15, H. W. Baum, president H. W. Baum Co., Salt Lake City; director to serve one year, Dists. 14-15, F. J. Twaits, Scofield Engineering Construction Co., Los Angeles.

#### Architect Files Suit

Architect Robert H. Orr of Los Angeles, has filed suit in the Superior Court at Stockton against the Christian Church of that city, to collect \$4787.10 alleged to be due as architect's fees for plans and specifications for the new Christian Church. Mr. Orr claims that the church agreed to pay him six per cent of the cost of the building within sixty days after its completion. The church cost \$129,785, and Mr. Orr says he has been paid only \$3000 out of a fee of \$7787.10.

#### Wanted a City Manager

Santa Barbara wants a city manager and will consider applications until 5 p. m., March 3. Communications regarding the position should be addressed to S. G. Taggart, city clerk of Santa Barbara.

## New Plan Hits "Jerry Building"

**A** NEW means of attacking the presence of irresponsible builders in the field of home construction has been advanced by the National Builders' Supply Association. It is cited as being based upon the proposition to enable the public to protect itself against "jerry builders."

The plan is said to aim, through distribution of a document called the "Safeguard Policy," at accomplishment of two purposes. These purposes are:

To place in the hands of the prospective home builder or buyer, compact, readily understandable information about the "53 Vital Points of Home Construction"—before he builds or buys.

To provide a means whereby anyone may know the exact materials and workmanship in the actual house — when he builds or buys.

The outstanding fact about the home market is the total inability of the average man and woman to tell a good house from a poor one. The modern home is a highly complex product—and many of its most important parts are out of sight, under floors, in the walls, or down in the hidden foundations. Even an expert must repeatedly investigate a house while it is under construction, if he would really know whether it is built of sound materials, by sound workmanship methods.

People will never get good houses till they know how to select them from the many shoddy-built houses which look the same, any more than they can get a good product of any kind if the only measure they have to judge by is price. But in buying almost anything else they have the reputation of the maker to guide them, whereas the builder of most houses is unknown to the buyer.

The Safeguard Policy is said to accomplish the two purposes mentioned above by means of two main features.

It contains a big sheet of "Master House Standards" which are the result of three years' co-operation by architects, builders and material men. These standards are in the form of general specifications covering fifty-three main construction points, and include comments to interpret them to the layman. Each standard is referred by guide number to a typical house diagram at the top of the page.

But the most important purpose of the Policy is covered by its "Construction Chart." This page provides space for the recording of the actual materials and workmanship methods used in any house. It is filled in by the builder, contractors, architect or realty man; signed and sworn to before a Notary Public.

The result is a Certified House. Anyone can buy it and know exactly what he pays for, and what kind of house he

gets. Any house can be thus certified by a Safeguard Policy, without adding anything to the cost.

To make the Policy readily available in every territory, the National Association is distributing it through local building supply dealers. The prospective home owner, builder, architect, or those who finance home building, can obtain the Policy from any material merchant who is a member of the Association.

The Association is carrying on this new service through its Master House Department, Guarantee Title building, Cleveland, Ohio. The campaign is supported by the monthly Safeguard Policy quotas subscribed to by member building supply dealers. The dealers pay two dollars for each Policy and sell it for the standard price of two dollars. Neither the dealer nor his Association makes any direct profit, for the resulting funds are devoted to advertising and promotion of the Policy as a new service to home builders and buyers.

A recent statement by the Association says:

"The progress of this campaign has been rapid from the start. The Northern Ohio district has already been well organized, and newspaper advertising is about to commence in New York, Pennsylvania and Indiana. National advertising will begin soon.

"Perhaps the most encouraging feature is the response the Safeguard Policy plan is receiving from builders. In Cleveland and other cities Certified House placards are appearing on many houses. The builder who gives honest money's worth in any price class realizes that he has everything to gain and nothing to lose from this method of bringing the facts out into the light of day. Indeed, he finds in the Safeguard Policy an invaluable aid in demonstrating the worth of his houses. The Policy Construction Chart interests and convinces the buyer who would otherwise pay little attention to anything but price. The public is proving more than glad to buy known materials and workmanship."

### Predicts Busy Year for Oakland

Mr. J. T. Wylie, owner of the Bliss & Van Auken Lumber Company, Saginaw, Michigan, recently paid a visit to San Francisco and Oakland, the guest of Mr. George H. Brown, president and manager of the Strable Hardwood Company. Mr. Wylie was greatly impressed with business conditions in California and commented favorably on the building prospects in the Bay region. He predicted a prosperous year for the building industries of Oakland.

### Passing of the Bookcase

(Abstract of an article in the  
San Francisco Chronicle)

**B**OOKCASES, particularly of the built-in and sectional variety, are fast disappearing in the modern home. This astonishing discovery was investigated to find out why such an important influence upon civilization as books should be practically dropped from the list of household necessities. The answer seems to be the same as to the question of why girls wear so few clothes, and those abbreviated, regardless of the weather.

It's the looks.

Books are being sold. Lots of them. Paul Elder says that the number is increasing each year. On top of that Robert Rea, head librarian, says more books are being read at the public library, also that circulating libraries have increased in number and size of circulation. Elder said that a better class of books have had the biggest sale, and Rea declares that the increased library reading is along the miscellaneous line, such as books on drama, chemistry, interior decorating, mechanics and trade subjects.

But—bookcases are not being sold and few are being built into the thousands of new homes. Furniture dealers say that a bookcase is sold about every blue moon. Many furniture stores have entirely discontinued carrying the sectional bookcases, and only occasionally is there a call for those of the medium-priced variety. Ristenpart said that there is some demand for the more elaborate bookcases, but this is usually from customers who have erected fine homes, where they have allotted an entire room for library purposes.

Architects and builders no longer provide shelves or built-in bookcases, because people don't want them. The old custom was to put a bookcase on one side of the fireplace.

William F. Yates says that he puts bookcases in his cheaper houses, but not in the better ones. Some people think that anything they can get for nothing is so much gained, although they probably have no books, and only fill up the cabinet with trash and use it as a catch-all.

Every one knows that we have been passing through the jazz age. Nobody has had time to be bothered with anything that did not create excitement or business of some kind, and the result has been that folks stayed home only when they had to. Books have as little to do with the average youth's life since the war as has the advice of the blue-law advocates. Not only that, but the older members of the family have been feeling their oats and doing some stepping, too. Books are too slow for the speedy. They can get all the hop in an hour by watch-

ing a movie, and then why read anyway, maybe there is some dance music on the radio, and besides I've read all the new scandal in the newspapers and there are so few printed thrills left.

It is a good deal like the story of the fellow who was at a loss to find something appropriate to buy his girl for Christmas. Someone said, "Why not buy her a book?" He said, "Aw, rats, she's got a book."

### Iceless Refrigeration

Manufacture of iceless refrigeration installations for general use has reached an importance which makes it one of the largest of the newer consumers of copper, according to a survey just completed by the Copper and Brass Research Association. It is estimated that iceless refrigeration units which will be manufactured in 1926 will require almost 30,000,000 pounds of copper.

Expanded development of the industry which produces apparatus for this type of refrigeration has been very rapid in the past year through the linking up of co-operative effort between the manufacturers and the electric power companies. Iceless refrigeration is being popularized for household purposes and for various uses in business aside from its application in familiar large industrial ways, according to the survey.

The advantages of household electric refrigeration are its automatic and steady operation, its ability to maintain a lower temperature of dry cold with entire absence of moisture, drip and dirt, and its better conditioning of refrigerated food.

### The Work of Ashley & Evers

Editor The Architect and Engineer

Dear Sir:—

We note in a recent issue of your magazine some illustrations of the Mandarin Cafe, Bush street and Grant avenue, San Francisco. The interiors shown do not credit us with the architectural treatment and painted decorations of walls and ceilings.

In calling your attention to this matter, we do so in order to correct the impression which seems to be given that we were architects solely for the exterior of the building. This is not the case, and all of the work shown in the picture of the roof garden and the architectural treatment of the interiors is the product of our office.

Thanking you for any corrections which you may see fit to make, we remain,

Very truly yours,  
Ashley & Evers, Architects.

Albert J. Evers.

## BOOK REVIEWS

*Edited by*

CHARLES PETER WEEKS

**The Old Mission Churches and Historic Houses of California.** By Rexford Newcomb. J. B. Lippincott Company, Washington Square, Philadelphia, Pa. Buckram, 8 by 11 inches, 400 pages, 216 illustrations. Price \$15.00.

One of the best works of the kind that has been published in recent years. Architects interested in the old California Missions will find in Mr. Newcomb's book information of great interest and value. The author has climbed over the old structures, a note book in hand, and prepared sketches and notations that combined make a fund of information not easily to be obtained elsewhere. His restorations are the result of careful investigations and studied research of old records.

The subject matter is presented in three parts: the first dealing with the "Environment Background," in which there are six chapters dealing with the land of California, the founders of the mission system and the builders of the missions, the rise of the system and its culmination and decline and the ecclesiastical and secular life in the mission and the province. Part II, "The Old Missions," has nineteen chapters which deal with materials of construction and the development of mission architecture and then individually with the more prominent missions, each in a chapter, and the less important structures in groups. Part III, "The Historic Houses," with five chapters, describes the old houses of Santa Barbara, Monterey and other California cities.

The illustrations, starting with the frontispiece which is in color, from a painting by Edward Stratton Halloway of the Mission San Gabriel Arcangel, are excellently chosen and finely presented. Mainly, the illustrations are photographic and the half tone reproductions printed on cameo paper are clear but soft in tone. Intermingled with the half tones, there are some two dozen line drawings prepared by the author and mainly showing plans of the missions as they originally existed, the restorations being the result of the author's careful studies.

**Ready-Written Specifications,** by Holland and Parker; published by John Wiley & Sons, Inc., 9 by 11 inches, 274 pages; 440 Fourth avenue, New York. Price \$5.50 per copy.

This book is a compendium of clauses for direct use in architectural specifications. The subject of specifications is more or less of a bug-bear to many architects and the contents of this 250 page book is intended to assist materially in the composition and arrangement of specifications. To quote the authors in their preface: "Specifications are a load

assumed with bravado, borne with groans and shifted when they can be shifted, universally without regret the architect who is not a specialist in writing them is apt to look upon them as a set of quasi-magic formulae, which he does not fully understand, nor really care to understand but repeats dutifully and wearily, as a ritual handed down to him by wiser men."

Each section of the book has an index letter. Each clause an index number. When contract drawings have been prepared, clauses pertaining to the several departments of work may be read until those are found applicable to the work in hand. The stenographer then copies out of the book the clauses indicated by the architect as applicable to the job and she fills in the blanks with the words the architect has supplied.

### Granted Certificates

At the regular monthly meeting of the California State Board of Architecture (Northern Division) certificates to practice architecture in the state were granted to the following:

George E. Ellenger, 1970 38th avenue, Oakland.

Scott Raymond, 2527 College avenue, Berkeley.

Eldredge T. Spencer, 105 Tunnel Road, Berkeley.

Winfield Scott Wellington, Euclid avenue, Berkeley.

Angelo Hewetson, 1100 Versailles avenue, Alameda.

Albert F. Roller, 1556 Cypress avenue, Burlingame.

Raymond de Sanno, 1209 Ordway street, Berkeley.

The following were granted architects' certificates at a meeting of the California State Board of Architecture, Southern District, January 6: William P. Lodge, 3928 Orange avenue, San Diego; Robert H. Ainsworth, 975 Garfield avenue, Pasadena; David D. Smith, 1259 Third street, Santa Monica; and Lambert A. Franson, 507 W. 5th street; Max Charles Drebin, 919 N. Kenmore avenue; Clarence A. Kelso, 1316 Washington building; Albert R. Ritter, 1168 W. Edgeware road, and John Thomas Payne, 426 Western Mutual Life building, all of Los Angeles.

### Part Performance Under Abandoned Contract

Where plans submitted by architects failed to comply with state building laws and city ordinances, whereupon they corrected plans to conform to legal requirements, the Court has held that, on owner's discharging architects before amended plans were completed, architects were entitled to recover reasonable value of their services.—237 P. (Calif.) 401.

### Rents Become Stabilized

Rents for residential property are becoming stabilized or are gradually diminishing, but business and office rents are increasing, with building activity at great height, and a plentiful supply of money available for real estate development, according to a survey of the general real estate market which has been made by the National Association of Real Estate Boards. The survey, made semi-annually through reports of local conditions by the association's constituent boards, covering 198 cities of the United States and Canada, is of especial interest at this time in view of the unprecedented activity of the building industry during the year, the general interest in real estate as an investment, and the close relationship between building and real estate activity and general business conditions.

### Window Hardware

The Austral Window Company of New York City announces two new catalogues of interest to architects, engineers and contractors. Catalogue No. 26 contains detailed specifications of Austral Window Hardware for wood and rolled steel construction suitable for office buildings and schools. In addition to the detailed drawings there are 32 pages illustrating nearly 100 different schools where Austral windows have been installed. Catalogue No. 25 is devoted to the installation of Austral window hardware for hotels, apartment buildings, hospitals, etc. Both of these catalogues are standard size for use in the A. I. A. file and can be obtained from the Pacific Coast representative, Herbert M. Holway, 639 Howard street, San Francisco.

### Information on Flag Poles

The Pole and Tube Works, Inc. of Newark, N. J., have just issued a catalog giving complete engineering and specification data on their steel flag poles. The matter is conveniently presented in a form to fit the A. I. A. file. This company manufactures "Steel Tubular" flag poles and radio masts for ground and roof setting and "Taper Welded" flag poles for monuments and memorials. Their product has been very well received on the Pacific Coast, having been installed on a number of recent large office buildings. Herbert M. Holway, 639 Howard street, San Francisco, is the Pacific Coast representative.

### Designing University Building

Architect William Hays, First National Bank building, San Francisco, is preparing plans for a two-story agricultural engineering building for the State University Farm at Davis, Yolo county. There is an appropriation of \$125,000 for the building.

### California Plumbers to Meet

At a recent meeting of the State convention committee of the Stockton branch of the California State Association of Journeymen Plumbers and Steam Fitters, arrangements were made for the State convention to be held in Stockton for four days, beginning March 10. General Organizer E. B. Fitzgerald of Chicago and State Organizer F. R. Van Norman met with the committee and it was reported that about 200 delegates will attend.

### Sacramento Warehouse

Architect Henry H. Gutterson, 526 Powell street, San Francisco, has prepared plans for a one-story brick office building and warehouse at 13th and C streets, Sacramento, for George Wagner, Incorporated. The building has been leased to the White Motor Truck Company. The Wagner Company will be in charge of construction.

### Plans Completed and Bids Taken

Architect James W. Plachek of Berkeley, has completed plans for a three-story addition to the T. W. Corder building at 2300-2348 Shattuck avenue, Berkeley. The additional floors will be converted into rooms and apartments and will be leased by W. W. Whitecotton of the Whitecotton Hotel.

### Hotel for Alameda

The Alameda Community Hotel Company has been incorporated and a site for a new hotel has been purchased at Broadway and Central avenue, Alameda. It is proposed to erect a three or four-story building having one hundred and twenty-five rooms and to cost in the neighborhood of \$400,000.

### Instruction in Concrete

Builders and architects are being given a course in reinforced concrete at the University of California extension division, Los Angeles. Eugene Cochrane Harvey, structural engineer of the bridge department of the city of Los Angeles, conducts the class.

### Engineer Injured

W. E. Giffen, civil engineer, with offices in the Higgins building, Los Angeles, is in the Palo Alto Hospital, Palo Alto, in a critical condition as the result of his automobile crashing into a milk truck on the county highway near Atherton.

### Completing Residence Plans

Architects Bakewell & Brown, 251 Kearny street, San Francisco, are completing working drawings for a residence for Mr. Frank Fuller to be erected on the northeast corner of Broadway and Broderick street, San Francisco.

### Personal

Architect Paul Brown has moved his office from 704 Lincoln building to suite 712, New Orpheum building, Los Angeles.

PUBLIC LIBRARY

*Recent Club Buildings in Northern California*

*The*  
ARCHITECT &  
ENGINEER



MARCH 1926

*Published in San Francisco*  
*50 cents a copy - \$2<sup>50</sup> a year*

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**ARCHITECT & ENGINEER**  
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The Architect and Engineer  
March, 1926

ELKS CLUB BUILDING, SAN FRANCISCO, CALIFORNIA  
FRED'K H. MEYER AND ALBIN JOHNSON, ARCHITECTS

# THE ARCHITECT AND ENGINEER

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## Some Recent Club Buildings in the San Francisco Bay Region

By FREDERICK JENNINGS

**A**T no time has the popularity of the club building been so noticeably manifest as today. Commercial clubs, social clubs, athletic clubs, golf and country clubs, and women's clubs seem to have taken the country by storm. Club buildings are going up on a scale never dreamed of a quarter of a century ago. Clubs think nothing of investing several million dollars in a home. Structures 15 and 20 stories high are built with every conceivable equipment for the amusement and comfort of the members. The club building of today is like the modern ocean liner — it is equipped with everything from steam heat and hot water to a tennis court and swimming pool. The club building today has a dining room and cuisine second only to our greatest hotels; it has social rooms, card rooms, billiard rooms, a gymnasium, an auditorium, a ball room, bowling, dormitories and what not. And some of the new club buildings, like many of our new hotels, have the ground floors laid out for shops which are rented to a variety of tenants, such as a confectioner, a barber, a druggist, a haberdashery and, in fact, about every line of merchandise that would benefit the members.

In devoting a goodly part of this issue of *The Architect and Engineer* to club buildings, we have endeavored to select homes that have lately been finished and occupied—buildings that would make our presentation as representative as possible, taking the California Automobile Association building as an example of the executive club building—one in which several hundred employes assemble daily to provide an efficient service for its several thousand members. The San Francisco Elks' building is an example of what our great lodges are doing to provide a home for their members; the Athens building in Oakland shows what may be accomplished by an organization prepared to encourage clean sport and at the same time provide a social and commercial center for its members. The Olympic Country club and the



R. McLeran Company, Builders

ENTRANCE LOBBY, ELKS CLUB, SAN FRANCISCO, CALIFORNIA  
FRED'K H. MEYER AND ALBIN JOHNSON, ARCHITECTS



Mural decorations by Heinsbergen Decorating Company

ENTRANCE FOYER, ELKS CLUB, SAN FRANCISCO, CALIFORNIA  
FRED'K. H. MEYER AND ALBIN JOHNSON, ARCHITECTS



LOUNGING ROOM, ELKS CLUB, SAN FRANCISCO, CALIFORNIA  
FRED'K. H. MEYER AND ALBIN JOHNSON, ARCHITECTS



Mural Decorations by Heinsbergen Decorating Company

SWIMMING POOL, ELKS CLUB, SAN FRANCISCO, CALIFORNIA  
FRED'K. H. MEYER AND ALBIN JOHNSON, ARCHITECTS



Doorway to Private Dining Room  
ELKS CLUB BUILDING, SAN FRANCISCO, CALIFORNIA  
FRED'K H. MEYER AND ALBIN JOHNSON, ARCHITECTS



Mural in Lodge Room by Frank Van Sloane



SPECTATORS' ALCOVE IN LODGE ROOM. ELKS CLUB, SAN FRANCISCO  
CREW H MEYER AND ALBIN JOHNSON, ARCHITECTS

Monterey Peninsula Country club show the possibilities of a distinctive architecture for our golf and country club houses.

\* \* \*

Designed and constructed for the special purposes of the California State Automobile Association, the new building in San Francisco will make possible a more efficient handling of the organization's work with a consequent increase in the value of the services provided the membership.

In the creation of this structure, Architect George W. Kelham was inspired by the architecture of sunny Spain whose traditions are so closely woven into the history of California. In the style adopted the freedom and romance of Spain is combined with the more staid and



LODGE ROOM, ELKS CLUB, SAN FRANCISCO  
Fred'k. H. Meyer and Albin Johnson, Architects

refined detail of the Italian Renaissance. Around this architectural motif has been constructed a building which rises to the height of seven stories and contains in addition basement and mezzanine floors. It fronts 120 feet on Van Ness avenue and 100 feet on Hayes street, providing over 65,000 square feet of space on the nine floor levels.

The structural framing of the building is of reinforced concrete frame type with hollow building tile (Dickey Mastertile) curtain walls built in between the concrete columns and beams. Covered with ornamental cement plaster, these walls give the exterior of the building an appearance of cast stone. In engineering tests the concrete laid throughout the building developed an average compression strength of over 2000 pounds per square inch at the end of a 28-day test.

The large ornamental entrance, with its wrought-iron grille, leads into the entrance lobby where the view of tall arches, terminating in an ornamental dome above plain pendentives recalls in symmetrical composition the central architectural motif. The level of the public lobby, the principal show place of the interior, is elevated 13 steps above the entrance lobby.

An architectural gem is the public lobby! The ancient law courts or basilicas of Italy and the patios of Spain and Spanish-America furnished the inspiration for its dominant features. The walls are of toned travertine stone, pierced at the base by graceful arches leading to the arcade. The upper part of the walls is relieved by richly carved balconies on the sides and ends. The ceiling is of old wood, its beams



DINING ROOM. ELKS CLUB, SAN FRANCISCO  
Fred'k. H. Meyer and Albin Johnson, Architects

painted in warm Spanish colors which are toned down giving the impression that it has endured the ages.

The carrying out of this well-conceived architectural design involved numerous unusual and interesting structural problems which were successfully solved by H. J. Brunnier, structural engineer. In designing the framing required to permit of the construction of the public lobby with its height of ceiling, the walls around the lobby from the top of the architectural arches up to the third floor were made to act as girders to carry the second and third floor framing and the columns supporting the floors above.

This engineering feature was made still more difficult by the requirement of openings through the walls to the balconies. This made



CALIFORNIA STATE AUTOMOBILE ASSOCIATION BUILDING, SAN FRANCISCO  
GEORGE WILLIAM KELHAM, ARCHITECT

necessary heavy framing of some kind in the central part of the building, so the columns supporting the girders were made to take all the available space the architectural design would permit. These columns as constructed brace the building against any lateral stress.

The building has been planned for lateral expansion and is the first unit of a more elaborate scheme to take care of the increasing growth of the Automobile Association in the future. The association owns the property fronting 140 feet on Hayes street and 155 feet in depth which is immediately in the rear of the present building. This is now improved with one-story concrete factory type buildings.

In the planning and erection of the association's new headquarters home, careful attention was given to the installation of modern equipment for inter-communication between floors and departments as well as to the engineering details in the installation of telephone and electrical wiring in such a manner as to permit the addition later of new telephone or electrical units without undue expense. Engineering installations in the building were made under the supervision of Hunter & Hudson, consulting engineers.

The new building has been equipped with one of the largest and most up-to-date telephone communicating systems in the city. It is the third largest installation of its kind in San Francisco, being semi-mechanical in type and incorporating the latest improvements in the science of telephony. The three-section private branch exchange switchboard has 40 outside trunk lines and is at present connected with 137 stations within the building.

Being semi-mechanical in type, each telephone station within the building is equipped with a dial with which the calling party may connect himself directly with any other party connected with the private branch exchange with whom he desires to converse without the aid of the operator.

For the collection and distribution of mail and the handling of intra-office memoranda, a double pneumatic tube system has been installed which has two stations on each floor. A central dispatching station is located in the mail room in the basement, all carriers going from the station where they are first dispatched to the central station from where they are immediately re-dispatched to their proper destination.

The telephone wiring within the building is carried through a conduit raceway system with outlets along the walls and floors at approximately eight feet centers. This system permits of the installation of telephones at any desk location without exposed wiring.

The building is equipped with an auto-call paging system consisting of signal bells located on the various floors and a central station controlled from the telephone switchboard. This equipment enables the telephone operator to locate any official should he be in the building, but away from his office.

An electric clock system is also provided. Secondary clocks are located at various points throughout the building and controlled from a master clock near the telephone switchboard.



ENTRANCE, CALIFORNIA STATE AUTOMOBILE  
ASSOCIATION BUILDING, SAN FRANCISCO  
GEORGE WILLIAM KELHAM, ARCHITECT



ENTRANCE VESTIBULE, CALIFORNIA STATE AUTOMOBILE  
ASSOCIATION BUILDING, SAN FRANCISCO, CALIFORNIA  
GEORGE WILLIAM KELHAM, ARCHITECT



ENTRANCE TO PUBLIC LOBBY, CALIFORNIA STATE AUTOMOBILE  
ASSOCIATION BUILDING, SAN FRANCISCO, CALIFORNIA  
GEORGE WILLIAM KELHAM, ARCHITECT

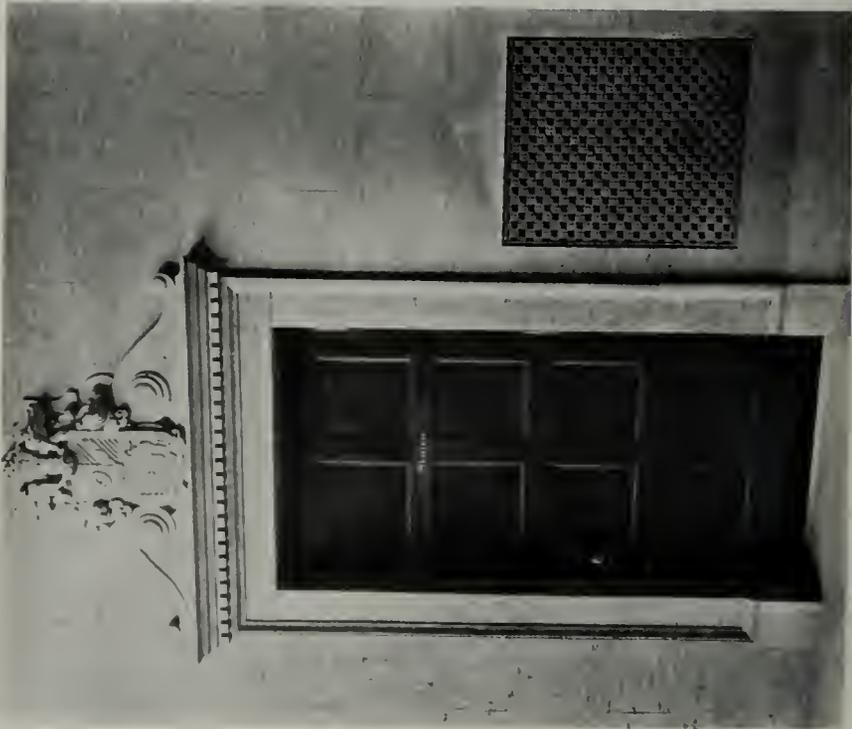


STAIRWAY AND LOBBY RAILING BALUSTRADE, CALIFORNIA STATE  
AUTOMOBILE ASSOCIATION BUILDING, SAN FRANCISCO, CALIFORNIA  
GEORGE WILLIAM KELHAM, ARCHITECT



Window Balcony in Public Lobby

CALIFORNIA STATE AUTOMOBILE ASSOCIATION BUILDING  
ARCHITECT



Detail of Stair Doorway

CALIFORNIA STATE AUTOMOBILE ASSOCIATION BUILDING  
ARCHITECT



PUBLIC LOBBY, CALIFORNIA STATE AUTOMOBILE ASSOCIATION BUILDING  
GEORGE WILLIAM KELHAM, ARCHITECT



Photos by Ford E. Samuel

ATHENS ATHLETIC CLUB, OAKLAND  
WILLIAM KNOWLES, ARCHITECT

The Athens Athletic Club building in Oakland was designed by Architect William Knowles, while the Elks' club building in San Francisco is the work of Architects Frederick H. Meyer and the late Albin R. Johnson. Both buildings have been ingeniously planned and their splendid arrangement indicate careful and conscientious study. More than a million dollars was expended in the construction of each of these structures.

\* \* \*

A simple Latin form of architecture, inspired from the Italian farm house and early California types, without any of the objectionable features of the so-called Mission style, has been used to good advantage by Messrs. Bakewell & Brown and Jno. A. Baur in the design of the new Olympic Country Club in San Francisco.

The plan is simple so that little comment is necessary. However, it may be well to call attention to certain features that seem particularly advantageous. The entrance is from the upper level, giving the sheltered east and south exposures to the larger and more important rooms and also giving these rooms an unobstructed outlook.

The southern exposure is featured by the use of a patio. This patio, which is sheltered from the prevailing winds, can be used in pleasant weather and even when not in actual use will form a very attractive feature as it is sufficiently protected and sunny to make possible a beautiful garden. It adds interest to the appearance of the building and gives fine light to the surrounding rooms.

The dining room and living room combine the advantage of the best exposure with that of the best views, the dining room and its terrace overlooking the lake view.

The terraces are in protected positions and in pleasant weather will be quite practical. However, it is realized that very often these terraces will not be usable, therefore covered and glazed porches are provided for such times. The terraces apart from such use, are pleasing in appearance and have the practical advantage that they make it possible to increase the locker space materially, since they give light and provide commodious ground floor space.

The main living rooms open up nicely and are arranged to be adaptable for entertainment purposes. The living room and dining room are high rooms and the treatment of open trusses make them especially impressive as club rooms.

The service and administration arrangements are excellent. The offices located next to the entrance are light and convenient and the same is true of the coat and cloak room facilities. The kitchen and pantry service is direct and simple. Access to the locker rooms from the various tees and caddy house has been carefully considered.

The simplicity of the architectural features made it possible to adequately execute this design with due regard for economy of cost.

\* \* \*

The Monterey Peninsula Country Club will be formally opened on July 4. For the past year the development work has been in progress and it is planned to have the dunes golf course, tennis courts, beach bathing pavilion, forest swimming pool, trapshooting grounds and other outdoor sport facilities ready for the opening.

Construction work on the \$150,000 clubhouse, of Spanish type of



ATHENS ATHLETIC CLUB, OAKLAND  
WILLIAM KNOWLES, ARCHITECT



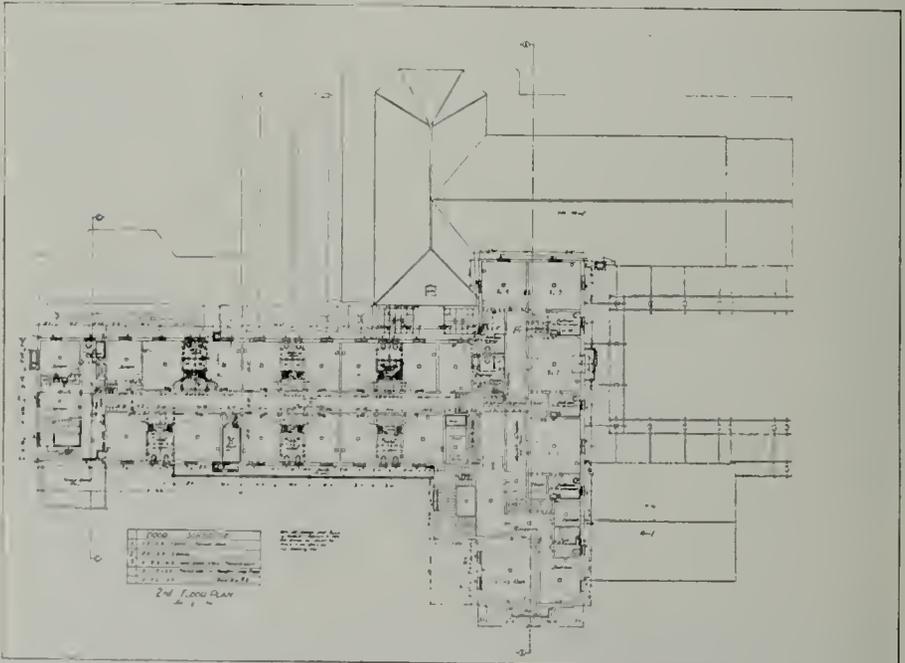
ATHENS ATHLETIC CLUB, OAKLAND  
William Knowles, Architect  
Mural decorations by Heinsbergen Decorating Company



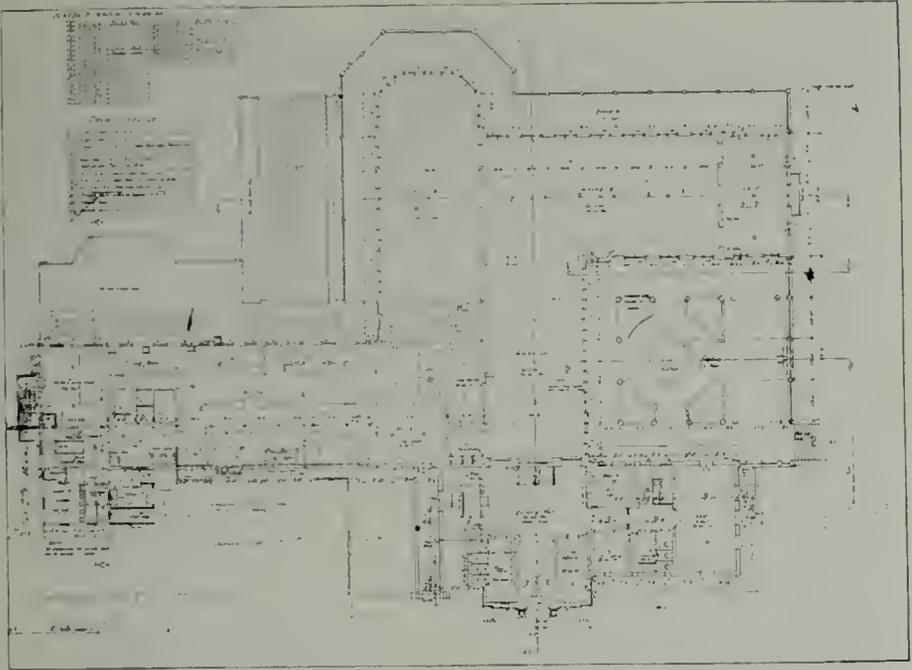
ATHENS ATHLETIC CLUB, OAKLAND  
William Knowles, Architect



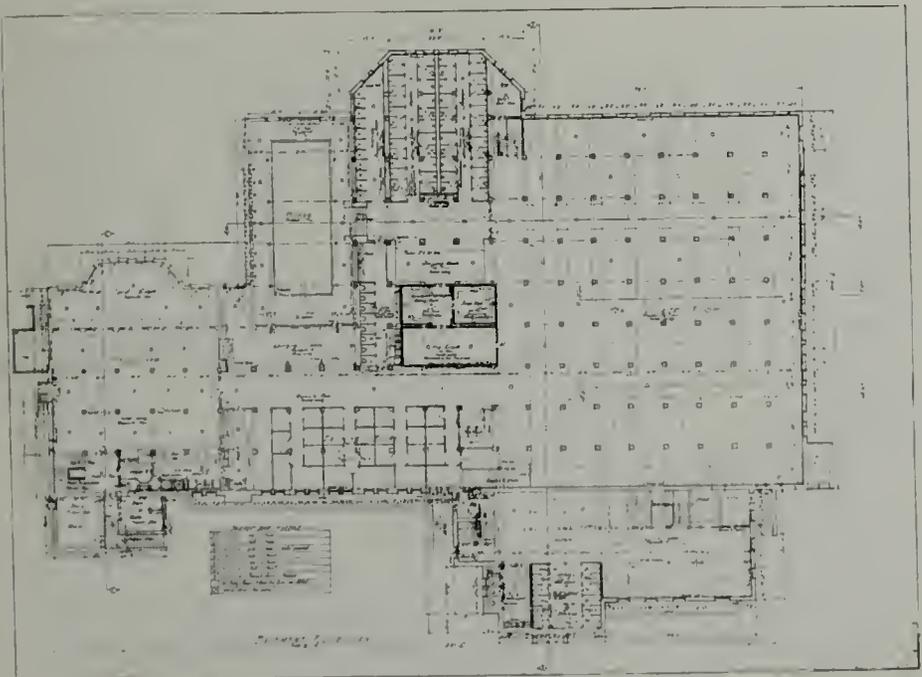
SWIMMING POOL, ATHENS ATHLETIC CLUB, OAKLAND  
William Knowles, Architect



SECOND FLOOR PLAN, OLYMPIC COUNTRY CLUB  
Bakewell & Brown and Jno. A. Baur, Architects



FIRST FLOOR PLAN, OLYMPIC COUNTRY CLUB, SAN FRANCISCO  
Bakewell & Brown and Jno. A. Baur, Architects



BASEMENT PLAN, OLYMPIC COUNTRY CLUB, SAN FRANCISCO  
Bakewell & Brown and Jno. A. Baur, Architects



OLYMPIC GOLF AND COUNTRY CLUB, SAN FRANCISCO  
BAKEWELL & BROWN AND JNO. A. BAUR, ARCHITECTS



FOUNTAIN, OLYMPIC GOLF AND COUNTRY CLUB, SAN FRANCISCO  
Bekewell & Brown and Jno. A. Baur, Architects



PERGOLA, OLYMPIC GOLF AND COUNTRY CLUB, SAN FRANCISCO  
Bakewell & Brown and Jno. A. Baur, Architects



VESTIBULE, OLYMPIC GOLF AND COUNTRY CLUB, SAN FRANCISCO  
Bakewell & Brown and Jno. A. Baur, Architects

architecture, is well advanced. The two golf courses will be the first work of Charles B. MacDonald and Seth Raynor in the far west. MacDonald, an architect of international reputation, planned the famous "National" and some hundred well known golfing places in the east and middle west. The dunes course, the first to be opened, has already been cleared, graded and ready to be seeded.

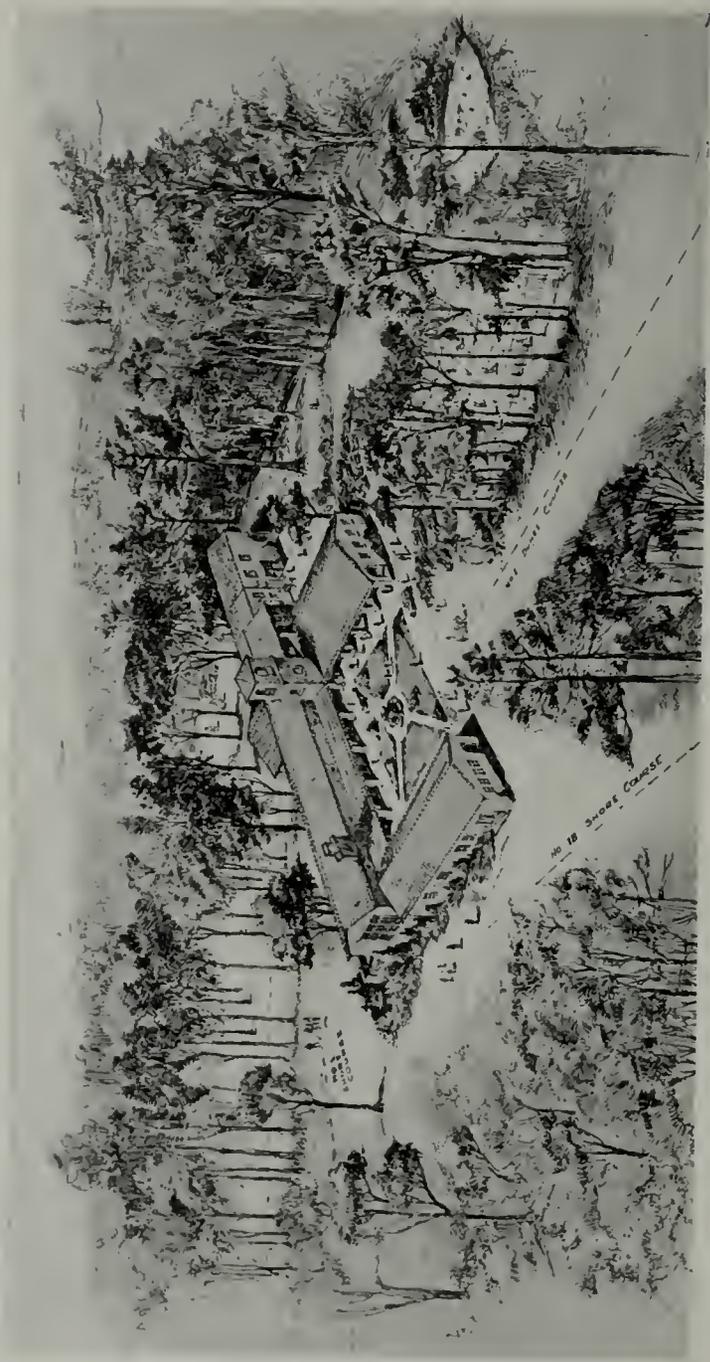
The club's membership now numbers more than 600. Fourteen states are represented. The Monterey Peninsula Country Club will own approximately 500 acres of land including a stretch of two miles along the ocean. More than a million dollars will be spent in developing the grounds.



LOUNGING ROOM, OLYMPIC GOLF AND COUNTRY CLUB, SAN FRANCISCO  
Bakewell & Brown and Jno. A. Baur, Architects

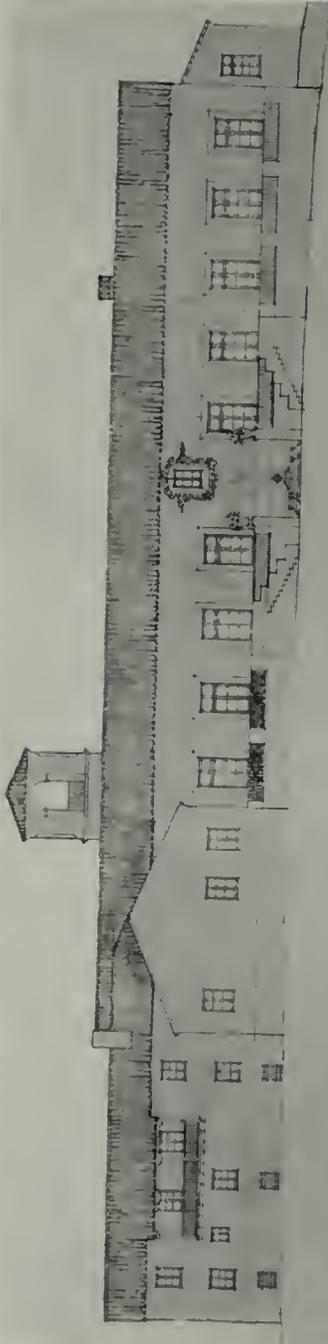


LOUNGE, OLYMPIC GOLF AND COUNTRY CLUB, SAN FRANCISCO  
Bakewell & Brown and Jno. A. Baur, Architects

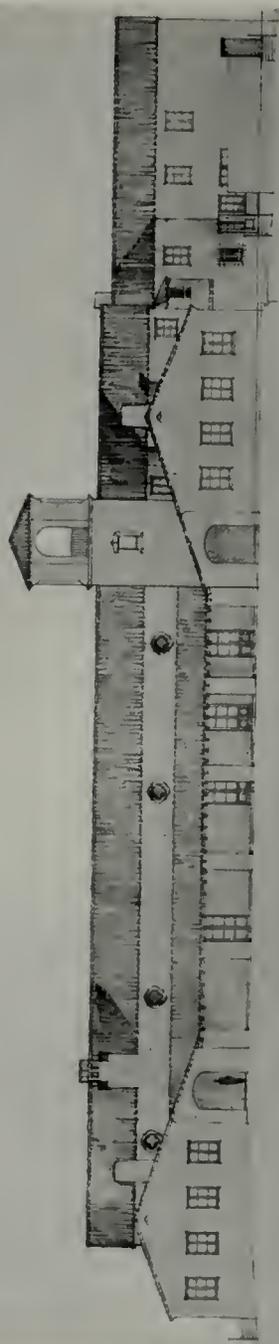


MONTEREY PENINSULA COUNTRY CLUB  
CLARENCE A. TANTAU, ARCHITECT





N O R T H E L L V A T I O N



S O U T H E L L V A T I O N

ELEVATIONS, MONTEREY PENINSULA COUNTRY CLUB  
CLARENCE A. TANTAU, ARCHITECT

## Relation of Construction to Design\*

By HARLAN THOMAS, President,  
Washington State Chapter, A. I. A.

I HAVE chosen to discuss the phase of this subject which has to do with the character of workmanship involved in construction, and the relation of that workmanship to design.

From the building of King Solomon's Temple to the rise of the building contract system, construction was conducted almost wholly under the guild system of craftsmanship.

These guilds were composed of the entered apprentice, the craftsman, master craftsman and the master builder. The master builder and the architect were in most cases one and the same person. The guilds, as it were, housed the entire building family. They created a social order which was sufficient unto itself.

In this social order it was possible for the entered apprentice to aspire to the hand of the daughter of the master builder. These guilds afforded every opportunity for the advancement of the entered apprentice along the different stages of craftsmanship to the goal of master builder. Only the skill and energy of the craftsman prescribed the limits of his advancement.

Under the scrutinizing and critical guidance of the guilds, craftsmanship attained to a high degree of excellence and perfection in construction and creative arts. Through the guilds the architect or master builder was constantly in close, sympathetic touch with the craftsman.

The craftsman was the architect's other self; he caught and interpreted the architect's thought, and strove through his genius and skill to achieve its perfection. His work was his exaltation, his achievements his crowning glory. He was a man among men.

In this atmosphere of sympathetic collaboration was no repression, but rather a powerful appeal to his spiritual or better self which quickened his imagination and initiative and opened wide the gates to self-expression.

(And here let me say, that any program or system which does not reckon with that spiritual or better side of man will sooner or later go on the rocks.)

Under these conditions, afforded by these guilds, the relation of construction to design was a most intimate one. It produced buildings which were marvels of durable construction and surpassing beauty, and which were to become an inspiration to succeeding centuries.

### THE TRADE UNIONS

The trade unions originated in England. In 1892, after more than two centuries of development, trades unionism in the United Kingdom numbered one and one-half million members. We find but few of these were members of the building trades as indicated by the fact that in 1880 the bricklayers' union in England had only three hundred and three members.

The trade unions operated independently of the Craft guilds and were organized for an entirely different purpose. Webb in his "History of Trades Unions in England" says: "In no case did any trades union in the United Kingdom find its origin either directly or indirectly in a craft guild."

\*An address delivered before the National Convention of the Associated General Contractors of America at Portland, Oregon, January 20, 1926.

Prior to the Civil War few trades unions existed in America, and such as existed were purely local in their import and few, if any of them, represented the building industry.

The labor union, as we know it in the building industry, is something quite different from the trades union of the past. It is an institution which developed co-incidentally with the great industrial building expansion which followed the Civil War. In colonial days, continuing on down to this expansion period, building construction was prosecuted under a system of craftsmanship similar to that of Europe, the owner buying the material and the master builder with his craftsmen doing the work. Doubtless this period was involved in some labor troubles, but only such as were local in character and of no national significance.

Beginning with the early '70s, building construction went ahead by leaps and bounds and became one of our foremost industries.

At this time the building contract system came prominently into use and with it came the contractor.

#### THE CONTRACT SYSTEM

In the early stages of the building contract system the component parts of a building were let in separate contracts, with the architect functioning in the capacity of master builder. In 1888 the first general contracting firm in America, of importance, was organized. The firm of George A. Fuller & Son of Chicago came into existence practically on account of the desire of the owner to have a stipulated price for the work, and to make one concern responsible for the carrying out of the entire job, thus avoiding the making of numerous contracts with the unescapable confusion resulting when the various parts are not under one authoritative direction. Thus the transition from master builder to contractor, thence on to the general contractor was completed.

Enormous amounts of capital throughout the United States now began to flow through the medium of the general contractor and the contract system into building construction.

Under this system the master builder was to attempt a double role. Henceforth he was to attempt to "carry water on both shoulders." As master builder he was to endeavor to maintain sympathetic relations with labor, while as general contractor he was inseparably linked up with capital.

The general contractor became the king-pin of the contract system, and so far as the interests of labor were concerned, the tangible representative of capital, and therefore the legitimate target of their antagonism.

Labor was quick to detect the joker in the contract system, which was the urge it contained for cheap labor and long hours, to the end that larger profits should accrue to the general contractor, who was now far removed from labor's sphere of activity or influence. The old time collaboration between employer and craftsman was effectually disappearing, craftsmanship was on the wane, the building trades unions grew enormously and entered the field as national institutions.

Under the contract system labor considered that it did not receive a fair share of the profits, which were supposed to be large, its identity was submerged, its work exploited without much reference to workmanship; "quantity, not quality," was the slogan which was dinned continuously into its ears. Its antagonism to the general contractor and to capital became more bitter each day, and the decadence of crafts-

manship became more and more evident as labor took up the gauntlet thrown down by the infamous contract system. This system contained no appeal to his spiritual or better self, it stifled his imagination and closed the gates to self-expression. Hence the relation of construction to design became seriously impaired.

The general contractor under the contract system is a gambler, the figurehead of an iniquitous system which was forced into existence by the timidity of capital. He does not necessarily wear a checked suit and twirl a roulette wheel, but his is nevertheless a game of chance—and you all know it.

Is it reasonable to expect honest construction under a system which places a premium upon dishonesty, forces labor into antagonistic organization and crucifies craftsmanship?

The contract system has bred a multitude of mongrel contractors, the natural progeny of a dishonest system. These individuals or concerns know nothing of construction and are not interested in good workmanship. They compile their bids from the aggregate of sub-bids, and trust to shopping, peddling, poor workmanship and cheap materials to pull them through. Such individuals are not contractors, they are brokers, wolves in sheep's clothing, preying upon the building public. Such are entitled to no place in building construction which has ever been a calling of high and honorable estate.

What chance has design to receive its proper interpretation and execution when ground between the upper and nether mill stone of a gambling broker and cheap, unskilled labor?

This miserable contract system, evolved, as stated before, from the timidity of capital, is unjust to labor, to the general contractor, to the architect, and to the owner—to all concerned.

When will the owner, the building public, come to recognize the fact that, whether the contractor doubles his reasonable profit, or loses money on his contract, he—the owner—always suffers loss under the contract system? In every case, with the owner, it is heads you win, tails I lose.

Look back over the fatalities in the ranks of the general contractors along the devastated trail of the contract system the past 40 years. If the story could be told of the financial ruin, the hopes, the homes, and the fortunes which have been wiped out, it would indeed be a pitiful one. In early manhood during a visit to New Orleans, Lincoln, witnessing the public auction of a slave girl, exclaimed to his companions, "Boys, if I ever get a chance to hit that thing, by God, I'll hit it hard!"

May we hope for a Lincoln or a St. George to come, buckle on his armour, and slay this hydra-headed dragon, which, stalking in our midst, has upset our building household, sucked up the milk of human kindness, created division and strife where harmony and collaboration are imperative, until construction has become a whited sepulcher in its relation to design.

General contractors and architects, recognizing the decadence of the crafts, are making an effort, here and there, to revive interest in craftsmanship. Guilds have been established. One organized in the city of Portland, Oregon, three years ago, has greatly stimulated good craftsmanship by giving suitable recognition and reward where it belongs. In many places schools have been established where young men are taught the handicrafts and prepared to enter the trades.

These efforts to restore the guilds and to provide new and skillful

workmen among the coming generation are most commendable. However, it certainly seems too bad that the product of all this effort should in turn be fed into the maw of the contract system, where the "worst is equal to the best," and where it will inevitably be shorn of every vestige of pride and spirit in its work.

Thus far it must be patent that my remarks have been arrayed against a system and not against individuals. I so wish it to be understood.

#### COST PLUS SYSTEM

I will now consider a panacea for some of the ills of the building contract system. History tells us of the Dark Ages, a period of 400 years of cultural confusion when civilization seemed to hibernate, yet we all know that out of this darkness came the wonderful Renaissance, the revival of letters, art and architecture. There is nothing so bad that it cannot be crowded out by that which is good. May we not hope then for a rebirth of craftsmanship following the confusion of the last 50 years, and a return to the true process of building construction which was one founded upon confidence. Nine-tenths of the world's business is transacted upon confidence. Why shouldn't the building business be conducted on a basis of confidence in the general contractor and the craftsman?

There have always been many of the legitimate and better class of general contractors, who, recognizing the injustice of the contract system to all concerned, have striven to promote a more equitable system of building construction. During recent years a great deal of construction work has been carried on, on the basis of actual cost plus a percentage to the general contractor.

If you will pardon a personal reference, I desire to say that, for the past 10 years our office has put forth every effort to substitute for the contract system this method of actual cost plus a percentage to the general contractor, and we have reason to believe that the results in every case have been satisfactory to our clients.

Under the actual cost system, the owner pays for just what he gets and the gamble is taken out of the building business. Under this system the owner pays only the sum of the paid invoices for material plus the sum of the paid and signed payrolls after the same have all been checked on the job, in the contractor's office, and the architect's office—to this the contractor's percentage is added.

If the actual cost plus a fixed fee to the general contractor system is used, then an additional compensation of an agreed percentage is paid the general contractor on all extras.

In the selection of a general contractor for the work, the following qualifications are exacted:

(a) The contractor must have sufficient capital with which to carry on the work and have a known reputation for honesty.

(b) The contractor's credit in the material market must be such as to make that market anxious to provide him with material at the most reasonable rates.

(c) The contractor's organization, equipment and management must be such as will insure the performance of construction on the most economic basis consistent with good workmanship.

(d) The contractor must be a master builder in the true meaning

of the term. He must know good workmanship and of what a day's work consists, in each of the component parts of building construction.

When such a general contractor is selected, he is asked to make a careful estimate of the cost of the work according to the plans, specifications and scale details. This duty he performs knowing that he is employed to do the work. Hence he is not under the stress of competition and there is no incentive to misrepresent.

If there is occasion to revise the plans, his figures are also revised to cover such changes. The contractor's percentage or fixed fee is determined in relation to the character of the building under consideration.

With a general contractor in charge of the work who measures up to the above mentioned qualifications, construction will bear its proper relation to design and the owner's best interests are assured.

Under this system, the owner, the architect, the master builder and the craftsman, employed by the master builder, become as of old, one family housed under the same roof.

Under the contract system, as soon as the contract is signed, the feelings and attitude of the parties to the contract toward each other undergo a metamorphosis. The owner suddenly visualizes the contractor as a skinner and fiend for extras, with the architect as his only bulwark of defense. The contractor immediately beholds the architect and the owner as co-conspirators consumed with diabolical intent to lop off every vestige of his coveted profit.

Under the actual cost system, no such calamity can possibly overtake the enterprise. Friendly and effective collaboration hovers over the undertaking like a benediction. Energy, pride and spirit are unfettered. Enmity cannot thrive in such an atmosphere.

The fear that craftsmen will loaf on a "time and material" job is a false fear, especially when their employer is of the master builder type described above. Human nature is the same today as it was 300 years ago. It possesses the same potentiality of spirit, pride, energy and achievement as it did then. Let every man on the job come to know that his is an important integral part in the work, that his efforts to please are going to be suitably recognized and rewarded. Consult with him as to the best manner of executing his part of the work and wisely bestow encouragement and praise when earned.

This will quicken his imagination and unshackle his initiative. Then pride in his work and loyalty to his trust will be the result and "loafing on the job" will become an obsolete phrase.

Many times even in the course of construction, an owner will make fundamental changes in the plans. Under the contract system this is a calamity. Whether true or not, the owner is positive that he is being gouged by the contractor. No matter what the occasion may be, to mention "extra" to an owner is like "shaking a red flag at a bull." It has come to be bred in the bone of the building public that under the contract system the "extra" is an evil device invented by the contractor to add materially to his profits. Under the actual cost system the most radical changes are made without causing a ripple in the harmony of those concerned. At completion of the work under the actual cost method, much to the satisfaction of the owner, he has a complete file of paid invoices, payrolls and statements, which set forth plainly where every cent of his money was spent and he can reassure himself that he

has gotten everything he has paid for and that he has paid only what it actually cost.

Again pardon a personal reference. One year ago our office in Seattle constructed a commercial building under the actual cost system described above at a cost of \$150,000. When the work was nearly completed the owner gave a dinner to all the mechanics who had worked on the building, together with their wives or sweethearts. The dining room, 40x100 feet in size was seated to capacity. When the dinner was over speeches were made by the contractor, the architect and the owner. The owner was generous in his praise of the workmen and commended the fine spirit which they had shown in their work. He remarked that when he built another building he wished to see them all back on the job.

We have another case in point today, which is nearing completion at a cost of \$70,000, under the actual cost plus system. The day before Christmas, the owner came to the job and presented each workman thereon, approximately 30 men, with a clean, crisp \$5.00 bill and wished them and their families a Merry Christmas.

This graceful recognition by the owner in both instances produced a reaction on the men which was indeed good to see and hear. You must admit that had this work been done under contract there would have been no incentive on the part of the owners for such recognition of services.

No doubt many, perhaps all of you, have had experience with this system or some similar one. You are probably sensible to the equal advantages it affords; you are also aware of the fact that its use presupposes responsibility, integrity and ability on the part of the contractor.

With the increase of this type of general contractor the confidence of the building public will increase, and the use of this system of construction will become more general until that day when it is universally accepted, and the contract system, with its brokerage contractor and other obnoxious parasites will have disappeared, and our friend, the walking delegate, resurrecting his kit, will find himself at the head or tail of a guild of genuine craftsmen.

This consummation, so devoutly to be wished, will not come in its fullness this year or the next, but the goal, through continuity of purpose, will eventually be reached. Each step in the right direction, as Shakespeare says.

"Shall lend a kind of easiness  
To the next. The next more easy;  
For use almost can change the stamp of nature,  
And master thus the devil, or throw him out  
With wondrous potency."

\* \* \* \*

## Engineers and Architects Needed For Federal Service

THE United States Civil Service Commission has launched its campaign to recruit approximately 200 engineers and architects who will be needed by the supervising architect's office in the execution of the extensive public building program provided in bills recently passed by the house and senate.

The bills carry \$165,000,000 for public buildings, distributed as follows: For structures in Washington, D. C., \$50,000,000; for post offices and other federal buildings throughout the United States,

\$100,000,000; and to complete the unfinished portion of a building program ordered in 1913, \$15,000,000.

President Coolidge said in an address before the Business Organization of the Government on January 30 that the saving in rents resulting from this expenditure would make it an actual economy.

For this work the Civil Service Commission has announced that it will receive applications until April 30 for positions of architects, associate architects, assistant architects, associate and assistant architectural engineers, associate and assistant mechanical engineers, and associate and assistant structural engineers.

Competitors will not be required to report for examination at any place. Applicants for positions of architect and associate and assistant architect will be rated on their education, training, and experience, and specimens of their work filed with the applications. Applicants for the engineering positions will be rated on their education, training and experience.

Full information and application blanks may be obtained from the United States Civil Service Commission, Washington, D. C., or from the Secretary of the United States Civil Service Board at the post office or custom house in any city.

\* \* \* \*

## English Critic Pays Tribute to California Architects and Their Work

*(Being a Short Review of the Recent Hollywood Exhibition)*

THE Architects' exhibition held at the Regent Hotel, Hollywood, between February 8th and 22nd, had, judging by the attendance, just as much interest for the general public as for the members of the profession. Opening addresses on the evening of February 8th were made by Mrs. Ralph Waldo Trine and Mrs. Richmond, president of the Hollywood Women's Club. Mrs. Richmond made some appropriate remarks on the dangers which usually beset the young and even some of the more experienced architects, more especially in localities in which they are allowed plenty of scope for their originality. Perhaps it was intended to extol the virtue of restraint, which applies equally well to all schools of architecture today.

The exhibit impressed the writer, who has pleasant memories of several voyages 'round the world, as one of the most interesting he has seen. The California architect, speaking generally, may well be proud of many valuable characteristics, for he is versatile, imaginative and sincere. He has a profound regard for fundamentals, traditions and domestic comfort, and he has been blessed with a wonderful background beyond the dreams of avarice.

His powers of execution and the ability to convey to the uninitiated the appearance his building will present on its completion seems to be a natural gift, and one has only to point to perspective drawings signed by Mr. Mason and Mr. Weyl to appreciate this. Some of the drawings by these artists would certainly grace any exhibition walls in the world, and while on that subject, we would like to suggest that this short exhibition should be the inspiration for something more permanent, at which all architects in the state would be represented.

One of the governing factors in the creation of any school of architecture is that of local materials, as John Ruskin was never tired of telling us. Most building materials familiar to us all are near at hand in

California, which may explain the very varied styles of buildings springing up around us.

Climate, as every student of architecture knows, is another, if not the most important factor to consider, which seems to indicate a treatment adopted so successfully by Mr. Seldon Price in the beautiful residence he designed for Mr. Thomas Ince. (Illustrated in this magazine about a year ago.) Mr. Price is to be congratulated on the results, as should also Mr. Alf. Mantz on his design for a residence for Mr. and Mrs. Van Winkle. Mr. Mantz, in his apartment building for La Brea Security Company, has, in the English farmhouse style, achieved something new and at the same time entirely satisfying.

An architect whose work gives one the feeling of "Muffins, firelight and cosy comfort" is Mr. Rolland Holbrook, an effect rather enhanced by the clever brush of Mr. Mason in such drawings as his "Bit of Old England in Hollywood" and the Costa Country Club.

Messrs. Harwood, Hewitt & Barker strike a happy note with their brick and half timber in domestic work and seem to have mastered the difficult art of the disposal of superfluities. Their parochial school is an example of this, also an untitled drawing and the model of a small country house. Mr. Nathan Coleman's hillside houses are well thought out and his application of half timber in strict moderation give his work great character.

The visitor to this exhibition had his notice immediately arrested by the large and well executed perspective drawings by Mr. Stacy-Judd. Mr. Judd appeals very strongly to the emotions which we attribute to a wide experience, and a deep study of the early art of Southern California and Mexico, in all its barbaric coloring and simplicity of line. He seems not only to have successfully applied the principles of the School of Architecture in which he specializes, but has managed to catch the atmosphere of the place in which he works. El Solamanca and Aztec hotels are good examples of this and we venture to say that in this class of work Mr. Judd is in his best vein.

We should like to see more of Mr. McAfee's work, as the residence for Mr. William Slater at Beverly Hills compares well with any in the exhibition in that particular style. A clever piece of designing is displayed in the Apartment Hotel at Oak Park, Illinois, by Spencer Powers and Martin; and Mr. Kyson is responsible for some clean and dignified work, the titles of which have been unfortunately omitted.

Mr. Horatio Bishop's Armanda Chapel is illustrated by some good photographs. We think this can be safely considered one of the gems of the exhibit, and we shall watch Mr. Bishop's future efforts and hope that his conception of a school at Carthay Centre will do him further credit.

Messrs. Roth & Parker show their independence by branching off on a new line in the Waldo residence. There is a great deal to be said for the beauty of the Flemish high angle roof, which they have applied in this case, if it is found by experience to be as practical in these sunny climes as those usually associated with the California bungalow.

Among the designs of modern office buildings, Gogerty and Weyls' knowledge of their job is manifest. The Professional building at Santa Barbara and the Marine Trust and Savings Bank at Long Beach are buildings of which these two young cities should be justly proud and we shall look forward to their early consumation.

Hollywood, Feb. 15, '26.

ROBERT ROSE, Architect.

PORTFOLIO  
*of VIEWS of the*  
WILSHIRE BOULEVARD, CONGREGATIONAL  
CHURCH, LOS ANGELES

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ALLISON *and* ALLISON  
*Architects*





WILSHIRE BOULEVARD CONGREGATIONAL CHURCH  
ALLISON AND ALLISON, ARCHITECTS



WILSHIRE BOULEVARD CONGREGATIONAL CHURCH  
ALLISON AND ALLISON, ARCHITECTS



WILSHIRE BOULEVARD CONGREGATIONAL CHURCH  
ALLISON AND ALLISON, ARCHITECTS



WILSHIRE BOULEVARD CONGREGATIONAL CHURCH  
ALLISON AND ALLISON, ARCHITECTS



WELSHIRE BOULEVARD CONGREGATIONAL CHURCH  
ALLISON AND ALLISON, ARCHITECTS



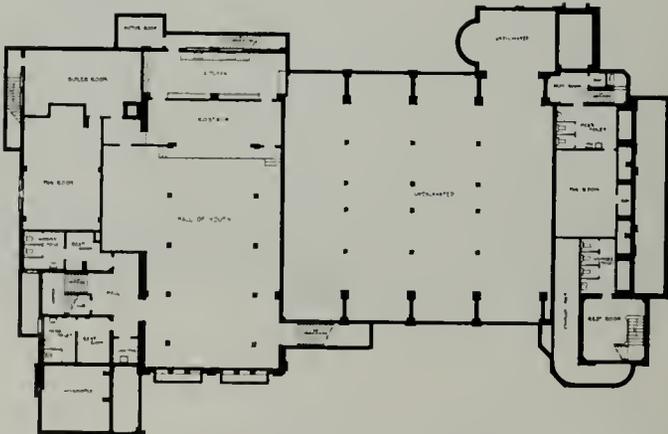
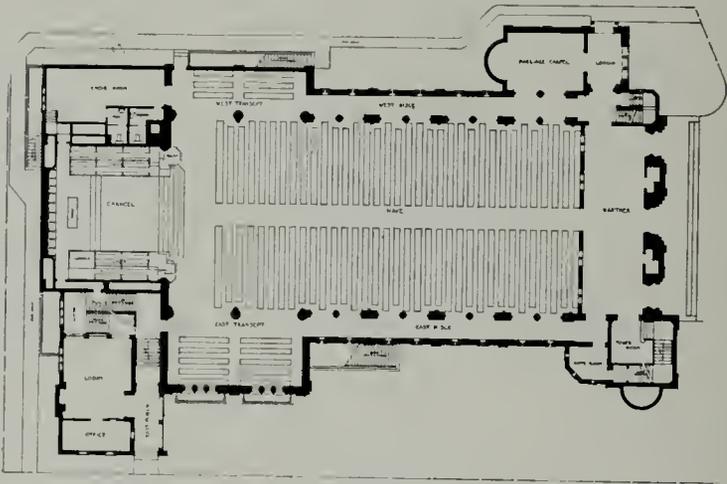
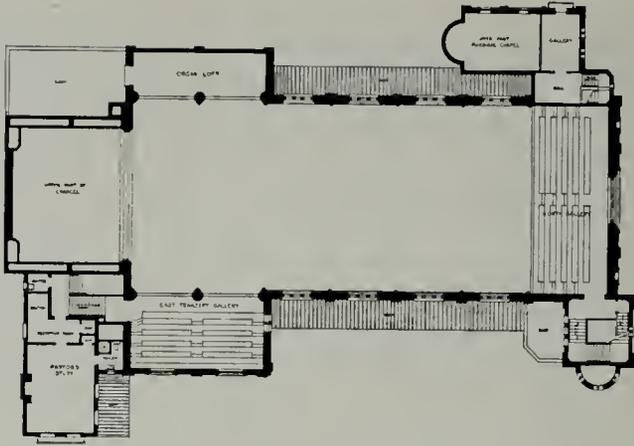
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ALLISON AND ALLISON, ARCHITECTS



PLANS, WILSHIRE BOULEVARD CONGREGATIONAL CHURCH, LOS ANGELES, CALIFORNIA  
ALLISON AND ALLISON, ARCHITECTS

## Some Notes on Copper Roofings

By JOHN F. GOWAN, Architectural Engineer

Copper and Brass Research Association

THE use of copper as a roof covering is centuries old and world wide. In Asia the Nagoya Temple in Japan dates back to 1411 and the Temple of Heaven in Peking was erected in 1420. These buildings, more than 500 years old, are roofed with copper. Among the oldest examples in Europe are the tower of the Bourse in Copenhagen, Denmark, 1619, and Kronberg Castle, Helsingfors, Finland, about 1635. On this continent is a copper roof which is 17 years older than the United States. It is on Christ Church, Philadelphia, and was put on in 1758—168 years ago.

Perhaps the oldest copper work in the world which is still in use is the Dragon weather-vane on the Beffroi in Ghent, Belgium. This was erected in 1377 and is 549 years old.

Today a large number of monumental buildings throughout the United States and Canada have copper roofs. Among them are the State Capitols of Massachusetts, Mississippi and Nebraska, the Woolworth building and St. John's Cathedral in New York, the Milwaukee Auditorium, Milwaukee, Wis., and the Chateau Frontenac in Montreal. On the Pacific Coast outstanding examples of copper roofing are the Church of the Good Shepherd at Beverly Hills, California, Malaikah's Temple and the Public Library in Los Angeles.

Copper is acknowledged to be an excellent material for general sheet-metal purposes—particularly for roofing, as well as for gutters, leaders, flashings, cornices, etc. Its physical and chemical characteristics make it an outstanding metal for long service under severe conditions. As there are practically no maintenance costs its service value increases with age. It has a high salvage value.

Copper roofing is light in weight, as compared with other roofings of a durable nature. The following table shows that copper is one of the lightest of roofing materials:

Material	Weight of 100 sq. ft. laid
Shingle Tile .....	1200-1800 lbs.
Spanish Tile .....	650- 850 "
Slate .....	450- 675 "
Asbestos Shingles .....	300- 650 "
Hardlead Sheets .....	210- 325 "
Wood Shingles .....	200- 300 "
Copper Spanish Tile .....	110- 125 "
16-oz. Copper (Standing Seam) .....	125 "
Copper Shingles .....	85- 100 "

There are many materials on the market which can be bought for prices considerably less than the simplest form of copper shingles. But none of these roofings can be compared for longevity with copper and few of them can be considered so far as appearance and beauty of finish and texture are concerned. Copper roofing is not cheap but it is the least expensive of any of the durable, quality roofing materials.

Copper retards appreciably the corrosive action of acid fumes and is a most effective material for use under extreme atmospheric conditions such as are found in manufacturing localities and cities. Near the seacoast and in the pure air of the West its longevity is unquestionable.

The green coating or patina which appears on copper after exposure to the atmosphere not only acts as a shield against deterioration, but also makes it a most beautiful roofing. It does not require protective treatment of any kind. Copper in the new state is, as we all know, a distinctive reddish color. Under the action of air and rain it tarnishes, turning from a bright sheen to a dull brown. This dark color is gradually replaced by the characteristic green carbonate insoluble coating, which is a distinctive feature of copper. The length of time that it takes to acquire this green depends entirely upon atmospheric conditions. Along the seacoast the green comes in a year or two. In drier localities the process is naturally slower.

There are two classes of metal roofings: those laid with (1) large sheets and locked, soldered or unsoldered seams, and (2) shingles and Spanish tile. The first class is familiar to everyone, with its straight lines making the seams. It is used chiefly on large buildings, with studied arrangements of the seams for architectural effect.

There are two methods of applying copper sheets in large sizes to sloping roofs, viz.; the ribbed seam method and the standing seam method. In the former wood ribs about two inches wide and two inches high are used to break up the roof surfaces. They are evenly spaced up and down the slope of the roof and the sheets are worked over them. It is obviously an expensive form of roofing, for it uses more copper and labor than do other types. It has to recommend it dignity, character and beauty, and by its construction it amply provides for expansion and contraction, the bugbears of all metal roofings. On large steep roof areas, such as mansards and gables, for public buildings, churches and large residences it is used because of its decorative features and its durability.

The standing seam method has the seams or locks (the edges of the metal are folded together) forming the longitudinal joints left standing. Again there is ample room for expansion and contraction, and the monotony of a flat surface is done away with. It is somewhat similar to the ribbed type but has the advantage of costing less. Moreover it can be used artistically on small buildings having comparatively flat roofs, as well as on steep slopes.

There is another type of sheet roofing which is used on flat surfaces. This is known as the flat seam method. The sheets are used in small units (about 18"x24"), and the seams are malleted flat and soldered or filled with white lead. This type of construction is used on flat areas such as porches, decks, etc.

It is apparent that the ribbed seam and standing seam methods are more suitable for large than small buildings, but there are outstanding examples of their use on small residence, both old and modern. There are a number of houses of modest size, constructed during the colonial period in and about Philadelphia and in the South on which standing seam copper has been used. One of these in Madison, Ga., is 93 years old.

Sheet copper roofing can be done by any competent sheet-metal contractor. The methods are similar to those for other metals, with a few special precautions which are necessary for good copper work. Sheet copper roofing is placed only over a smooth surface. Here shingles have a distinct advantage for they can be placed over an old shingle roof with ease and satisfaction.

Another form of copper roofing well adapted to houses is copper shingles and Spanish tile. These are stamped from sheet copper in a

variety of sizes and designs. The method of application is extremely simple. They are secured by copper nails at the top edge and each shingle or tile locks with adjoining ones to form a water-tight joint. As the joint sheds the water, no soldering is required. The lock provides ample room for movement so no allowance for expansion and contraction is necessary. Copper shingles can be laid by any good mechanic. Of course, at flashing points the services of a competent sheet-metal man are essential.

Copper shingles are light. A roof so covered weighs only one-ninth shingled roofs. Because of their raised butt construction there is an air space between the shingle and the roof covering which provides ample ventilation with consequent coolness in warm weather.

Copper shingles are light. A roof so covered weight only one-ninth as much as slate and one-third as much as wood.

Another form of copper shingle consists of a plating of copper deposited on a slate-covered asphalt base. This is a light weight, durable, inexpensive roofing. The copper plating, beside adding a rich green color, stiffens the asphalt shingle and prevents to a large extent the lifting due to wind action. These shingles are well adapted to use on the smallest bungalow, or even a large residence. Their cost is little more than the good grade asphalt shingle.

Copper Spanish tile, stamped from sheet copper, is a useful form of roofing on buildings of Spanish and Italian design. They are durable and beautiful and they are easy to install. They weigh about one-sixth as much as clay tile.

On the Pacific Coast an outstanding example of the use of copper shingles can be found in Canon Vista Park, Santa Monica. Here a sample house was roofed with copper shingles. It has attracted a great deal of favorable comment and other residences in this locality are being roofed in the same manner.

For small houses particularly copper shingles are an excellent roofing. They are durable, first cost is the last cost. They are beautiful. No treatment is necessary. They combine permanent protection against the elements with attractive appearance. No other metal roofing has these advantages.

\* \* \* \*

## Studies of Bond Between Concrete and Steel

“STUDIES of Bond Between Concrete and Steel,” by Duff A. Abrams has just been published as Bulletin 17 of the Structural Materials Research Laboratory, Lewis Institute, Chicago. The report is reprinted from the 1925 Proceedings of the American Society for Testing Materials.

Bond tests were made by applying a pull on one end of 1-in. plain round steel bars embedded axially in 8 by 8-in. concrete cylinders; parallel compression tests were made on 6 by 12-in. concrete cylinders. The concrete covered a wide range in quantity of mixing water, cement and size and grading of aggregate. Tests were made at ages of seven days to one year. 735 pull-out bond tests and 735 parallel compression tests were made.

The principal conclusions from the tests are:

(1) Slipping of the bar began at a bond stress of about 10 to 15% of the compressive strength of the concrete, but considerable additional load was taken before the ultimate bond resistance was reached.

(2) An end slip of bar of 0.0005-in. occurred at 55 to 60% of the maximum bond. For mixtures leaner than 1-1, the maximum bond was about 24% of the compressive strength of the concrete and came at an end slip of about 0.01-in. regardless of the characteristics of the concrete.

(3) Bond and compressive strength increased with age of the concrete from seven days to one year. For 1-5 concrete of water-ratio 0.88, the bond at one year was 134% of the 28-day value and the compressive strength was 148%.

(4) Bond responded to changes in water-ratio of the concrete in much the same way as compressive strength; increase in water-ratio due to use of wetter concrete, less cement, or an excess of fine aggregate, resulted in material reductions in both bond and compressive strength.

(5) For mixtures richer than 1-1 the bond fell off probably due to the greater volume changes during hardening, which is characteristic of such mixtures.

(6) The use of 4% of the 28-day compressive strength of concrete as the working stress in bond for plain bars, as specified by the Joint Committee, is justified; this gives a factor of safety of about  $2\frac{1}{2}$  to 3 against first slip.

(7) The use of crude oil to replace mixing water, in general, caused a reduction in both bond and compressive strength of concrete due probably to the lubricating effect of the oil. Replacing cement with hydrated lime also decreased the compressive strength and bond about 1.2% for each 1% of hydrated lime in terms of volume of cement or about 2% for each 1% by weight.

\* \* \* \*

## The Economic Life of Buildings

"That seven years is the financiers' expectation of life for new buildings was set forth in a recent article in the Journal of the American Institute of Architects. While we do not believe that there is any compilation of data to support such an estimate, nor that any such generalization can be practically applied to the expected economic life of any particular building even though an average estimate was prepared from full data, such a statement is startling to say the least.

"A thorough study of the subject would be of great interest and value to the entire industry. We know that, while reputable bond houses are floating issues that mature at dates up to 15 years from the time of issuance, the estimated profitable life of buildings has been getting shorter. This is happening, not because of structural defects in the buildings but because the changing classes of tenants, increases in land value and higher taxation make it necessary to use the land more intensively by building structures having greater rentable floor areas and higher earning power.

"If the shortness of building life does come down to seven years revolution in the art of structural designing and erecting will necessarily follow. However distant such an eventuality may seem at present it is no more startling than the skyscraper developments of the last 30 years. In such an eventuality contractors will be found able and competent to execute structurally sound, lightweight, shortlived projects whenever such are demanded and building codes allow them."—The American Contractor.

## How Overhead Consumes the Architect's Profits

By CHARLES H. KYSON

President The Architects' League of Hollywood

ARCHITECTS and engineers apparently know less about their costs and the way overhead affects them than the ordinary business man. And the report of the Federal Trade Commission is not at all flattering to the American business man. The Architects' League of Hollywood is attempting to dispel this mantle of ignorance and show the light to at least the architectural and engineering professions. As an architect I want to make a fair profit on my work and it is difficult for me to do so if the fellow in the next office is quoting prices considerably under mine on the mistaken assumption that he can do the work at this low figure and make for himself a profit.

If the following article will help dispel this ignorance as to the cost of overhead it is going to assist every architect, every engineer and every publication in which it appears and which is attempting to serve them. The average architect and engineer are rather retiring, modest citizens, and when it comes to tooting their own horns, they are good listeners. Intelligent publication can accomplish much, and that is what the Architects' League of Hollywood is attempting to do.

The problem of how much to charge against a given amount of draughting room expense is a very vital one for the architect to solve, otherwise his margin of profit can easily be wiped out. It is absolutely necessary that a simple time card system be kept showing the number of hours, draughtmen's time, and the amount of dollars in draughting salary that have been consumed on any given job. No intelligent cost analysis of an architectural business can be made without this information, nor can any efficiency in a draughting room be maintained without a time card system. This can be of the simplest character and can be kept by the office boy or stenographer. The draughting room time in dollars is to the architect what the wholesale price is to the merchant. The merchant takes the wholesale price of an article and multiplies it by a percentage markup and thus gets his retail price. It is a very simple matter for the architect to apply this principle to his own business. He obtains the percentage markup in the following manner:

### FORMULA (A)

Formula for obtaining markup including profit:

$$\frac{\text{Sd plus O plus As plus P}}{\text{Sd}} \text{ equals Mp}$$

### FORMULA (B)

Formula for obtaining markup showing actual cost only:

$$\frac{\text{Sd plus O plus As}}{\text{Sd}} \text{ equals Mc}$$

- (Sd) Draughting room salary.
- (O) Office expense.
- (As) Salary or drawing account of architect.
- (P) Profit.
- (Mp) Percentage markup which includes cost plus profit.
- (Mc) Percentage markup which does not include profit, and shows actual cost.

It is well to note the distinction between the cost markup (Mc)

which merely gives the cost of producing the work. The profit markup (Mp) includes the cost plus the profit made by the architect. For the sake of illustration, assume that the profit markup (Mp) works out to be 340%. This Mp will vary slightly from month to month. The architect could figure out these markups each month and also average them over a number of months so that he can judge more accurately what this percentage markup should be. There is one thing the markup does. When taken over an average of a long period of months, or even of years, it takes into consideration the factors of good times and bad times, busy periods and slack periods, vacations and times of illness, accidents, etc., so that when the markup covers such long periods of time as an average of 12, 24, 36 or 48 months, the business will have gone through practically every economic vicissitude and these will be taken care of by the average markup.

My bookkeeper has just handed me my markup figures for 26 months: Mc equals 380.1%. Mp equals 431.6%. This time included a rush period, a very slack period, six weeks of vacation, and the luxury of a broken leg which put me on my back for 2 months in a hospital. The commissions I charged were never below the schedule as set by the American Institute of Architects; in many cases they were higher by a considerable margin.

The percentage markup is a very valuable factor in your business and should be watched very closely. It can be used in various ways as shown in the following problem:

#### APPLICATION OF MARKUP SYSTEM

Problem: The draughting room salary for a set of plans equals \$100.00, and at this point of the work the client decides to discontinue the work, and wishes to know how much the architect will charge him. This works out as follows:

$$\$100 \times 340\% \text{ Mp} = \$340.00 \text{—Amount of bill.}$$

Problem 2: An architect has a \$20,000 house. His commission is 6.0% for making the drawings. He wants to know how much he can afford to put into the draughting room salary:

$$6.0\% \times \$20,000 \text{ (cost of house)}$$

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$$3.4 \text{ or } (340\% \text{ markup})$$

equals \$352.95—Amount he can afford to spend for draughting room salary on this job.

Personally, I use the markup system to a great extent in checking my costs and I find it invaluable. The Architects' League of Hollywood in their desire to solve the problem of the correct allocation of overhead to each job in the office, employed a well-known firm of cost accountants to work out a simple but effective system of bookkeeping for an architect's office that would show how much each job cost in draughting salary and how much overhead it should carry. The accountants found several methods for allocating overhead to each job, but they were so very complicated that it was apparent the average architect or engineer would throw up his hands in despair if he attempted to use some of the solutions. It resolved itself down to Formula (A) and (B). (A) and (B) are the simplest and therefore the most usable. But in using either Formula (A) or (B) you must roughly take the time factor into consideration to this extent. Always put as many draughtsmen on the plans as you can possibly work efficiently, in order to get them finished and out of the office as quickly as possible. The rats of overhead are

always nibbling at the profit on the job and the longer it stays in the office the less you make, and the profit can vanish very quickly.

Problem: A house is to cost \$20,000. The commission for the plans is 6.0% or \$1200.00. (A) How many dollars can be allowed for overhead, and how much office time can be allowed in getting out this set of plans in order that a profit can be made? (B) How much draughting room salary can be allowed in getting out plans and still maintain a profit?

Referring to Table III, we find—

Office expense .....	25.68%	of gross architect's com.
Architect's salary .....	34.42%	of gross architect's com.
Profit is .....	10.28%	of gross architect's com.

Total overhead .....70.38% of gross architect's com.

70.38% (total overhead) x \$1200.00 (gross com.) equals \$844.56.  
 \$844.56 allowable overhead for these plans

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\$1225.79 (overhead of ofc. per month, see  
 table II, column B)

equals 68.9% of a month, or approximately three weeks, the time the plans must be gotten out of the office in order that the job show a profit.

Answer—Proposition (A).

Solution to Proposition (B). From table III we find the draughting room salary runs 29.62%. 29.62% x \$1200 (Gro. Com.) equals \$355.44—amount allowable in draughting room salary. Note it would be economical to put one draughtsman on the job at \$65.00 per week and one at \$50.00 or \$115.00 a week and allow them three weeks to get out the drawings. They should do it in a little less time. This would naturally add a little to your profit.

Table No. 1 will be found very valuable to show how much it actually costs to produce a set of plans, both in draughting room salary and the proportionate overhead chargeable against these plans. It is very much greater than is commonly supposed, for the reason that only in the rarest of instances does the architect add the correct amount of overhead to his draughting room salary cost. Many architects think that draughting room salary is the principal item of expense in getting out a set of drawings. Such is a very mistaken idea, as the following table will show. The cost markup (Mc) was 327.62% (see formula B). This markup was taken over an average of 24 months and during this time there were very busy and very slack times in the office.

Compare the cost of the \$85,000 church at 5.29% with the cost of the \$135,000 hotel at 2.34%. Obviously this is due to several factors: 1. The church was a Gothic structure and consequently the plans had to be more fully illustrated with details. 2. A church plan is bound to take longer to go through the office than an ordinary job, due to the long conferences, getting decisions, submission of plans to building committees, church membership, etc. 3. Had the church cost twice as much the plans would have been done in practically the same time and this would naturally have reduced the percentage overhead from 3.47% to about 2.85%. The salary for draughtsmen in percentage could easily be reduced from 1.82% to probably 1.5%, or a total reduction in the cost of the plans of from 5.29% to 4.35%. This shows that it is never safe to determine your cost by using percentages only. Figure out your

costs by taking the draughting room time and finding out what it means in dollars; the same with overhead and then add a reasonable profit and see how it works out in percentage.

Table I presents some very interesting, and vital facts. In the first place it will be noted that as the cost of a residence increased there is a tendency for the percentage cost of the plans to increase. This is explained by the increased amount of detail drawings necessary to illustrate the construction of the house. And only expensive draughtsmen are capable of doing this work. Also with the more expensive houses the plans take much longer in their preparation and this increases the overhead. In considering the costs of the plans in table I it is well to state that these plans were well detailed and studied, but no more time was put on them than was necessary to produce a reasonably first-class result. Also to legitimately cut the expense of these drawings they were all made on tracing paper with lead pencil. Drawings on linen naturally cost considerably more than on tracing paper. Also it is interesting to note that the plans for an English house cost from 10 to 20 per cent more than for a Spanish or Italian house, the reason for this being the greater detail drawings necessary to illustrate the construction.

Referring to Table No. 2:

Value of architects' or builders' time per hour: There are 52 weeks per year. Deduct two weeks for a vacation, one week for holidays, and one week for illness, equals 48 productive weeks per year. Now 48 weeks x 42 hours per week equals 2016 hours. For ease in figuring call it 2000 productive hours per year, or the time the architect has to produce his overhead and make a profit for himself.

The items composing the overhead in Table No. 2 are very comprehensive. When an overhead is ordinarily figured it is not as complete as the one above enumerated. However, bear this in mind, if you do not charge these items into your overhead, you are simply presenting to your client something to which he is not legitimately entitled and it is coming out of your own very meager margin of profit. Most of the items are self-explanatory. The matter of item No. 30—bad debts—is one which is perhaps open to question. Many clients would feel that they should not be required to pay for the bad debts of other clients, and that it should come out of the architect's profit. Better business methods will cut this item down. Many people start to have plans drawn who are long on conversation and short on cash. Look out for them, as that is where most of your bad debts come from. Regardless of how careful you may be you will contract bad debts, and \$50.00 a month is little enough and will probably not cover them. Merchants carry a charge for their bad debts in their overhead. From an accounting standpoint it is an allowable item. Watch this very carefully—many a promising business has gone under because of this item alone.

Item No. 31—Expense of non-productive sketches—is the great leak in an architectural business. Here again we meet the glib promoter whose principal capital is an idea and usually a poor idea at that. Shun him as you would the devil because your association with either of the gentry will be devoid of profit. "Non-productive sketches" is the great reef upon which the bark of many promising architectural and construction business have crashed to their utter ruin.

I once overheard the following conversation between two fast talking real estate promoters: "Now, to put this deal over we'll have to

have some sketches of the building to go on the lot," said the first High Pressure Conversationalist. "I know," said the second, "but we'll have to pay for them, and who's going to put up the money?" "Pay for them? I should say not," said the scandalized geographical merchant, "we'll get some boob of an architect to make them for nothing, and hand him a fast line that he'll get the job." An enviable reputation many of us have, isn't it? Was the real estate promoter right? Friend architect, let your conscience answer.

A safe rule that will save you many thousands of dollars, years of time and much mental anguish is to say—"Well, I'll be glad to furnish you sketches, they will cost you \$300.00." The amount you quote is immaterial to the lightweight promoter—any amount quoted would be too much. This is the acid test. If they are irresponsible they will gently fade away. But console yourself with this—the jobs out of which you make the most money are the jobs you never get. This irresponsible type of promoter rarely puts a deal over. If he lacks confidence enough in himself to back his judgment with some money he very rarely carries enough conviction to put a deal over. The reputable promoter will meet you fairly and pay for his sketches. You can separate the sheep from the goats every time. Stiffen up your backbone and apply the acid test. If you don't you will always be "chasing rainbows" and at the end of the year you will wonder why you didn't make any money. You will have the dubious satisfaction of knowing that it was because of your lack of business ability to figure out what your profits ought to be, or if knowing them, it was your lack of moral courage to fight for them. Know your costs—show your client that you do know them. He will respect your business ability all the more and have greater confidence in you as an expert in the building business. If by analyzing your costs you convey this impression, the time thus spent will pay you big dividends.

Cost of Superintendence—

Cost of superintending a building to the architect or builder—Is very much higher than is ordinarily supposed. Let us take a fairly typical case:

Problem 1—A house costs \$15,000.00. It takes 18 weeks to build and requires 3.0 visits upon the part of the architect per week. He will need to spend 2.0 hours on the job and one-half hours office work per visit or 2.5 hours per visit.

Solution: 18.0 weeks x 3.0 visits per week x 2.5 hours x \$7.36 per hour (See Column B, Table 2) equals \$993.60, total cost to architect, no profit. \$993.60 divided by \$15,000 (cost of building) equals 6.62% cost of superintendence to architect. This includes no profit.

Problem 2—Cost of a house is \$20,000.00. Time of construction is 26 weeks. Distance from office to job is 20 miles. Architect visits job 1.5 times per week. Architect's paid superintendent visits job 2.5 times per week. Time consumed per visit is 2.5 hours. The percentage of cost markup (Mc) (see formula "B") is 300%. Amount of architect's commission is 6.0% for drawings and 4.0% for superintendence.

Solution: Cost of architect's time in superintendence:

26 weeks x 1.5 times per week x 2.5 hours per trip x \$7.36 per hour (see table II, column B) .....\$ 717.60

Cost of paid superintendent's time: \$60.00 per week. 42 hours per week equals \$1.43 per hour x 300% (Mc) equals \$4.29 per hour x 2.5 hours per trip x 2.5 times per week x 26 weeks equals ..... 698.13

Auto Expense—As the distance is 20 miles, assume that it is 15 miles more than would be covered by item 25, table II, then a round trip equals 30 miles x (4.0 visits per week) x 26 weeks x \$.08 per mile ..... 249.60

Actual cost of superintendence, including no profit to architect, \$1665.33  
\$1665.33 (cost of superintendence)

\$20,000 (cost of building)

equals 8.33% or cost of superintendence, or a loss in percent to architect of 4.33%.

Commission for superintendence:

4.0% x \$20,000, cost of building .....	\$ 800.00
Total cost of superintendence .....	\$1665.33
Loss to architect .....	865.33
	<hr/>
	\$1665.33 \$1665.33

Conclusion: For residential work the ordinary price is 6.0% for drawings and 4.0% for superintendence, or a total of 10.0%. Now 4.0% is obviously not enough for the superintendence as outlined above. The cost to the architect for his time is \$7.36 per hour (see table II, column B). His superintendent's time costs him \$1.43 x a 300% (Mc) or \$4.29 per hour. These figures are actual cost to the architect. He should have a profit of at least 20% of his total commission. (He seldom does (however.) The charge he would then have to make for his own time and his paid superintendent's time, including this 20% profit would then be as follows:

	Archd. Time per Hour.	Supt. Time per Hour.
Actual cost to architect .....	\$7.36	\$4.29
Profit at 20% .....	1.48	.86
	<hr/>	<hr/>

Amount architect should receive per hour if  
 he is to make a profit ..... \$8.84 \$5.15

Where the question of what charge to make for superintendence comes up the best way to handle the situation is to disregard the ordinary precedent of charging a fixed percentage for your superintendence. Show your cost figures to your client and tell him that is the amount of money that should be spent to superintend the building. If you do not think that this would be acceptable to him assume for the sake of argument that he is willing to pay the customary 4.0% for superintendence. 4.0% x \$20,000 is \$800.00. Divide \$800.00 by \$8.84 per hour which equals 91 hours, and write into your contract that you will spend 91 hours in the superintendence of his building. If he wishes more of your time you will charge him at the rate of \$8.84 per hour. In this way it is fair to both the architect and his client because the owner

gets what he pays for and the architect is paid for what he does. You will find under these conditions that the owner will not act as though he owned you body and soul, and demand an utterly unreasonable amount of your time in the superintendence of his work. If you do not watch this item carefully and cover it in some form of contract, as above suggested, you will always be the loser, particularly on small residential work. To show the costs of operation of an ordinary architectural business, the following table III was compiled, and may be considered fairly typical. It was an average of 21 months taken from an actual business. It may be used to check any architectural business against these percentages. In this particular business it was fairly typical, fine residences, churches and some commercial buildings, and was an average of busy times and slack times.

TABLE No. 3

Item	Percent
1. Draughting room salary .....	29.62
2. Office expense composed of items set forth in table II except that architect's time was omitted .....	25.68
3. Office expense plus draughting room salary, or item (1) plus (2) .....	55.3
4. Architect's salary .....	34.42
5. Profit .....	10.28
6. Gross collections .....	100.0

If this item No. (3) runs above 60.0% it is a sure indication of danger, and does not indicate a healthy condition of the business. For instance, if an architect makes a reasonably complete set of plans and item No. (3) ran over 60.0% it is a sure indication of the following difficulties:

- (1) The architect is not getting enough for his services.
- (2) His office expenses may be too high.

(3) Time may be wasted in his draughting room due to the high cost of conversation, cigarette smoking, or the various other time-wasting activities in which many draughtsmen are adepts.

(4) The plans are not being completed in the office in a reasonable time. I wish this could be written in red ink in this article. A set of plans should always receive a sufficient amount of study to produce first-class results. But, if this can be accomplished in one month do not let it run into two months. The clock is ticking off your overhead at 13 cents per minute, or \$7.36 per hour, and every unnecessary hour that set of plans stays in your office takes just that much from your profit. Think it over.

Let us place ourselves for the moment in the position of the architect or designer who, due to the ignorance of his costs, makes the plans of his buildings at cut rate figures. Leaving the artistic quality of the work out of consideration, we will assume that the plans he makes are prepared in a workmanlike manner with sufficient constructional details shown so that his buildings can be estimated and built in a satisfactory manner. Let us assume that he believes he can make the plans and superintend residences for 6.0% and commercial buildings for 2.5%.

He would then have to do considerably more than twice the amount of work that a man would have to do who gauged his price by the standard of the American Institute of Architects. He would have to work more than twice as hard. It would take a much greater effort to finance the volume of business, and he would have the peculiar experience that while he had done a tremendous volume of work during the year, he would have made nothing out of it for the simple reason that he would really be operating at the very best, at cost, and in many cases, greatly under cost. His overhead would have to be met and at these prices the percentage of his draughting room salaries to his gross collections would be tremendously high. In other words, he would be working exceedingly hard and the only ones who would get anything out of his business would be the draughtsmen and the owner. There is no exaggeration of this condition of affairs. It exists in a great number of architects' offices. A new job merely tends to finance the old one, and the architect has no cost system to guide him, and he cannot understand why he does not make money out of his business.

The foregoing figures point out the difficulty and the way it can be avoided. They further point out this fact with inexorable clearness, that the scale of the American Institute of Architects should be the minimum scale under which an architectural business is conducted, if the architect ever hopes to make any money out of his business. There are many cases, particularly where the costs of buildings do not run into a great amount of money, that an architect adhering to the scale of the American Institute of Architects would face a loss on every job that comes into his office taken at that scale. The only hope that an architect has to make money out of his business is that he shall conduct it with the same analytical regard to his costs that any skilled merchant or business man would use. Every architect should be familiar with the principles of cost accounting and should make a very careful study of the cost of overhead and profit in his business. If he does this he will be successful as an architect and as a business man, and if he does not, just assuredly will he fail.

This article has been written with the idea of furnishing just enough figures and methods to show how such an analysis can be made. The figures have been taken largely from the cost data furnished by the Architects' League of Hollywood. This group of architects have furnished these figures with the idea that they are not merely the costs of an individual business, but they are the costs taken from an average of a number of well conducted businesses, so that they will serve as a more or less reliable guide to any architect or builder using them as a check against his own business. The profession of architecture is a necessary and vital one to the community, and there is no reason why architects and builders as a class should not make a reasonable profit for their effort. To do this the public must be educated as to costs, and the only ones who can educate them are the architects and builders who know their costs.

NOTE—Costs of the buildings as figured in this table do not include architect's fees.

TABLE No. 1

	Draughting Salary in % of Cost of Building	Overhead Exp. in % of Cost of Building	Total Cost of Draw- ings in % of Cost of Bldg. (No Profit to Architect)
	Column 1	Column 2	Column 3
Average of 8 houses costing up to \$10,000.....	1.56	2.97	4.53
Average of 8 houses costing up to \$15,000.....	1.39	2.98	4.37
Average of 2 houses costing \$25,000 to \$30,000....	1.82	4.15	5.97
Average of 3 houses costing \$40,000 to \$70,000....	2.08	3.98	6.06
One \$90,000 house.....	2.04	3.90	5.94
One \$135,000 hotel.....	0.71	1.63	2.34
One \$85,000 church.....	1.82	3.47	5.29

Column No. 1 equals the salary paid to the draughtsmen. No architect's salary is included in these amounts, as the architect's salary is considered as overhead and comes in Column No. 2.

Column No. 2 represents the overhead as set forth in Table No. 2.

Column No. 3 is the total cost of making the drawings. No superintendence is included in this. To arrive at the figures in Column No. 3 average markup Mc was 311.0%. The costs of the drawings in Column 3 include no profit to the architect, merely his cost of producing them. These averages were taken over a number of well conducted offices and are not the figures taken from one architectural business. The costs of the buildings as stated in this table do not include the architect's fees.

In studying Table No. 1 as prepared by the Cost Committee of the Architects' League of Hollywood, your first reaction will probably be that they are all wrong and that the costs of preparing plans and specifications as given in this table are high. However, before you indulge in any snap judgment take the amount you spent in draughting room salary on your various jobs and multiply it by your cost markup (Mc) and see how your resultant cost compares with Column 3 of Table 1. I venture to prophesy that you are liable to be a very pained and surprised individual.

TABLE No. 2

Monthly Average Architects' Overhead.

"A" Smallest Office Considered.

"B" Average for a Small Office.

	Column A	Column B
1. Rent .....	\$ 45.00	\$ 100.00
2. Janitor service .....	10.00	10.00
3. Heat and light.....	3.00	7.00
4. Towel service .....		2.00
5. Stenographic service .....	25.00	130.00
6. Bookkeeping; accounting .....		31.00
7. Drinking water .....		2.00
8. Telephones .....	9.56	15.70
9. Office maintenance and repairs .....	1.50	2.00
10. Depreciation on office equipment .....	5.00	25.00
11. Insurance (fire) .....	2.50	3.00
12. Insurance (liability) .....	1.00	1.00

13. Insurance (accident) .....	10.00	10.00
14. Taxes .....	5.50	6.45
15. Interest on capital invested in office equipment .....	6.00	12.00
16. Magazines .....	2.00	2.00
17. Stamps; petty cash .....	10.00	12.00
18. Charity .....	3.00	3.00
19. Club dues .....	5.00	5.00
20. New office equipment .....	4.00	5.00
21. Architectural books .....	5.00	10.00
22. Telegrams and express .....	5.00	10.00
23. Advertising .....		5.00
24. Miscellaneous .....	14.28	5.00
25. Auto based on 1500 miles per month at \$.08 per mile .....	75.00	120.00
26. Long distance calls .....	1.32	4.80
27. Blue printing, stationery, drawing ma- terials and printing .....	62.00	82.00
28. Attorneys fees .....		10.00
29. Photographs .....	7.00	21.50
30. Bad debts .....	20.00	50.00
31. Expense of non-productive sketches.....		90.00
32. Drawing account at \$100 per week or salary to architect .....	433.34	433.34
Total overhead per month .....		\$ 771.00 \$ 1,225.79
Overhead per year .....		9,252.00 14,709.48
Overhead per hour .....		4.63 7.36
Productive hours per year .....		2,000.00 2,000.00

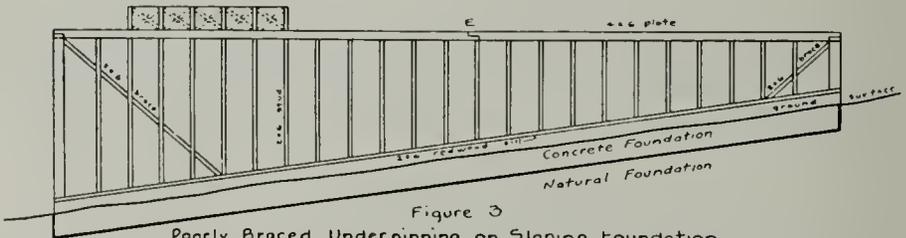


Figure 3  
Poorly Braced Underpinning on Sloping Foundation  
Without Anchor Bolts

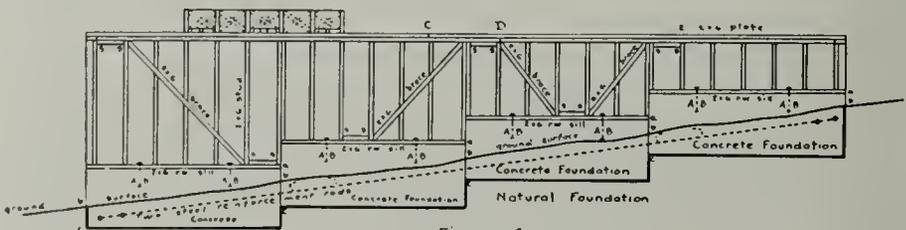


Figure 4  
Properly Braced Underpinning on Reinforced Stepped  
Foundation with Anchor Bolts

## An Earthquake-Proof Dwelling

By ARTHUR C. ALVAREZ

Associate Professor of Civil Engineering, University of California

THE year 1769 marks the beginning of the historical record of earthquakes in California. Since then many earthquakes of varying intensities have occurred in different parts of the state, including a number of major shocks which have occurred with a sort of periodicity that justifies the assumption that they will continue to recur at intervals. For instance, in the northern Coast Range, shocks of intensity 10, the maximum on the Rossi-Florel scale, occurred during the years 1839, 1865, 1868, 1892 and 1906; in Southern California, shocks of this intensity occurred during the years 1769, 1812, 1852, 1857, 1918 and 1920. Furthermore, during the interval of 156 years between 1769 and 1925, more than fifty earthquakes of intensity 8 occurred in various localities of California. Intensity 8 is defined by: "Fall of chimneys; cracks in walls of buildings"; intensity 10 means: "Great disasters, overturning of rocks; fissures in surface of earth; mountain slides."

These facts are mentioned to show the need for considering earthquake forces when designing buildings. Experience has shown that it is possible, within limitations for each type, to construct buildings having frames of timber, of reinforced concrete or of structural steel, that will successfully resist the most severe earthquake that has occurred in California during the last century and a half. When buildings are well constructed, earthquakes need not be feared. Good construction depends on three factors: Correct design, good materials, and good workmanship. A serious deficiency in any one of these three factors may be sufficient to spell ruin for a building in a severe earthquake.

One of the conclusions reached by the writer as a result of extensive observations\* made at Santa Barbara immediately after the earthquake of June 29, 1925, was that a properly designed and braced timber frame house on a concrete foundation, extending high enough above the surface of the ground to prevent decay of the underpinning, with fire-resistant roof covering of light weight, and wood-sheathed exterior walls covered with reinforced stucco, constitutes the ideal dwelling of moderate price from the standpoint of resistance to earthquakes. Since this type of dwelling is so well suited to conditions in California, this article has been written briefly to outline the chief features in its structural design in order to reduce the earthquake hazard to a minimum. To accomplish this, two requirements must be satisfied: 1. The natural foundation must be reliable. 2. All parts of the building must be so tenaciously tied together and so stiffly braced against horizontal thrusts, that the entire structure will sway as a unit.

A brief statement in regard to the nature of the forces that act on buildings during an earthquake is pertinent here. When a large rock mass of the earth's crust suddenly slips past an adjacent mass along a geological fault, which may or may not be evidenced by a rift at the surface, the vibrations which are thus generated in these solid rock masses are transmitted in all directions. Those vibrations which reach overlying surface deposits of loose sand, natural alluvium, "made ground" or marshy terrain cause these loose materials to be agitated in such a manner as to shake buildings very much more violently (two to

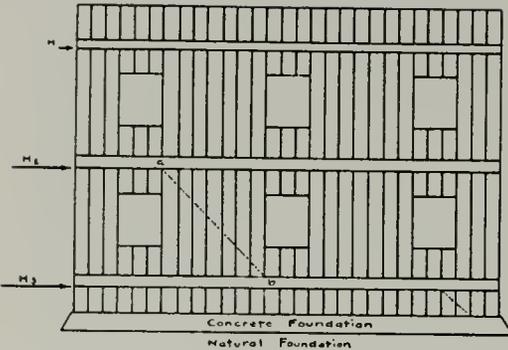


Fig. 1

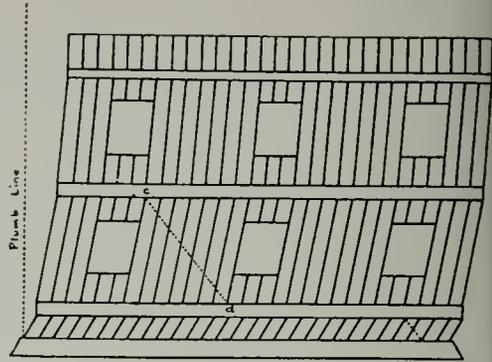


Fig. 2

twelve times) than when the buildings rest directly on bed rock. It is chiefly the horizontal vibration or agitation of the natural foundation of a building, due to oscillations of large amplitude that have periods varying from one-half to two seconds, that causes the destruction. The location of the principal damage that may occur to a building in a severe earthquake depends on the relation between the periods of vibration of the building and of its natural foundation. Low buildings are injured most severely near the base; but tall buildings, in a region somewhere between one-third and two-thirds of their height.

Because of the inertia of a building, the mechanical effect of rapid vibration of its natural foundation is equivalent to the application of horizontal thrusts such as H1, H2, and H3 in Figure 1. When the frame is low, as in this illustration, the greatest strain occurs at the base in the underpinning. When not braced, the frame will become distorted, as shown in Figure 2, the angular distortion of vertical members in different stories varying and being a maximum in the underpinning. The entire building also tends to slide from its concrete foundation, particularly when the top of this foundation is sloped instead of stepped. The design of structural details which will be outlined in the following

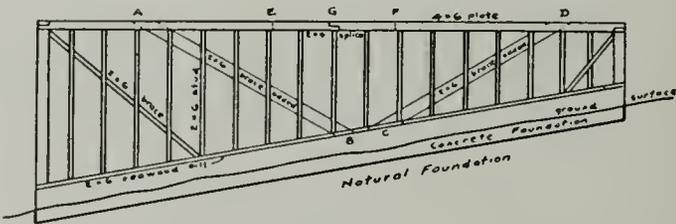


Fig. 5

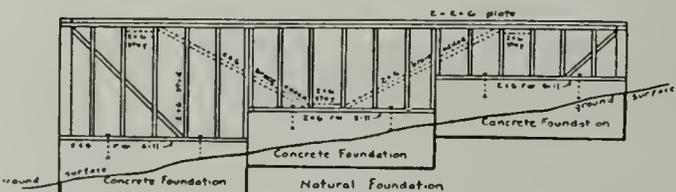


Fig. 6

FIGS. 5 AND 6—A METHOD OF REINFORCING THE BRACING IN THE UNDERPINNING OF A HOUSE ALREADY BUILT

paragraphs has been planned to prevent injurious distortion of the structure and slipping of the building from its concrete foundation.

**FOUNDATION.** Solid rock, wherever situated, whether on hill top or in valley, constitutes the best natural foundation, because it vibrates with the least destructive effect during an earthquake. In a severe earthquake, violent shaking of a building may be anticipated if it is founded on sand, on alluvium, on recent fill or on a marsh. If possible, such localities should be avoided.

Assuming a rather compact well drained gently sloping soil as a natural foundation, the excavation for the concrete foundation should always be stepped, as shown in Figure 4, rather than sloped, as shown in Figure 3, in order to retard the building or its foundation from sliding. In order to prevent decay of the sill or underpinning, the height  $ba$  in Figure 4 should be a minimum of 6 inches, and to obtain reliable bearing on the natural foundation, the depth  $bc$  should not be less than 12 inches. The foundation should contain at least five bags of Portland cement per cubic yard of concrete. In order to tie its different parts together, the concrete foundation should be reinforced with two steel rods not less than  $\frac{5}{8}$  inch in diameter, as shown in Figures 4 and 8. The ends of the separate lengths of these rods should have 180 degree hooks, they should overlap at least two feet and the overlap should not be placed at the corners of the foundation. The interior transverse and longitudinal concrete foundations should be similarly reinforced so as to be well tied to the exterior foundation. Particular care should be taken to dimension the various bearing areas between concrete and natural foundations so that they will be in proportion to the superimposed vertical loads from the building. This will prevent unequal settlement with consequent damage to plaster when the natural foundation yields during the vibration caused by an earthquake.

At intervals of about four feet, bolts 12 inches long by  $\frac{5}{8}$  inch in diameter should be imbedded vertically in the concrete foundation, as shown at AB in Figures 4 and 8, to provide for anchorage of the redwood sill which should be bolted tightly with nuts and washers. The eight anchor bolts shown in Figure 4 give that side of the building alone a resistance against slipping from the concrete foundation about 80,000 pounds greater than the resistance of the side shown in Figure 3. In Figure 7 the plan of the top of the concrete foundation is outlined by dashed lines but neither reinforcement rods nor anchor bolts are shown.

**UNDERPINNING.** The sill should be 2 by 6 inches in section and of redwood, because redwood is more resistant to decay than fir or pine. For reasons previously given, the underpinning, which should consist of 2 by 6-inch pine or fir studs placed 16 inches center to center, must be well braced by diagonal members of the same size, arranged as shown in Figure 4, rather than as shown in Figure 3 which illustrates common practice.

The function of the diagonal brace is easily explained by reference to Figures 1 and 2. The frame in Figure 1 may become distorted as in Figure 2, only if the distance  $ab$  in Figure 1 may become shortened to the distance  $ed$  in Figure 2. The insertion of a member along  $ab$ , called a diagonal stud brace, prevents this change in distance and hence acts to prevent distortion of the frame. If however the ends of the diagonal stud brace slip at either  $a$  or  $b$  or at any intermediate joint in the brace, distortion of the frame will occur. To prevent such slipping, the diagonal braces of the underpinning in Figure 4 are made continuous rather than discontinuous as in Figure 3, and stays, 2 by 6 inches in section, are wedged between the vertical studs at their ends, as shown at  $ss$  in Figures 4 and 8. Furthermore, the ends of the diagonal braces in Figures 4 and 8 are saved to a blunter angle than are the ends of the braces in Figure 3; this increases their resistance. To prevent splitting, holes should be drilled in the stays for the large nails that should be used. After the diagonal brace is in place, the stay should be tightly wedged into position and each stay should have ten 20-penny nails so offset as not to split the sill. The underpinning of each side of the building should have at least two diagonal stud braces sloping in each direction as shown in Figure 4.

Assuming the common practice of three 12-penny nails at each joint of the braces in Figure 3, the underpinning as braced in Figure 4 can withstand a horizontal thrust at the level of the plate, ten times greater than that which may be resisted by the underpinning in Figure 3. This great increase in resistance is accomplished at small cost by employing more efficient timber joints. The cost and appearance of the plaster are important items in a stucco dwelling. During a severe earthquake, great rigidity of the bracing, over and above that required to prevent structural damage to the building, pays large dividends by reducing injury to the interior and exterior plaster to a minimum.

In Figure 7 the interior longitudinal foundation AB is needed as an intermediate support for the floor joists,  $fg$ . The interior transverse foundation CD is very



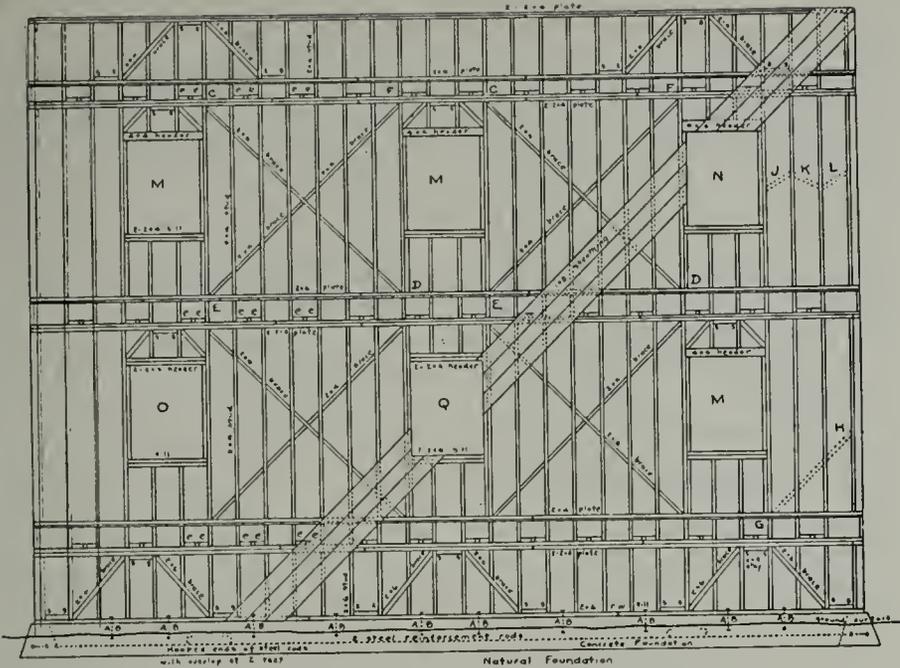


FIG. 8. ELEVATION OF FRAMING OF BUILDING

desirable in order to support a line of braced underpinning that is adequately tied to the otherwise long exterior walls to prevent them from bulging at C and D. The plate of the underpinning should be double instead of single, because this permits of well nailed joints having a large overlap like CD in Figure 4, instead of a joint with short overlap as at E in Figure 3, which is very weak in horizontal tension. The corner ties, br in Figure 7, should be of fir or pine 2 by 6 inches in section. They should be drilled at each end for five 20-penny nails and attached as shown to the top of the redwood sill, also to the bottom of the 4 by 6-inch plate.

Because the bracing of the underpinning is so important and because the underpinning is usually still accessible from the inside in houses already built, Figures 5 and 6 have been drawn to show how the underpinning may be reinforced in such cases. To do so is good insurance against damage by earthquake. In Figure 6 the added reinforcement is shown dotted. In Figure 5, two 2 by 6-inch pieces of pine, AB and CD, are attached to sill, studs and plate with 20-penny nails for which holes have been drilled, because the strength of the brace is greatly impaired, if split by nailing. In Figure 5 EF represents a stick of 2 by 4-inch pine drilled for 20-penny nails and attached to the plate to strengthen the weak joint at G.

**FLOORS.** To insure lateral support, the joists, fg in Figure 7, which are usually 2 by 10 inches or 2 by 12 inches in section according to span, should be bridged solidly with 2-inch pine along plates EF, AB and GH. The cross bracing of joists along lines JK and LM in Figure 7, which is also shown dotted in Figures 3 and 4—because it is concealed by the solid bridging—would be much more efficient in stiffening the floor than it frequently is, if it were made 2 by 4 inches in section instead of 2 by 3 inches, if care were taken to mitre the ends of the pieces accurately against the sides of the joists and if the pieces were drilled for two 12-penny nails at each end instead of being split by driving in two 10-penny nails. This cross bracing of joists acts to stiffen the floor by distributing concentrated vertical loads to adjacent joists.

The joists should be fastened strongly to the three transverse plates, EF, AB and GH, by properly designed joints rather than by mere "toe nailing," a method commonly followed by carpenters but one which produces a very weak joint. A very effective joint may be arranged by using a piece of 2 by 6-inch pine about two feet long, as shown in plan by e in Figure 7 and in elevation by e in Figure 8. The joist should be drilled for four 20-penny nails properly staggered and the piece e should be drilled for four 20-penny nails to the plate. The joist-plate joints should be made in this manner at the first and second floors and at the ceiling of the second floor.

(Concluded in the April number)

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### EARTHQUAKES AND HONESTY

A recent issue of the Saturday Evening Post discusses earthquakes and honesty in the editorial columns. It would appear that many buildings, though erected to withstand any except the worst storms of wind and rain, are not put up to brave even a moderate earthquake; that buildings are constructed on the false assumption that the earth's crust is a completed, stable object, although vibrations in its mass are as old and as natural as the wind and rain. It also appears that under present conditions different materials which cannot be connected are too often used indiscriminately. Facades are tied to nothing at all, and story is piled upon story with no members continuous throughout. Engineers know how to get strength and elasticity in build-

ings; but how many buildings have such qualities?

The idea is advanced that earthquakes may teach even the most mercenary, if enough of these shocks come along, that good workmanship pays—for the earthquake respects only honesty of construction.

### CO-OPERATIVE APARTMENT HOUSES

San Francisco, like many other metropolitan cities, is having a veritable epidemic of co-operative or community apartment house projects. Investors, encouraged by the apparent success of recent ventures in this type of building, are eager to "sign up" as evidenced by the large number of co-operative apartment house projects now in the embryo stage in San Francisco. The fact that the tenant may own his own apartment by paying a substantial sum down and the balance like rent has proved an incentive to many persons who have found themselves getting nowhere by paying rent to the landlord. Co-operative apartment houses are now being designed with apartments of from five to 15 rooms with costs ranging from \$900 to \$3500 a room, according to location, type of building and conveniences.

The first co-operative apartment project is said to have been started in Chicago in 1919. Today there are 180 co-operative apartment houses in that city with an average of 20 apartments to each house.

Within the past few years co-operative apartment houses have been appearing with great rapidity throughout the country. Their popularity in the larger cities has led to their adoption in smaller cities until now a city of 16,000 population, Champaign, Illinois, has 12 such apartment houses in operation.

In making plans for a co-operative apartment house project three

factors must be first considered: Transportation, convenience to schools and general attractiveness of surroundings. The most satisfactory class of apartments to sell are those that appeal to the wealthier classes, but the biggest field for such projects is among persons of moderate incomes. A well known promoter is quoted as saying that about ten percent of all co-operative apartment projects should be promoted for the wealthier classes who are well able to pay for all the latest appointments and most modern conveniences; about sixty percent of all such projects should be planned to appeal to the so-called middle class, and about thirty percent to the poorer classes. Apartments built to sell to people who belong to the middle class should cost from \$1500 to \$2250 per room.

The best selling co-operative apartments are of fireproof construction, both from the standpoints of safety and fire protection, and because of their soundproof value. The latter feature has been found to be extremely desirable. Apartments should be sold from the plans as soon as they can be prepared. This enables the promoter to make changes in the layout to suit the needs of individual buyers while the building is in course of construction.

The co-operative apartment building is owned and managed by the owners of the apartments it contains. Each owner shares with the other owners in the building in the costs of operation and upkeep. Each stockholder in a co-operative company has a voice in the management through the board of directors of his own building, these directors being selected from among the stockholders. This board meets monthly to consider the various problems that arise in connection with the operation of the building and to make decisions in accordance with

the will of the majority. The corporation that sells the apartments, however, reserves the right to decide on the tenancy and to use its discretion in certain matters in connection with the management and operation.

A surplus fund is created when the building is completed and ready for occupancy to care for the upkeep and maintenance of halls and corridors and all the property held in common.

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#### *DAY LABOR SYSTEM DENOUNCED*

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The growing tendency of public officials to expend public funds for construction work by the day labor, rather than by the contract system, is denounced in no uncertain terms by a special committee of the Chamber of Commerce of the United States in a report recently made public.

The report is submitted by Joseph H. Defrees, Chicago; Arthur S. Bent, Los Angeles; John M. Crawford, Parkersburg, West Virginia; Clyde C. Dawson, Denver and Sylvester L. Weaver, Los Angeles. It will be considered by the national body at its annual meeting in May.

Of approximately \$2,000,000,000 expended annually for public construction, the committee estimates that \$300,000,000 is expended by public officials themselves by day work.

"The day labor method in public construction," the committee asserts, "means that public officials not chosen for office because of their training and success as construction managers, assume charge of great projects without furnishing any guarantee to the paying public of either cost, quality or time of completion.

"It is a menace to quality of work because the designing department, the inspection department and the construction department are in effect one and the same. There is no disinterested

check upon changes in plans, methods, materials or labor efficiency. Responsibility for costs and the duty of passing judgment on quality cannot properly repose in the same agency.

"The day labor method fosters inefficiency and laxness in labor. Payrolls are likely to be excessive, and it is common knowledge that the lowest man-hour output is to be found on public work done by day labor.

"The contract system is based upon well established economic principles. Its fundamental characteristics are public competition, responsibility, skill, protection of the public against losses through accidents, floods, fires and storms, guaranteed time limits, guaranteed costs, preservation of individual initiative, and the stimulation of the resourcefulness necessarily developed by competition. The development of this system has made America foremost in labor-saving equipment and economical construction methods."

The committee recommends that plans and specifications for public works should be prepared in advance and filed as a permanent public record, that public estimates should be made of the cost, that competitive bids should be sought and also made a matter of public record for future reference.

#### Unique Chinese Y Building

From an architectural and structural point of view, the new building of the Chinese branch of the San Francisco Y. M. C. A. at 855 Sacramento street, which has just been completed, is attracting attention. The structure, designed by Architect Frederick H. Meyer and the late Albin Johnson, combines Western and Chinese architecture into a pleasing ensemble. Those who have traveled in China recognize the detail of the "Temple of Heaven" in the balustrade leading to the terrace. The interior of the main hall, social and billiard rooms and cafeteria are in the same feeling, brilliant in color.

## COMMUNICATIONS

### Ding-Donging For a Bridge

Editor, The Architect and Engineer,  
San Francisco.

Sir:—

Your February number interests me. Your fine description of the various bridge schemes for the San Francisco Bay crossing is most interesting. But why do they harp so on a bridge for that crossing, with a tunnel as a remote and vastly costlier alternative?

San Francisco is progressive and I can't understand its ding-donging for a "bridge." Surely they don't want to go back to horse and buggy means of communication; they're not so set in their old ways as all that. No wonder both and all branches of the government kick at a bridge. It's an obsolete, dangerous, and every way objectionable mode of crossing navigable waters.

And why dig away down for a tunnel, another ancient and costly crossing?

We've submitted to the Commission, the City and everyone else, and illustrated in the ARCHITECT AND ENGINEER, not once but often, the modern, safe, and economical, and in every way best means of crossing that bay. Reinforced concrete tubes, as many as needed (and more may be added at any time) for railroads, vehicles, foot, pneumatic tube, and what not. These tubes, made on shore, like great hulls of ships, bulk-headed temporarily, floated out to established line, sunk to any depth required, below navigation, laid on piers or laid in a dredged trench as the bottom necessitates, joined together, and there you are.

As different from bridge and tunnel as an auto is from a horse and buggy. It would cost not over 80 percent of the cost of the bridge, would not be in the way, requires infinitely less repair and upkeep, a lesser grade for approaches, the only sane and proper thing.

Get after them! Perhaps they don't know how things are being done in 1926, for fashions do change. They perchance want their women folk to wear bustles and trailing skirts!

The Chicago City Council is insisting upon the use of brick when hollow tile is just as good and would save the citizens \$10,000,000 a year in construction costs. Architects and builders and citizen-committees have been yelling protests for years and still the city authorities stick to brick, they see nothing else, and we wonder why.

It surely can't be that the bridge companies have blinded San Francisco to all other charms than theirs.

Sincerely,

Chicago, Ill.,  
March 2, '26.

F. W. FITZPATRICK,  
Consulting Architect.

### More Plagerism

Editor The Architect and Engineer,  
San Francisco

Sir:—

Several years ago I was accused of stealing the Bergos Cathedral stairway for the Don Lee building in San Francisco. I think this qualifies me as an expert on architectural peculations. I have just recently seen the architect's sketch for the Bancitaly office building and Fox theatre and although I believe in an architect helping himself I can not see why he should have chosen to "steal" the San Francisco City Hall as his crown. Why not the Bank of Italy building or one of the comfort stations in the park?

I can imagine forty or fifty years from now, when Rolph has ceased to be the mayor, the newly elected executive finding himself at the top of the Bancitaly building prepared to deliver his inaugural address.

If Fox should see this criticism I suppose he will spring his time honored "sour grapes."

Yours truly,

CHARLES PETER WEEKS.

**Cost of Buildings by Cubic Foot**

In the December Architect and Engineer there appeared an interesting estimate of the cost of buildings by cubic foot by Mr. John Grace of Grace & Bernieri, San Francisco contractors. Letters from all parts of the United States have been received both by Mr. Grace and the publishers, and the attached correspondence is given as an example of the interest created by the publication of Mr. Grace's computations:

CITY OF NEW YORK

Department of

TAXES AND ASSESSMENTS

Grace & Bernieri, January 4, 1926  
Gentlemen:

I have read in the issue of The Architect and Engineer that in giving figures of construction costs, you have abandoned the cubic foot unit and have adopted the square foot unit as a basis on the theory that you find it more practicable to make your estimate by the square foot area.

I would like to ask you if in computing your estimates on the square foot area basis do you allow for openings on the floor, such as: stairways, elevators, etc.? We have been using the square foot area method in this Department for some years, and find it very practical. It is a quick method of arriving at construction cost, and furthermore, we find the square foot unit to be about twelve times the cubic foot unit.

Thanking you for the courtesy of a prompt reply, I am,

Very truly yours,  
W. P. BURKE,  
Deputy in charge,  
Borough of Brooklyn.

Mr. Grace's reply to Mr. Burke was as follows:

Mr. W. P. Burke,  
Dear Sir:

Referring to your communication of January 4th, in computing the cost of buildings by the square foot floor measurements, we take the entire floor area, including hatchways and openings of all kinds, excepting in cases where there is a gallery around the floor or a large hatchway for giving light through various floors as we do not include these openings in the measurements but compute the lineal feet around the opening at the rate of \$2.00 per lineal foot, plus the area of the gallery or floor, excepting where a bronze or ornamental rail might occur for which we naturally make allowance.

We find that by using the square foot unit, it equals about 10% times the cubic foot unit. This may be due to the fact that our basements are probably not so deep as those in the East or our ceilings are more uniform.

Respectfully yours,  
GRACE & BERNIERI.

**Pleased With February Number**

Editor The Architect and Engineer,  
San Francisco

Sir:—  
Thank you for the copy of The Architect and Engineer which you mailed to me.

We are all immensely pleased with our part in this beautiful number, and congratulate you on the interest and appeal in the Easter Sunrise Services pages. They are exquisite, and make a wonderful record for our beautiful spots throughout this land.

We are enclosing stamps for extra copies. Again thanking you, and hoping that we may some day have the great pleasure of welcoming you into our Bowl when it becomes the "garden-theatre" we are now working toward, I am,  
Sincerely,

MARION BOWEN,  
Assistant to MRS. J. J. CARTER, President  
Hollywood Bowl Association.

**COMPETITIONS**

With the idea of ultimately getting adequate piping, flues and appliances for using gas in every home, a prize contest is being conducted by the American Gas Association among architects for plans for a six-room suburban house.

Twenty-five hundred dollars will be distributed among nine prize winners, and, in addition, five plans will be chosen for honorable mention.

"The plan has been approved by the American Institute of Architects," said Alexander Forward, secretary-manager of the association, "and the judging of the submitted plans will be left to a committee with a preponderance of architects, and only a few gas men who are to decide the technical soundness of the plans submitted."

Architects of Portland, Ore. will be given an opportunity to compete for the commission of preparing the plans for a new city hall to be erected in that city, if the recommendation of City Building Inspector H. E. Plummer is accepted by the council.

**Recent Court Decisions Affecting Architects**

In the instance case it is held that where a contract for certain architectural service contains a proviso that the plans shall be submitted to the owner for inspection and criticism, and if found necessary shall be changed until approved by the owner, and the architect prepares and submits plans, which are received by the owner and in a general way declared satisfactory but not approved, and the architect later, at the request of the owner, furnishes further service in connection with the proposed improvement, the owner becomes liable in damages to the architect, where he (the owner) arbitrarily and without any cause or reason prevents the architect from completing the agreement.—204 N. W. (N. D.) 850.

**Varying Terms of Contract**

1. Where contract for compensation of architect called for payment of six per cent commission on the cost of construction, of which four and one-half per cent was to be paid upon the completion of plans with "scale details," and the balance proportionately as the work progressed, after abandonment of contract, contention of owner that plans did not include "full-size details," is immaterial.—210 N. Y. S. 686.

# With the Architects

Building Reports and Personal Mention

## Accepts Important Mission

Architect John T. Vawter of Los Angeles departed February 22 for Manizales, Colombia, as the representative of the Ulen Company of New York City which has a contract for rebuilding Manizales. This Colombian town was almost destroyed by an earthquake and fire. Bonds of the city for reconstruction have been guaranteed by the state. Street paving, lighting system and sewer system are included in the Ulen Company's contract in addition to buildings. Mr. Vawter will make a survey and report on the entire reconstruction program and will have charge of the architectural work under the contract.

## New Partnership

The partnership of Messrs. Pring and Lesswing has been formed for the practice of architecture. Thos. E. Pring is a graduate of the University of California and has been actively engaged in architectural work for the past 15 years, the last three years associated with Meyer Bros., the builders. S. A. Lesswing has been engaged in architecture and building work for the last 20 years, in the East with several large construction companies and in San Francisco with Meyer Bros. as estimator and superintendent. The firm is located in the Holbrook building, San Francisco. Samples and catalogues of building materials will be welcome.

## Sacramento Club Growing

Eleven new members have been admitted to the Architects' and Engineers' Club, these being Messrs. Leonard F. Starks, Edward F. Flanders, James R. Craig, L. O. Bradford, Fred Howling, Edwin K. McNinch, Harold John Peacock, Arthur E. Storti, William E. Coffman, M. W. Sahlberg and Lowell E. Brown.

The club has appointed the following members to act as a committee to cooperate with the Better Homes Committee of the Chamber of Commerce in the coming national campaign: Messrs. L. T. Poage, Edward F. Flanders and J. O. Tobey.

## Allied Architects Elect

Allied Architects' Association of Los Angeles has elected the following directors to serve for the ensuing year: Edwin Bergstrom, William Richards, Myron Hunt, Sumner P. Hunt, and Pierpont Davis.

## Arthur Brown Honored

It has been recently announced in the Parisian press and by cable to this country that Architect Arthur Brown, Jr., of San Francisco, has been elected a member of the Institute de France, (in the Academie des Beaux Arts), of which he has already been a corresponding member for several years. Mr. Brown succeeds to the chair of Mr. John Sargent, the painter.

The Institute is the highest official honor in intellectual and artistic circles in France. The number of members is restricted, there being but eight Americans at the present time. These are Nicolas Murray Butler, Whitney Warren, John D. Rockefeller, Jr., Dr. Hale, Dr. Michelson, Dr. Walcott, the Duc de Loubat and Arthur Brown, Jr.

Mr. Brown's many friends in California will be pleased to learn of this latest honor that has been conferred upon him. The recognition is international.

## Architects' League Dinner

The first annual dinner of the Architects' League of Hollywood inaugurating an exhibition of the work of Hollywood architects was held at the Hotel Regent February 5 and was attended by more than a hundred architects, representatives of various branches of the construction industry and civic associations of Hollywood.

Speakers at the dinner included President Charles H. Kyson, who presided, Vice-president Robert B. Stacy-Judd, and Secretary Walter H. Parker of the league.

## Portland Architects Elect

Orman R. Bean has been elected president of the Portland Chapter, American Institute of Architects. Jamieson Parker was chosen vice-president, W. L. Smith, secretary, F. S. Allyn, treasurer and A. Glenn Stanton, assistant secretary. The board of directors for the ensuing year will be composed of John V. Bennes, C. D. James and Joseph Jacobberger.

## Granted Certificates

The following have been granted certificates to practice architecture by the California State Board of Architecture (Northern Division): Messrs. Hammond Weeks, 16 Woodland Way, Piedmont; Louis Schalk, 526 Powell street, San Francisco, and C. Jefferson Sly, 638 Miranda street, Oakland.

### A. I. A. Chapter Committees

President Witmer of Southern California Chapter, A. I. A. has announced the appointment of Chapter committees as follows:

Institute and Chapter Affairs—Chairman, W. L. Risley; C. M. Winslow, Edwin Bergstrom, W. Templeton Johnson, H. L. Pierce.

Public Service—Chairman, Edgar H. Cline; Henry F. Withey, J. J. Backus, Sumner P. Hunt, Edward Cray Taylor.

Ethics and Practice—Chairman, Alfred W. Rea; J. E. Allison, R. D. Johnson, H. M. Patterson, J. C. Austin.

Affiliated Societies and Allied Arts—Chairman, C. E. Noerenberg; S. O. Clements, S. Charles Lee, Sumner M. Spaulding.

Education and Publicity—Chairman, H. C. Chambers; Fitch H. Haskell, Harold O. Sexsmith, H. C. Nickerson, Walter S. Davis, Winsor Soule, McNeal Swasey.

Membership—Chairman, Donald B. Parkinson; Gordon B. Kaufman, Wm. Lee Woollett, Chas. F. Plummer, A. M. Edelman.

Permanent Record Committee—Chairman, Edwin Bergstrom; David J. Witmer, Edgar H. Cline.

### SPECIAL COMMITTEES

Small House Committee—Chairman, Clifford A. Truesdell; George Jay Adams, C. R. Johnson, A. S. Nibecker, Jr., Reginald D. Johnson.

Better Building Business Relations Committee—Chairman, C. E. Noerenberg; John T. Vawter, S. B. Marston, Myron Hunt, Walter Webber.

Tree Conservation Committee—Chairman, Eugene Weston, Jr.; A. C. Zimmerman, A. R. Hutchason, Chas. H. Cheney.

### Los Angeles Architects Move

Architects Morgan, Walls & Clements have moved their offices to suite 1135-40, Van Nuys building, the original offices occupied by the firm of Morgan & Walls immediately after the completion of the Van Nuys building, for which they were the architects. The offices have been redecorated and specially fitted up for architectural work.

### New Federal Buildings

The \$165,000,000 public buildings bill, passed recently by the House, has been approved by the Senate Public Buildings Committee with two amendments. Under the Senate committee amendments, not more than \$5,000,000 of the fund could be expended in any one state in any one year and sites already purchased would be given preference as locations for new buildings.

### Tribute to Harwood Hewitt

The recent sudden death of Architect Harwood Hewitt of Los Angeles has left a void with his associates not easily to be filled. President Edwin Bergstrom, in his annual report concerning the activities of the Allied Architects' Association of Los Angeles, and of which organization Mr. Hewitt was secretary, pays a fine tribute to the sterling character of the deceased.

"Mr. Hewitt," he says, "was indefatigable in service to the Association. Constant in his attendance at the meetings of the board, he carried on many extra duties, and for the last few months had given unstintedly to the design of the Los Angeles General hospital. He never failed a call to service. He endeared himself to everyone of us and his going has torn our hearts."

It was an impressive moment when at the first meeting of the Southern California Chapter, A. I. A., under the new administration of officers all the members stood with heads bowed in silent tribute to Mr. Hewitt while David C. Allison read the following memorial:

But a little over a week ago we were all stunned by news of the sudden death of Harwood Hewitt. The shock was greater because many of us had seen and talked with him within the two or three days prior to his death.

He came amongst us first, twelve or thirteen years ago, from the East, after having equipped himself with the fullest and best preparation in architecture that the schools can give, having graduated from the Massachusetts Institute of Technology and taken his diploma from the Beaux Arts.

He was endowed with an enthusiasm for his work, a frank attractive personality, and a gift for friendship that immediately won him a place in the hearts of all of us. He carried with him always the enthusiastic spirit of the Atelier, was never happier than when called in by one of us to discuss a problem in design or when one should visit his office for a like purpose. This enthusiasm was of a kind that many times would keep him working 'till the morning hours that led him also to give largely of his time and energy to the criticism of student work in the Atelier, of which he was for some time patron.

Many will remember the completion of the Schultz house some seven or eight years ago, in which he seemed in a sense to find himself, giving to the community a distinctive and beautiful building and one that has found large echo in much of the finest work of similar character since done in the city. Many other beautiful works have also come from his hand, all characterized by a fine feeling for design and adaptation to climate and conditions. But few individuals have contributed as much as he to the development of a satisfying residential type for Southern California.

Passing on as he has in the prime of life, at the age of fifty-two years, there can be no doubt that many important things in larger fields would have come from his pencil, as is fully evidenced by the beautiful preliminary sketches well on their way for his last and largest project, the Ebell Club. It is to be hoped that this building may be carried out by his successors in such manner as to constitute a fitting memorial to his splendid service—though to those of us who knew and loved Harwood Hewitt, must always remain a sense of irreparable loss in the passing of this honorable, talented and stimulating friend.

## P E R S O N A L

Architect Ernest Floris who was recently granted a certificate to practice architecture by the California State Board, has moved to 814 Chanslor avenue, Richmond.

Architect A. H. Knoll has moved from the Hearst building, San Francisco to 222 Kearny street.

Architect C. E. Perry has opened an office at 460 Montgomery street, San Francisco.

Architects Smith & Griffiths, 410 Gerlinger Building, Portland, announce the dissolution of partnership, Mr. E. L. Griffiths continuing his office at the old location.

Mr. Herbert A. Blogg, architect, Northern Life Building, Seattle, recently spent three weeks in San Francisco, being a reserve officer in the Construction Service of the Quartermaster's Training Corps.

Captain R. H. Ober, former superintendent of buildings for the city of Seattle, has been elected president of the Seattle Engineers' Club, succeeding E. B. Hussey, civil engineer. Captain Ober served in the United States Army during the World War as a captain of engineers.

Colonel W. J. Barden, Division Engineer, U. S. Engineers Corps, has been elected president of the Seattle Chapter of the American Association of Civil Engineers.

Architect Leo J. Devlin of San Francisco recently returned from an extensive pleasure tour of France, England and Italy.

Thomas E. Stanton, Jr., assistant state highway engineer, has been elected a member of the executive committee for 1926 of the highway division of the American Society of Civil Engineers. Mr. Stanton is the only member of the committee to be chosen from the western section of the country.

Architect C. O. Clausen, Hearst building, San Francisco, is planning an extended trip abroad.

Architect C. Howard Sherwood, A. I. A., announces the opening of an office for the general practice of architecture at 226 Bryan Court, Fort Lauderdale, Florida. Manufacturers' samples, catalogues and other trade literature are desired.

Architects Sidney B. and Noble Newsom, Nevada Bank building, San Francisco, have taken into partnership Mr. Archie Newsom who was recently granted a certificate to practice architecture in California by the State Board.

### Artist's Dream Coming True

Architect F. W. Fitzpatrick, 418 Church street, Evanston, Illinois, writes that he has received word from Artist Hendrick C. Anderson, originator of the World Capital Plan, that the artist's dream is coming true, in that Benito Mussolini, dictator of Italy, has given his approval and set aside a large tract of land bordering on the Mediterranean, for the establishment of the "Dream Metropolis." The tentative plans for the proposed city were drawn by Mr. Fitzpatrick and he is naturally quite elated over the good news.

### Y. M. C. A. Hotel

Architect Frederick H. Meyer, Bankers Investment building, San Francisco, has been commissioned to prepare plans for the first unit, consisting of five hundred rooms, of a 1500-room hotel for the San Francisco Y. M. C. A. on Golden Gate avenue. The building will probably be fifteen stories. Mr. Meyer has also prepared plans for additions to the clubhouse of the Corinthian Yacht Club at Belvedere.

### Oakland Store Building

Architect Leonard H. Ford of Oakland, has completed plans for four stores to be built at 35th and Telegraph avenue, Oakland, for Robert L. Prouty of San Francisco. Contracts for the building have been let. Mr. Ford has also let a contract for the erection of a \$17,000 residence on Excelsior avenue, Oakland, for J. Fenton.

### Santa Maria Architect Busy

Architect Louis N. Crawford, of Santa Maria, reports plans being prepared for the following new work:

Store building at San Luis Obispo for W. C. Wickenden Company, \$14,000; Branch county hospital, Santa Maria, \$45,000; resort hotel at Oil Port, \$100,000; apartment court at Santa Maria for J. Ontiveros, \$10,000; hotel at Lompoc, \$50,000.

### New Orpheum Theatre

Architect G. A. Lansburgh, San Francisco and Los Angeles, is preparing plans for a new Orpheum theatre to be built on Mission street, between 19th and 20th streets, San Francisco, at an estimated cost of \$300,000.

### Redwood City Apartments

Plans have been completed by Architect F. J. DeLongchamps, Underwood building, San Francisco, for a \$35,000 apartment house at Redwood City, for the Misses V. and M. Gurwin. There will be eight two and four-room apartments.

**Advertising a New Building**

Printers' Ink, a long established journal devoted to advertising, alludes in its editorial columns to a protective canopy erected over the sidewalk in front of a new building on upper Fifth avenue, New York. It commends the owners for avoiding the common habit of painting big, boastful advertisements on the space made available by the canopy and for contenting themselves with a modest card addressed to the public apologizing for any obstruction to traffic caused by the erection of the building.

This is what Printers' Ink (referred to in the editorial as the "School Master") has to say on the subject:

Building contractors in large cities have gone far in recent years in making the temporary wooden structures that roof over sidewalks during the time of construction a pleasant affair to look upon. Even so eminent an authority on art as Lorado Taft has taken occasion to call some of these structures a joy to the eye.

With all of this the Schoolmaster agrees. There is but one general suggestion that he wants to make on these necessary, temporary structures. It is a suggestion concerning copy. Too often the Schoolmaster has been filled with a feeling of aversion, despite the pleasing lattice work and color, because of the bragging spirit of the information that has been painted on them. What of it if some particular building is to be the seventh largest office building in the world, or that it contains 22,000 acres of floor space? The public isn't interested in that. It is interested in itself. If something must be said isn't it far better to say something that interests the reader and leaves a friendly feeling for you in the reader's mind?

As an example of copy worthy of being used as a pattern for such structures, the Schoolmaster would call attention to that which the Farmers' Loan and Trust Company has used during the course of the construction of its new building on upper Fifth avenue in New York. "We regret," says the copy, as the Schoolmaster recalls it, "any inconvenience that may be caused during the construction of this building."

**An Index to Wealth**

Addressing the Tile & Marble Contractors' Association, Roy Jordan of New York is reported to have said that a plain white bath room is for a \$10,000 home; a \$20,000 home should have bathrooms in blue or pink, and a \$40,000 home should have purple, green or yellow tiles in its bath. Commenting on the foregoing, Nation's Business said:

And what would Mr. Jordan prescribe for the baths of millionaires? Nothing less than rain-bows would do for the golden showers of the rich and powerful of the earth. And what's to prevent income tax publicity issuing from a man's bathroom? Once the color was known, his wealth might easily become a matter of clamorous public interest—a sort of hue and cry affair.

**Residence Contract**

Architects Bakewell and Brown have let a contract to Chas. Stockholm & Son to build a \$70,000 residence for Mr. Frank W. Fuller on the northwest corner of Broderick street and Broadway, San Francisco.

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## BOOK REVIEWS

*Edited by*  
CHARLES PETER WEEKS

**Part Two—Good Practice in Construction** by Philip G. Knobloch; size 9x12 inches; 52 full page plates; substantially bound and labeled. Price \$4. Published by Pencil Points Press, Inc., 19 East 24th street, New York.

This book as its title implies is an adenda to Part One of Good Practice in Construction which latter has proved so popular in architectural offices throughout the country.

Part Two of Good Practice in Construction, has been prepared partly for the purpose of supplying details of a more or less special character but of wide usefulness—details that the architect and draftsmen are most likely to have occasion to employ in their work having been selected—and though many of the plates embody special knowledge, such as special details for theatres, store fronts, log cabins, etc., all are for buildings that are constantly being built in most, if not all, parts of the country and that may well come within the practice of any architect.

The new volume is indeed a valuable addition to Pencil Points Library which seems to be filling more and more the definite needs of large numbers of men in the architectural field, and at as moderate a price as is found consistent with the satisfactory presentation of the matter. The aim of the publishers is to offer not costly publications of limited appeal, but a practical working library covering broadly all matters of architectural interest, with especial reference to the many problems centering in the drafting room.

**Portland Cement Stucco**—Published by the Portland Cement Association, 111 West Washington street, Chicago, Illinois. No charge for copy.

One of the most interesting and instructive books on Stucco that has ever been published to our knowledge. That there exists at the present time a high appreciation of color and textured surfacing in enhancing the design of structures, particularly in residences, is generally admitted. It is a noticeable fact that this popular trend is being emphasized more and more in the architectural press of today.

With the viewpoints of the architect, owner and contractor, the Portland Cement Association has compiled in a booklet the subject of color and texture in Portland cement stucco. The book presents, in an artistic way, the practical features in the preparation and application of this plastic material. These are considerations which the practicing architect endeavors to dispose of first

with his clients and later with the artisan who does the work.

The illustrations show the application of various styles of exterior cement finish and the coloring is so natural that one gets the impression he is actually looking upon a panel of freshly applied stucco. The artisan with the trowel shown in the pictures is said to be none other than O. A. Malone, father of California stucco.

### Los Angeles Architects Busy

Architect Richard M. Bates, Jr., 527 West Seventh street, Los Angeles, writes that he has the following active jobs in his office:

West Lake Theatre building, Los Angeles, \$350,000; Show Hotel, Hollywood, \$150,000; Burbank Theatre, Burbank, California, \$100,000; Montebello Theatre, \$40,000; Jno. Reid residence, Los Angeles, \$25,000.

Architect Wm. Bruce, 4221 South Broadway, Los Angeles, reports the following:

Hotel for Mr. Thomas, 39th and South Broadway, Los Angeles, \$120,000; hotel for Mr. Foley, South Broadway, Los Angeles, \$130,000; office building for physicians and dentists, \$60,000; Class A warehouse, Los Angeles, \$30,000.

Architect Hugh R. Davies, 1010 Farmers and Merchants Bank building, Long Beach, writes that he has the following active jobs in his office at the present time:

Eastman apartments, 12-story, Long Beach, \$400,000; Mottells Chapel and Mortuary, Long Beach, \$100,000; twelve two-story duplex dwellings, Long Beach, \$8,000 each; residence, Long Beach, \$25,000.

Architect C. E. Finkenbinder, 727 Story building, Los Angeles, writes that he has the following new work:

Six one-story frame and stucco dwellings, Altadena; ten-room residence in Los Angeles and six-room residence in Beverly Hills; twelve-room, two-story frame and stucco residences, Hollywood.

### Starks and Flanders Busy

Architects Starks and Flanders of Sacramento, have a large amount of new work on the boards, including theatres, schools and commercial buildings. They have completed drawings for the \$300,000 addition to the California National Bank and contracts are expected to be awarded shortly. The firm has recently been commissioned to prepare plans for a fine building on J street, between 11th and 12th streets, Sacramento, for the Eastern Outfitting Company, the structure to cost in the neighborhood of \$100,000.



CAFETERIA IN OFFICE BUILDING OF PACIFIC TELEPHONE AND TELEGRAPH COMPANY, SAN FRANCISCO

## Monel Metal in the Pacific Telephone & Telegraph Company Office Building

**I**N the new 27-story office building of the Pacific Telephone and Telegraph Company, San Francisco, a large kitchen and cafeteria have been installed for the convenience of employees. Every effort was put forth to secure an installation that would be modern and that would permit the maintenance of the highest degree of cleanliness.

To this end, the Montague Range and Furnace Company, which built and installed the serving tables, plate racks, cook's and baker's tables, sinks and other features, constructed the equipment according to an ingenious method which is calculated to prevent water and dirt from penetrating cracks or joints at any point.

Monel metal, supplied by the Pacific Foundry Company of San Francisco, was used for all table tops and for all doors to cabinets, refrigerators, garbage receptacles and numerous other features. Heavy gauge Monel is used throughout, the table tops being 11-gauge and other parts mostly 14-gauge.

There are two 22-foot serving tables supplied with the usual equipment. The tile walls above butt tightly on top of a

right angle bend in the Monel metal rear apron, which drops to the level of the table top without joint or crack. At the outer edge of the table, the Monel metal has again been bent at right angles, thus permitting all water to drain directly off. A similar construction has been used throughout all other equipment. No raw metal edges are exposed, since all table tops and counters are finished with a flat edge obtained by bending the sheet vertically down at right angles. Additional strength and stiffness are secured where needed by using a horizontal bend at the lower edge.

Joints have been avoided where possible, but where these have been necessary the metal has been welded, then ground and polished to an even surface which presents no breaks or cracks of any sort.

The garbage receptacles are fitted with Monel metal doors and are foot operated. They are completely water tight and odorless.

The ports for the accommodation of trays and silver have been fitted with Monel metal shelves and doors built into the tile wall. The salad table and sink,



KITCHEN TO CAFETERIA, OFFICE BUILDING PACIFIC TELEPHONE AND TELEGRAPH COMPANY, SAN FRANCISCO



ANOTHER VIEW OF KITCHEN IN OFFICE BUILDING OF PACIFIC TELEPHONE AND TELEGRAPH COMPANY, SAN FRANCISCO

and dishwashing trays and the dirty dish table are all of solid Monel metal. All joints have been properly closed so that water cannot seep into and through cracks.

In the kitchen, too, Monel metal has been used liberally to cover the cook's and baker's tables, the pie racks, the proofing box and the cook's sink.

Officials of the Telephone Company have expressed much pleasure with the installation. They were surprised to note how easily the heavy gauge sheets had been handled. They were particularly impressed with the beautiful finish and the lightness and grace apparent in the equipment, as well as the solidity and permanence of the construction and material, and the manifest ease of keeping the installation clean.

The entire building presents evidence of permanent, wear-resisting construction which is a policy of the Pacific Telephone and Telegraph Company. Thus, all kick plates and push plates throughout the building are of Monel metal. Drain lines from the battery rooms are of Corrosiron made by the Pacific Foundry Company.

#### Clay Products Merger

Merger of Gladding, McBean & Co. and Los Angeles Pressed Brick Company, two of the largest clay products concerns on the Pacific Coast, with combined assets of more than \$8,000,000, is announced. Consolidation of the two concerns was affected through purchase of stock ownership in both by a group of San Francisco and Los Angeles capitalists who are represented on the newly elected board of directors.

Atholl McBean is the president of both companies and F. B. Ortman, vice-president of Gladding, McBean & Co. and general manager of their interests in Southern California, has also been named vice-president and general manager of Los Angeles Pressed Brick Company. Few, if any, further changes in the personnel will be made, as it is the intention to preserve the identity of the original companies.

#### Large Brick Order

Cannon & Co. of Sacramento, "Makers of America's Finest Face Brick," have the contract to furnish fifty carloads of face brick to be used on the Mark Hopkins Hotel, now under construction in San Francisco, from plans by Architects Weeks and Day. The contract is one of the largest face brick orders ever placed on the Pacific Coast. To complete the order the Sacramento concern will operate full capacity, over a period of six weeks.

#### Expansion Program Announced

The Electrical Products Corporation with headquarters in Los Angeles, has announced an extensive program of expansion. The capital of the company has been increased to \$1,000,000 and the company has purchased the factory and business of the National Electric Sign Company of Oakland to take care of the Northern California production. A service and sales building is also maintained in San Francisco at 253 Golden Gate avenue. Arrangements are being made to convert the present agencies at Seattle, Wash., and Denver, Colo., into integral parts of the company. Offices will also be maintained at Portland, Ore., and Salt Lake City, Utah. The existing business in Mexico City will be enlarged. The Los Angeles factory is being doubled in capacity.

The company has acquired the rights to manufacture Claude Neon illumination specialties which comprise outline lighting for buildings as well as electric signs, the light being obtained by high voltage discharge through exhaust tubes containing a minute amount of rare Neon gas. In addition to this the company will specialize in all forms of theatrical illumination and equipment.

The directors of the company include: John B. Miller, president Southern California Edison Company; George I. Cochran, president Pacific Mutual Life Insurance Company; Wm. L. Stewart, president Union Oil Company; W. I. Hollingsworth, realtor. The management of the company is the same as it has been: Paul D. Howse, president; John W. Harris, vice-president and treasurer; other vice-presidents in charge of various activities are: W. E. Joost, J. T. Northcutt, Tracy W. Simpson and J. E. Tucker.

#### Resolutions for Mr. Hewitt

Southern California Chapter A. I. A., has unanimously adopted the following resolution as a tribute to the high professional standing and sterling character of the late Harwood Hewitt:

WHEREAS, the Southern California Chapter, The American Institute of Architects, has suffered a great loss in the passing of its loyal friend and co-worker, Harwood Hewitt;

RESOLVED, that the earnest sympathy of the Southern California Chapter, The American Institute of Architects, is extended to Mrs. Hewitt and that to her the Chapter expresses its appreciation of the services rendered to it by Mr. Hewitt, of his friendly and unwavering support of its aims and purposes, of his interest and enthusiasm in the advancement of art and architecture, and that this minute with its preamble be entered in the book of minutes of the Southern California Chapter, The American Institute of Architects, and that a copy thereof be sent to Mrs. Hewitt.

### Suit to Force Payment

Suit to force payment of \$52,264, alleged to be the balance due for the construction of the new San Jose Knights of Columbus building, has been filed at San Jose by John D. and G. E. Carlson, contractors, against the San Jose Knights of Columbus Hall Association. The Bank of Italy is named as party defendant.

The contract called for the erection of the Knights of Columbus building for a total of \$168,959. All of this sum has been paid except the \$52,264, for which the contractors are suing.

The suit arose from a disagreement between the contractors and the officials of the building association as to whether or not the building is completed. The condition of the swimming tank and certain other features in the basement is such that the building cannot be accepted, according to the Knights of Columbus Hall Association, and Leo J. Devlin, the architect, has refused to sign a certificate stating that the work is completed.

In their suit to force payment the contractors declare the building to be completed in accordance with the terms of the contract and declare Architect Devlin's refusal to deliver the signed certificate of completion is without cause or justification.

### Napa Parochial School

Architect Creston H. Jensen of San Francisco, has completed plans for a \$50,000 reinforced concrete parochial school to be built at Napa for the Parish of St. John the Baptist. Mr. Jensen is also the architect of a new building at Gilroy for St. Mary's Parish.

### To Build Warehouse

The American Radiator Company has purchased the lot at Fountain and Fourth streets, San Francisco, and will erect thereon a two-story Class B warehouse estimated to cost \$200,000.

### New Oakland Dwellings

The Oak Knoll Corporation is planning extensive improvements of a new tract being opened off the Foothill boulevard, Oakland. The drafting department at 1918 Broadway, Oakland, is in charge of Mr. W. J. McCormack.

### Sacramento Hotel

Architect Jens C. Peterson of Sacramento, has prepared plans for a three-story steel and brick addition to the Civic Center garage and hotel at 715 I street, Sacramento. Cost is estimated at \$70,000.

### Engineers to Meet in Seattle

The American Society of Civil Engineers will hold its national summer meeting in Seattle July 14 to 16 inclusive. More than 300 delegates from all parts of the United States and Canada are expected to attend.

Such problems as Highway Construction, City Planning and Irrigation and Power, are to be discussed by the engineers and reported on by representatives of these interests.

Mr. A. W. Downey, civil engineer, Hoge Building, Seattle, is chairman of the committee of arrangements for the convention. Mr. Downey reports that plans are under way to make this gathering of particular interest to the engineering profession of the Northwest.

### Builders' Exchange to Build

The San Francisco Builders' Exchange has voted to erect a modern skyscraper. The vote to proceed with construction at the present time was unanimous on the part of the membership which was called in special meeting to consider ways and means to finance the project. The structure will be erected at the northwest corner of New Montgomery and Mission streets, the birthplace of the organization of the original San Francisco Builders' Exchange. The property has a frontage of 120 feet on Mission street and an 80-foot frontage on New Montgomery street.

### Building Construction Hazardous

Building construction is the most hazardous occupation in California, according to the annual report of the State Industrial Accident Commission on the number of persons injured during the fiscal year ending June 30th, last.

In all 211,178 industrial accidents were reported to the commission, but only 89,069 were of a serious nature. Of the latter 645 caused death, 1215 permanent impairment and 87,209 temporary disability.

While building construction as an occupation was the cause of 12,501 accidents, the greatest number of fatalities occurred among public utility employes, 95 of whom were killed while at work.

### Varnish Concerns Merge

Announcement is made by J. W. Robson, president of the Standard Varnish Works, that two of the oldest concerns in the paint and varnish industry in this country have combined through the acquisition by the Standard Varnish Works of all of the capital stock of Toch Brothers, Inc.

## Arguments For and Against the Modern Skyscraper

THE American City Magazine recently published an exhaustive article on "Skyscrapers" by M. Delano, presenting a collection of arguments for and against the tall office building, but with adverse criticism predominating. The editor of Building and Building Management takes issue with some of Mr. Delano's statements in opposition to the skyscraper particularly his unproved theories regarding effect on health, etc., but the points made for and against have been deemed of sufficient interest to warrant capitulation by Building and Building Management which has placed them in parallel columns for comparison, as follows:

### The Pro-Skyscraper Arguments

1. High buildings which, in effect, mean the intensive use of property, are required in order to earn a fair income on high-priced property.

2. High buildings frequently give magnificent views of the surrounding country, and at the same time give the tenants the enjoyment of a maximum of light and air.

3. There is great convenience incident to concentration. Horizontal distance is converted into vertical, making, by reason of the rapidly moving elevator, for greater convenience.

4. A single office building forty stories high on one acre of land is no worse in respect to causing congestion than four office buildings of similar floor area each ten stories high—though this argument, of course, requires the further supposition that in the case of the forty-story building the other three acres shall remain vacant.

5. It is urged that a uniform height of building, or uniform cornice line, results in an uninteresting effect, that occasional high buildings lend an interest to the skyline and to the general appearance of the city.

### The Arguments in Rebuttal

1. It is a real question as to whether high values of land compel high buildings, or the reverse. Apparently we have a vicious circle in which one can hardly say which is cause and which is effect.

2. High buildings give fine views only so long as they monopolize sky privileges, and even then only at the expense of others whose views are cut off.

3. Concentration spells congestion. Conceivably it might be convenient to conduct all a city's business activities under one roof, creating an enormous bee-hive of industry; but obviously such a plan, while having some merits of convenience, would be highly objectionable from many other points of view. In our larger cities buildings of thirty stories are common, and there are a few of forty, and of even fifty stories and more.

4. The trouble about permitting a single office building forty stories high, is obviously that one cannot prevent other similar types near-by, and that is why congestion soon results from a single skyscraper. For example, a forty-story building occupying an acre and accommodating conservatively 10,000 persons, is served usually by only one important artery of traffic. On the other hand, four ten-story buildings, each occupying an acre, would probably be served by more than one traffic route, and in any case would offer greater freedom of access.

5. In answer to the old argument that uniform height of building, or uniform cornice line, is uninteresting, it may be said that, while this is sometimes true, it is certainly no more so than the irregular hodgepodge which we so often see. Compare, for example, the uniform treatment of the frontage of the Place Vendome in Paris with the usual frontage even of high-class buildings in any American city. Some day we shall learn that a reasonable harmony of design in architecture is as important as harmony in music.

## RECENT TRADE PUBLICATIONS

### PAINT MANUAL

Aluminum Paint Manual, by J. D. Edwards and Robert I. Wray, published by the Aluminum Company of America. This little booklet tells how to select the proper paint, how to prepare it and how to use it; the data given is both interesting and instructive. The booklet is for free distribution. The company's San Francisco sales office is 326 Rialto Building.

### CONCRETE FLOORS

Reinforced Concrete Floors, published and distributed complimentary by the National Steel Fabric Company, Pittsburgh, Pa. The book tells of the adaptability of National steel fabric as a reinforcement in concrete floor and roof slabs. Industrial buildings in particular are recommended for the application of this fabric. The book contains a valuable table giving the loads required by building codes, also tables for designing reinforced concrete slabs. There are numerous illustrations. A copy will be mailed free to any Architect and Engineer reader who may have legitimate use for the book and who writes for it on his own stationery.

### STEEL SASH

"The New Window Vogue for the Home Beautiful" is the title of a very attractive new booklet just published by the Detroit Steel Products Company, Detroit, manufacturers of Fenestra windows. The booklet is profusely illustrated, and contains many useful suggestions for interior decoration. It is sent free on request.

### Not Entitled to a Lien

Architects are not entitled to a lien upon a building for services rendered in preparing plans and specifications and superintending thereunder, according to a decision handed down by the Oregon supreme court. A request for a rehearing has been made.

### \$600,000 Warehouse

The Illinois Pacific Glass Company is having plans prepared by Engineer A. Torrigini, Mills building, San Francisco, for a six-story Class B warehouse at 15th and Folsom streets, San Francisco, estimated to cost \$600,000.

### Policy of Fireproof Company

There have been so many rumors regarding the future policy of The General Fireproofing Building Products that a statement at this time would seem to be necessary.

It was found necessary to separate the furniture department sales and warehouse from the building products division of the company and to handle these two divisions as separate and distinct organizations.

As the company's warehouse and office have been occupied jointly by these two departments, it has been decided to establish separate quarters for each.

The office of The General Fireproofing Building Products will be located in the Sheldon building, San Francisco, under the direction of A. S. Tiedeman, branch manager. To the line of complete plastering specialties has been added steel windows, reinforcing bars, wire mesh, concrete road forms and metal trim. The Building Products department will be able through this division to devote its sales efforts to the building specialty lines exclusively.

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### Engineer Examination

The United States Civil Service Commission announces an examination will be held in the immediate future for the position of "Junior Engineer" to fill vacancies in various branches of the Government service. The entrance salary is \$1860 a year with promotional increases ranging as high as \$2400 a year. Receipt of applications for the position will close April 17.

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### Redding High School

Architects Glenn Allen and Charles H. Young, of Stockton, have been commissioned to prepare plans for a new building for the Redding Union High School District, for which bonds amounting to \$375,000 have been voted.

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### Completing School Plans

Architect Joseph J. Rankin of San Francisco, has completed plans for a nine-room addition to the Francis Scott Keyes school at 42d avenue and Judah street, San Francisco, for the City and County of San Francisco. The building will cost \$75,000.

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## The "Way to Beautiful Homes"



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STAIRWAY IN A SPANISH GARDEN, MEXICO  
PHOTOGRAPH BY E. J. OBERT

# THE ARCHITECT AND ENGINEER

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1926

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## Domestic Architecture in California

*Being a Letter to an Eastern Observer*

**M**Y Dear Ernest:

It was good to have your recent letter discussing architecture in California—or should I eschew further modesty and hesitation and postulate a “California Architecture?” I can not say that I agree unreservedly with your every suggestion and conclusion; but that is one of the things that make discussion interesting. At any rate, it is flattering to reflect that the efforts we are making are deemed worthy of the serious attention of intelligent art-lovers.

You are correct in recognizing the pervasive importance of “Spanish” in our current domestic architecture, even in localities which came only slightly or not at all under the influence of Spanish culture when that was a reality in California. Indeed, I consider it a fact of some significance that this influence is actively operative in other fields than domestic work; this at least disposes one to admit a certain consistency in spiritual orientation which would be questionable if our house architecture were being forced into a separate stylistic compartment of its own. But when you inquire whether this Spanish is a spontaneous mode of thought or a consciously assumed manner (thank you for avoiding “mannerism”) you probe close to the quick of the problem of architectural style, not only in California, but in the entire United States.

Are we building anywhere in the country architecture whose “style” is not in the nature of a consciously assumed manner? It is true, as you tactfully intimate, that even in Southern California, which was the stronghold of the Spanish settlers, our culture of today is in no real sense a Spanish one. I would not hesitate to be more specific, and admit that it is not even built on the Spanish as a basis; it crowded the less aggressive older one aside and began over largely on its own terms. Only as an accident of physical location can Spanish art be considered our “inheritance.”

But what is happening in the eastern states? It is accepted as normal and unexceptionable that city and country houses, town halls, libraries, schools, college buildings, and so on should be designed in

"Colonial." Yet are you living in a Puritan civilization? You may object that you stand in a more direct line of descent from that culture than we do from the Spanish. The important fact remains that while in all your social aspects you have been evolving, your architecture alone has remained static. By the way of parenthesis I might remark that perhaps, in all our life, there lingers more of Puritanism than we are wont to recognize. Psychologically I suppose that Puritanism resides not so much in the ideals one holds as in one's insistence that everyone else shall hold them also, or at least act as if he did. In this sense we undoubtedly all still live in a Puritan civilization.



HOUSE OF MR. SIMON HORNSTEIN, SACRAMENTO  
A. R. Widdowson, Architect  
See Plan, Page 70

But perhaps you regard Colonial architecture as not Puritan, but English. Does it leave us any better off in principle? You in the East are coming to accept English as naturally as we of California accept Spanish. That is all right in its way, so long as it does not blind you to the fact that our own architectural expression is no less than ours a consciously assumed manner. A few days ago I glanced through the House Number of an eastern architectural journal. Being eastern, the greater part of the work shown was naturally from the East. I have not taken the trouble to check up numbers, because I am not statistically minded. Besides, I like my statistics best when they come tripping light-heartedly from the tongue—or pen. But I suppose that fully three-fourths of the work shown was Colonial and English, divided about half and half. In fact, I was surprised at the number of English cottages which might have been photographed in England. There were also a couple of articles on English for small houses—in fact, there were articles on all the standard styles for the same purpose, as if the determination of style were normally a mere matter of taste, like selecting

a color for a coat. And so, indeed, has it become. But to return. Let me put the question seriously: Is your civilization more Seventeenth or Eighteenth Century English than ours is Spanish?

No, my dear Ernest, there is no architecture being built in these United States today which is not designed in a consciously assumed manner. To put it another way, no designer ever embarks upon a new project without considering either subconsciously or in more or less open discussion what "style" he will "use." Men who invariably design in one "style" are in no different position, except that narrower sympathies or stronger predilections have led them to decide the question



HOUSE OF MR. AND MRS. H. C. HUNT, PEBBLE BEACH, CALIFORNIA  
Clarence A. Tantau, Architect  
See also Pages 82 to 84

once for all at the outset; their course is none the less a personal choice rather than a social imposition. One has only to take a ride through Los Angeles, say, to realize that we are in a most disconcertingly literal sense "the heirs of all the ages." And the important thing, the really anomalous thing, about these deliberately chosen styles is that they are one and all retrospective. We do nothing which owes its form and decorative aspect to a realistic consideration of the factors of the case, and which expresses our own attitudes with reasonable completeness and uniquely. The only great realist we have produced in the course of our architecture was Louis H. Sullivan; and naturally no one man, however great his force and originality, could have stemmed unaided the flood of romantic "classicism" let loose by the Chicago Exposition.

But have no fear. I have neither time nor inclination now to go into an extended discourse on architectural history and philosophy. I am only sending you, with random comments, a few pictures of more or less recent houses in California. [Illustrated in this number.] Again you will see the same predominance of Spanish influences that is evi-

denced by any chance collection of California house photographs. Some of them are not Spanish, or even what we have come to term "Mediterranean." No sooner is your mind all comfortably made up to the perfectly equitable distribution of English for the East, Spanish for California, than along come Mr. Widdowson, Mr. Hardman, and Messrs. Maston and Hurd to confuse your neat mental filing system. And, in the face of our traditionless tradition, who shall set himself up to declare that they have not a perfect right to their stylistic preferences? Morally, I mean. Because from the artistic point of view I can not help feeling that they are pursuing the less fruitful path, as I shall explain



HOUSE OF MRS. CHAS. WHEELER, JR., PEBBLE BEACH  
Clarence A. Tantau, Architect

later. Mr. Widdowson's Johnston house is very English, and very beautifully so. The same may be said of Mr. Hardman's more modest Siston house—at least, if he gets it executed as well as Mr. Widdowson has done his. Messrs. Maston and Hurd's Davenport house is perhaps more definitely English on the outside than within; and there is no denying that it sets well on its hillside under the eucalyptus trees.

Then there are others which, if not English in any demonstrable sense, at least suggest the flavor of ale. What should I call Messrs. Sidney B. and Noble Newsom's Henshaw house? Is it English? French? Far be it from me to suggest that stylistic uncertainty damns a building. But I do feel that this house, picturesque and consistent though it be, is not by any means the Newsom's best work. In its bulk Messrs. Miller and Warnecke's Cowan house suggests English or Colonial; but it really falls into a class about which little can be said, but for which I come to have an increasing respect when it is well done. I mean the kind of building that, when pressed for a diagnosis on style, you finally describe as

"just house." We waste much ingenuity on the reproduction of particular periods and localities; but when all is said and done, these extravagances can go into only a comparatively small proportion of homes, which happen to be the most conspicuous ones; and the majority of people, fortunately perhaps, must live in "just house." A somewhat more consciously Spanish inspiration does not prevent the same things being essentially true for Mr. Dakin's Chamberlain house.

The rest of the work I send you is Spanish out and out, ranging from good old adobes up to rather sophisticated masonry construction. I say this with my tongue in my cheek. We California architects have



HOUSE OF MRS. CHAS. WHEELER, JR., PEBBLE BEACH

Clarence A. Tantau, Architect

See also Pages 85 to 90

become so clever and consciousnessless, and our plasterers so ably abet in the conspiracy, that you can't tell how a thing is built by looking at it—sometimes not even by knocking the wall. One might paraphrase the old proverb into, All is not masonry that is plastered; or, if of a slightly more malicious turn of mind, one might recall without textual change that Beauty is only skin deep. What difference, ask the sophisticated, provided the beauty be there?

Well, a critic looking at current architecture has two possible methods of approach open to him. He may regard a building uniquely from the standpoint of aesthetics, as pure form, color, and texture. Or he may inquire into the relations between these abstractly aesthetic values and the practical, scientific, and social considerations inevitably bound up with them. In other words, he may consider it as he might a vase, or even a spring hat. Or, even if its appearance is thoroughly agreeable, he may proceed with importunate questions such as, How does it serve its purpose? Is there a reasonable relation between its apparent form

and its construction? And, Is its expression consonant with the ideals and outlook animating the society which brought it about? In the first instance he limits himself to the building's sensory appeal; in the second, he estimates its significance. It would be folly for me to try to conceal that I regard the latter attitude as the only one for serious criticism. But it must also be obvious that when I write for magazines,



OJAI STABLES, OJAI, CALIFORNIA  
E. Wallace Neff, Architect

as I sometimes do, it can seldom be maintained. In the first place there is a limited amount of architecture being done which it is profitable to consider in so serious a light. In the second place, even architects who do not share the ideal and who disparage it as visionary or foolishly academic, become incensed when their work is criticised from that point of view and drop their subscription to the magazine. So one is generally forced to accept a building at its own estimate, or, in case of disagreement, use sufficiently long words so that readers will never surmise the fact. With you I can afford to be more frank.

I know that at least one of Mr. Neff's buildings, namely the wholly charming Ojai Stables, is genuine, because you can plainly see the adobe bricks which he has left unplastered. How strange to reflect that ordi-

nary mud can be so satisfying, even thrilling! It only goes to demonstrate once again the important but oft-neglected artistic truth that the inherent preciousness of the material is inconsequential compared with the manner in which it is organized. The best of his houses—Burr, Baer, Bourne, and his own, are equally delightful to look at, though I can not say if their construction is what it seems and pretends to be.



OJAI STABLES, OJAI, CALIFORNIA  
E. Wallace Neff, Architect  
See also Page 48

Those arches springing almost from the floor are puzzling. There are certain things I would not want in my own house, and would never do myself, yet I always feel grateful that there is someone who has the courage and the inclination to do them; and these seem to fall in that class.

I know that some of Mr Smith's houses are tile, and I happen to know that a few, at least, are stud construction and wood furring. That is among the things that you just have to know, because you could never deduce it from the appearance. Well, Mr. Smith's houses are almost uniformly things of exceptional beauty and dignity. And there is no gainsaying that the wood ones are just as beautiful to look at; and there you are again up against the old problem. You know my high

regard for Mr. Smith as a designer. Now there is an experiment I would like to see tried on him. I remember how, some years ago, I came across some simple wood structures designed by Mr. Myron Hunt. I already knew and prized Mr. Hunt's serious work; but here were a few trifles as beautiful and as satisfying on their own terms as the more important things on theirs. My estimate of Mr. Hunt as an architect was measureably enhanced. I would like to see Mr. Smith forced to design in wood something which had to be built of wood.

Another confirmed spiritual Spaniard is Mr. Tantau. He composes his forms with a simplicity that conveys distinction, and he achieves an



HOUSE OF MR. R. LEE CHAMBERLAIN, BERKELEY  
C. C. Dakin, Architect

execution delightfully appropriate to his design. I wish I could have sent you fuller illustrations of the Hunt house, for it deserves it. But Mr. Tantau is also willing to consider his forms without much reference to the means of realizing them at his disposal. I know how it feels to have an inspiring conception without the proper means of realizing it. And when you have to do something different from what you wish you were doing, it is hard to avoid pretending you are doing just what you wanted. If you consider that carefully, you will find it is considerably truer than it sounds.

Spanish in all of its phases is being assimilated. It was the surviving work of the Spanish-California settlers, of course, that started the tide; but long ago we had to abandon referring to the current movement as "Mission." "Mission" as a style is distinctly discredited. It connotes suburban stores and railroad stations with petty, grotesque parapets and pediments, and furniture twice as heavy and ugly as it

need be. None the less it is the Mission spirit which survives and animates in its essential phases work like that of Mr. Neff, Mr. Smith, and Mr. Tantau. Some of our architects have visited Mexico—which, of course, was the direct parent of the Mission. Mr. Smith, more than any of the others, has gone back to some of that piquant Andalusian work which is colored by the Moorish influence. You see it clearly in the Vincent patio, as well as in the ceilings of his own home. And there are architects who, still within a Spanish inspiration, work in a "grander," more sophisticated manner. Mr. Harwood Hewitt's Seymour house is one of the best examples of this kind. It seems, if such a thing

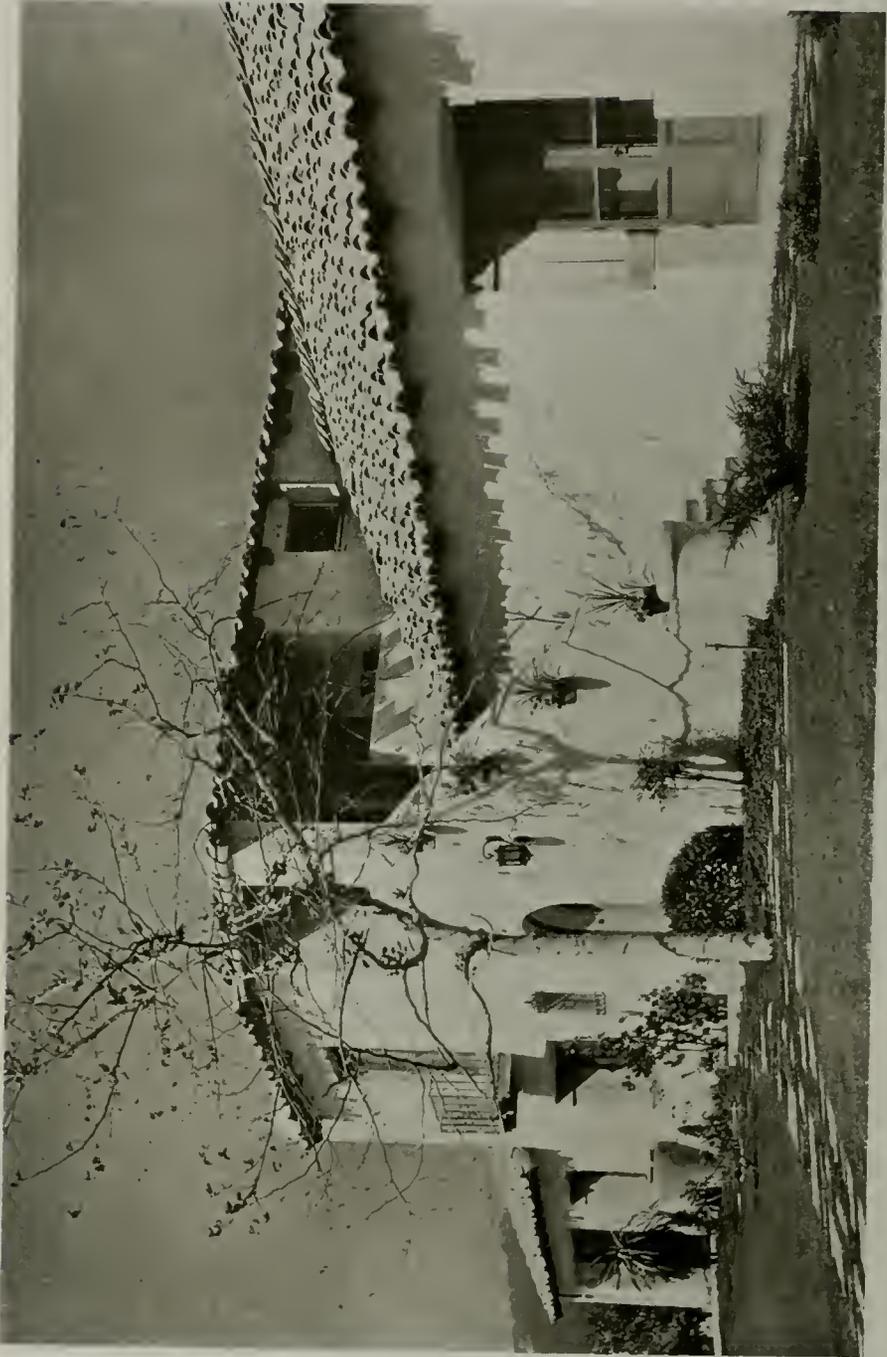


HOUSE OF MR. R. LEE CHAMBERLAIN, BERKELEY  
C. C. Dakin, Architect  
See also Pages 74 and 75

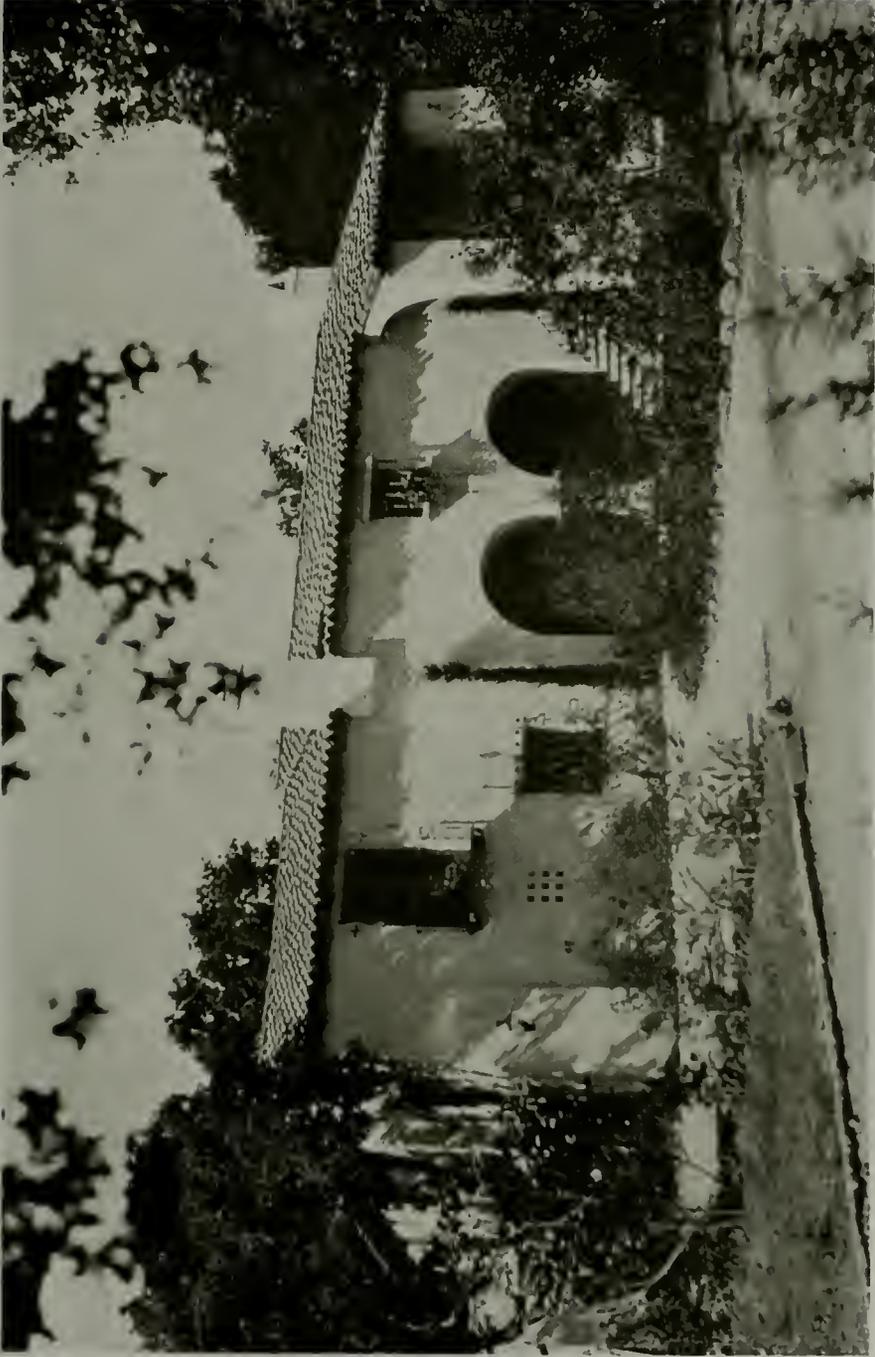
were possible, monumental and intimate at the same time. It is certainly highly colorful and adventurous.

I suppose that much of our so-called Spanish work is Spanish more incidentally than deliberately. I mean that when designers use simple means in a straightforward way, without decorative preoccupation, which was the manner of working of the old Spanish settlers and Mission Fathers, they fall naturally and almost by accident into similar forms of expression. And the result, though innocent of stylistic intent, is dubbed "Spanish." Such, I know, is the case with my own farm house for the San Joaquin Valley, which I have shoved in along with the rest. This projected building has this of interest, that it is going to be constructed of the local earth, though not by the familiar method of adobe bricks. We are using the ancient, but until recently disused method known as "pisé de terre;" that is to say, earth rammed into forms like concrete. So all wall thicknesses as shown on the plan are "real."

(Concluded on Page 106)



HOUSE OF MR. A. E. BURR, BEVERLY HILLS  
E. WALLACE NEFF, ARCHITECT



HOUSE OF DR. JOHN WILLIS BAER, MONTECITO  
E. WALLACE NEFF, ARCHITECT



HOUSE OF MR. E. WALLACE NEFF  
E. WALLACE NEFF, ARCHITECT



HOUSE OF MR. E. WALLACE NEFF  
E. WALLACE NEFF, ARCHITECT



See also Page 40 and 41

OJAI STABLES, OJAI, CALIFORNIA  
E. WALLACE NEFF, ARCHITECT



HOUSE OF MR. HENRY W. SCHULTZ, PASADENA  
E. WALLACE NEFF, ARCHITECT



HOUSE OF MR. TOM. PASADENA, CALIFORNIA  
E. WALLACE NEFF, ARCHITECT



See Plans, Page 56

HOUSE OF MR. ARTHUR K. BOURNE, PASADENA  
E. WALLACE NEFF, ARCHITECT



HOUSE OF MR. ARTHUR K. BOURNE, PASADENA  
E. WALLACE NEFF, ARCHITECT



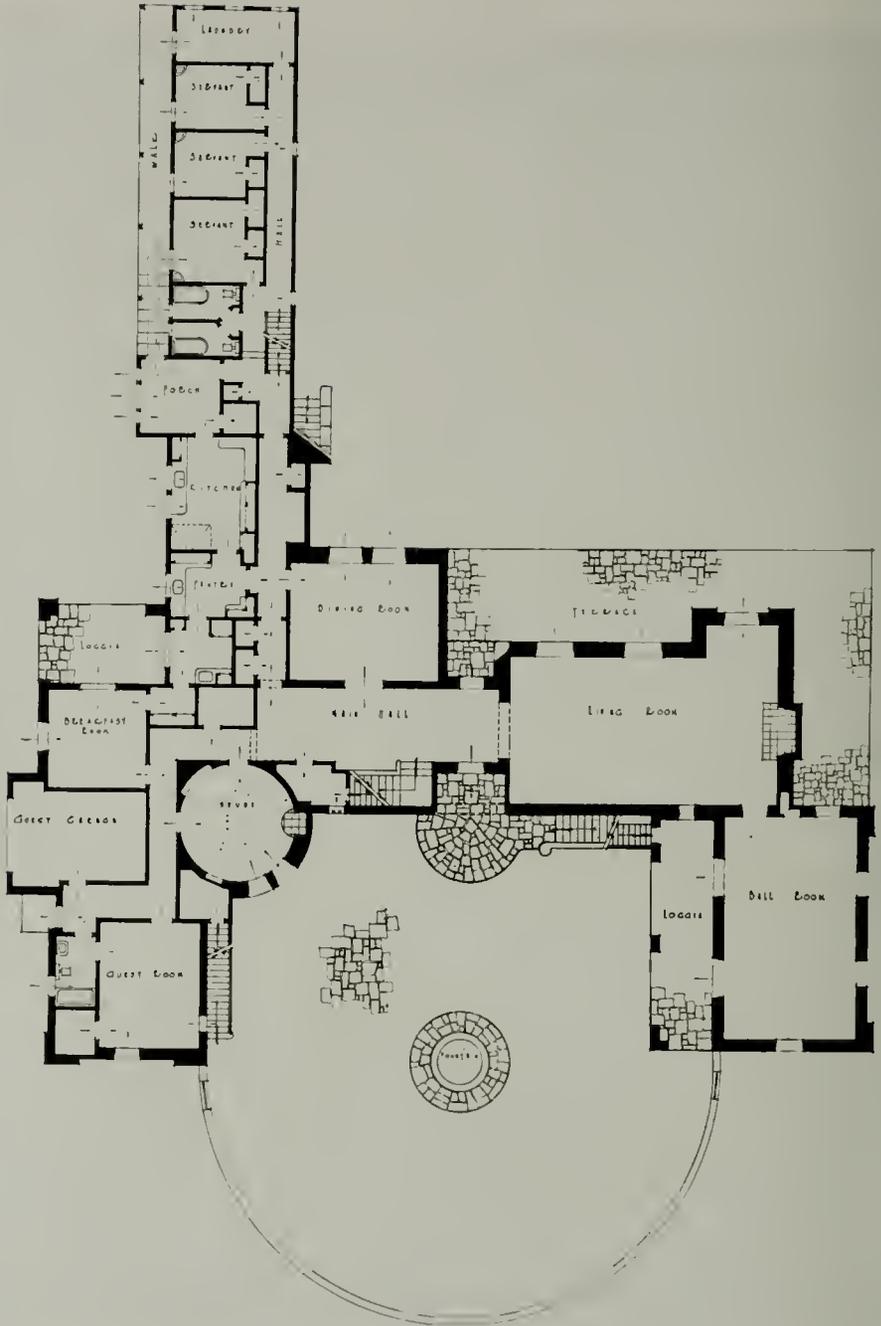
HOUSE OF MR. ARTHUR K. BOURNE, PASADENA  
E. WALLACE NEFF.  
ARCHITECT



HOUSE OF MR. ARTHUR K. BOURNE, PASADENA  
E. WALLACE NEFF, ARCHITECT

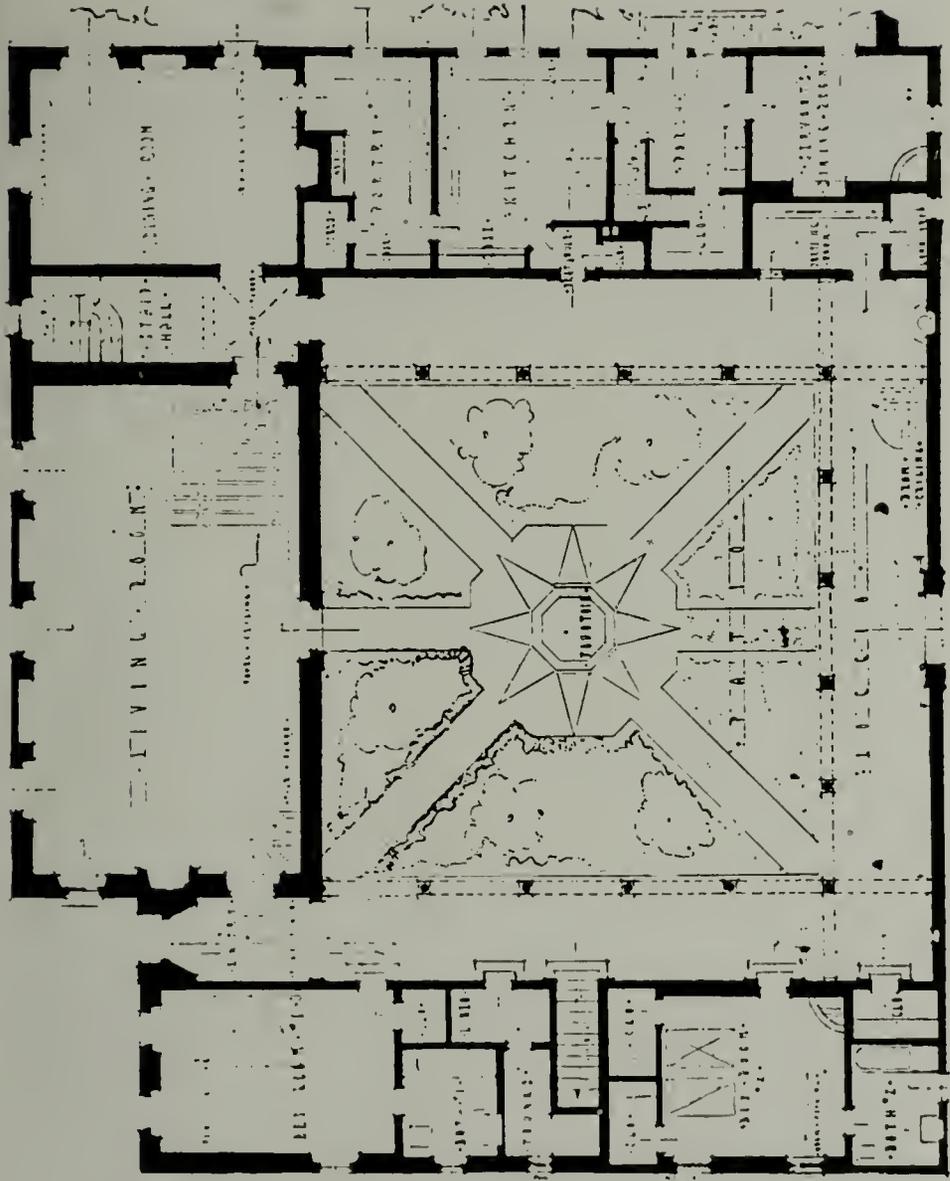


HOUSE OF MR. ARTHUR K. BOURNE, PASADENA  
E. WALLACE NEFF, ARCHITECT



See Pages 51 to 55

PLAN, HOUSE OF MR. ARTHUR K. BOURNE, PASADENA  
E. WALLACE NEFF, ARCHITECT



See Pages 58 to 62

PLAN, HOUSE OF MR. AND MRS. ARTHUR ROSE VINCENT, PEBBLE BEACH  
GEORGE WASHINGTON SMITH, ARCHITECT



See Plan, Page 57

HOUSE OF MR. AND MRS. ARTHUR ROSE VINCENT, PEBBLE BEACH  
GEORGE WASHINGTON SMITH, ARCHITECT



HOUSE OF MR. AND MRS. ARTHUR ROSE VINCENT, PEBBLE BEACH  
ARCHITECT  
GEORGE WASHINGTON SMITH.



HOUSE OF MR. AND MRS. ARTHUR ROSE VINCENT, PEBBLE BEACH  
GEORGE WASHINGTON SMITH, ARCHITECT



HOUSE OF MR. AND MRS. ARTHUR ROSE VINCENT, PEBBLE BEACH  
GEORGE WASHINGTON SMITH, ARCHITECT



HOUSE OF MR. AND MRS. ARTHUR ROSE VINCENT, PEBBLE BEACH  
GEORGE WASHINGTON SMITH, ARCHITECT



HOUSE OF MR. GEORGE WASHINGTON SMITH, SANTA BARBARA  
GEORGE WASHINGTON SMITH, ARCHITECT



HOUSE OF MR. GEORGE WASHINGTON SMITH, SANTA BARBARA  
GEORGE WASHINGTON SMITH, ARCHITECT



HOUSE OF MR. GEORGE WASHINGTON SMITH SANTA BARBARA  
GEORGE WASHINGTON SMITH ARCHITECT



HOUSE OF MR. GEORGE WASHINGTON SMITH, SANTA BARBARA  
GEORGE WASHINGTON SMITH, ARCHITECT



HOUSE AND GARDEN OF MR. GEORGE WASHINGTON SMITH, SANTA BARBARA  
GEORGE WASHINGTON SMITH, ARCHITECT

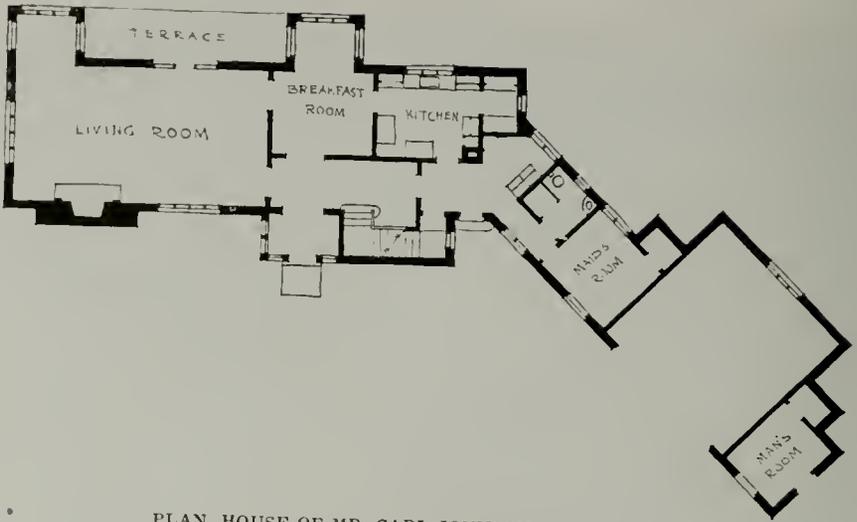


GARDEN OF MR. CRAIG HERBERTON, MONTECITO  
GEORGE WASHINGTON SMITH, ARCHITECT



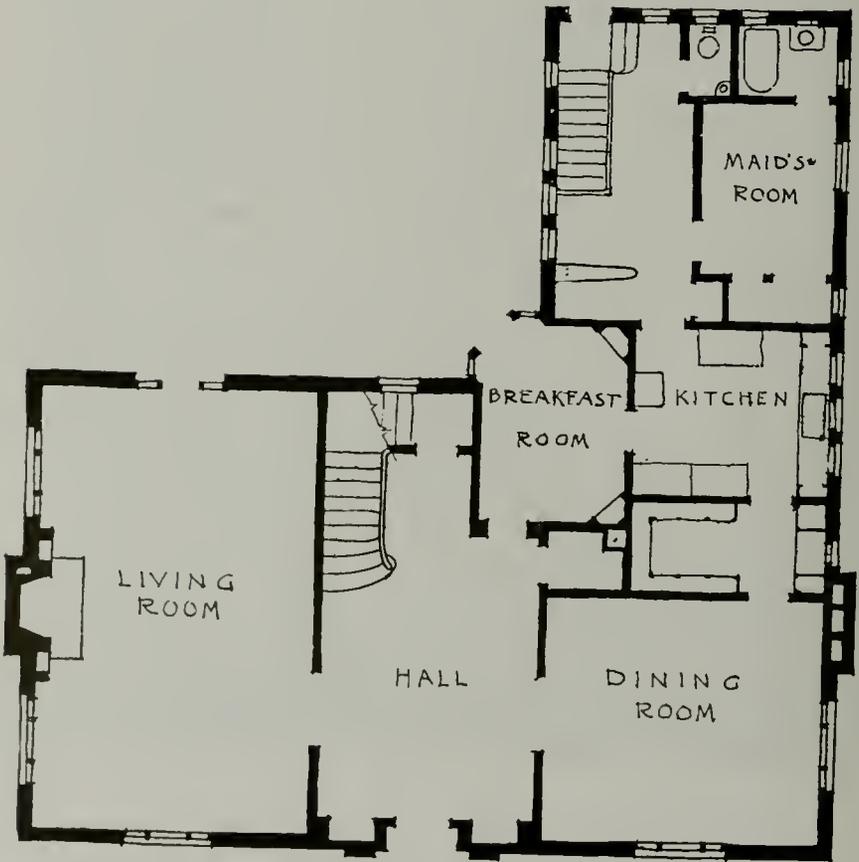
HOUSE OF MR. CARL JOHNSON, SACRAMENTO  
A. R. WIDDOWSON, ARCHITECT

See Plan, Page 70



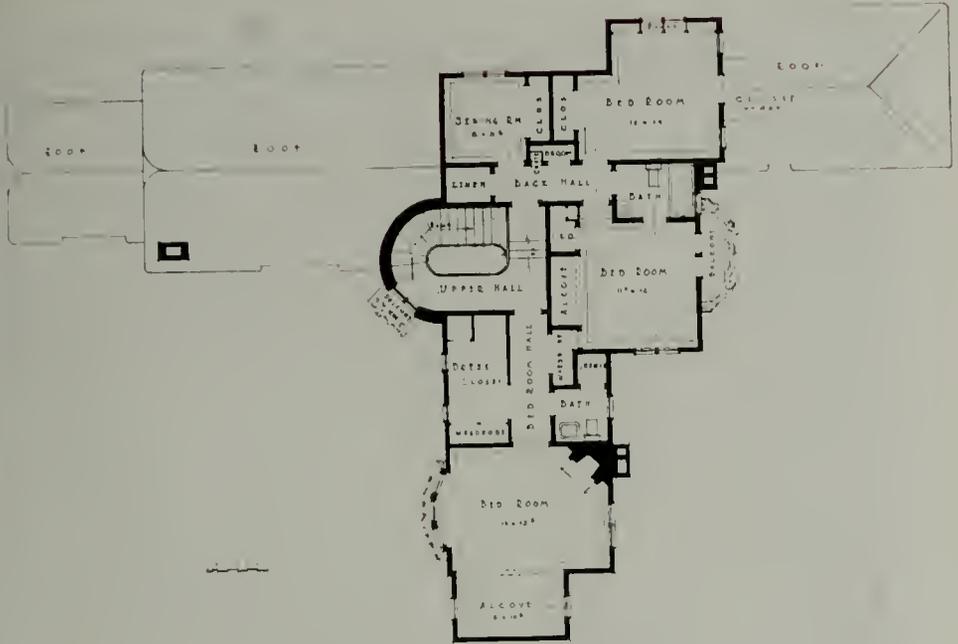
PLAN, HOUSE OF MR. CARL JOHNSON, SACRAMENTO  
A. R. Widdowson, Architect

See Page 69

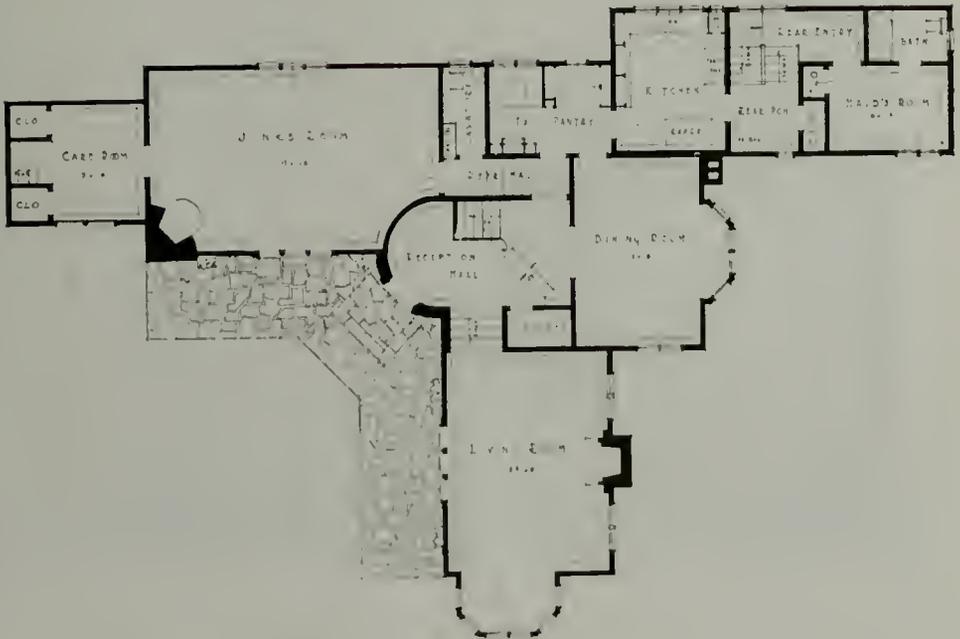


HOUSE OF MR. SIMON HORNSTEIN, SACRAMENTO, CALIFORNIA  
A. R. Widdowson, Architect

See Page 36



SECOND FLOOR PLAN



FIRST FLOOR PLAN, HOUSE OF MR. FRITZ HENSHAW, PIEDMONT  
Sidney B. and Noble Newsom, Architects  
See Pages 72 and 73



See Plans, Page 71

HOUSE OF MR. FRITZ HENSHAW, PIEDMONT, CALIFORNIA  
SIDNEY B. AND NOBLE NEWSOM,  
ARCHITECTS



HOUSE OF MR. FRITZ HENSHAW, PIEDMONT, CALIFORNIA  
SIDNEY B. AND NOBLE NEWSOM, ARCHITECTS

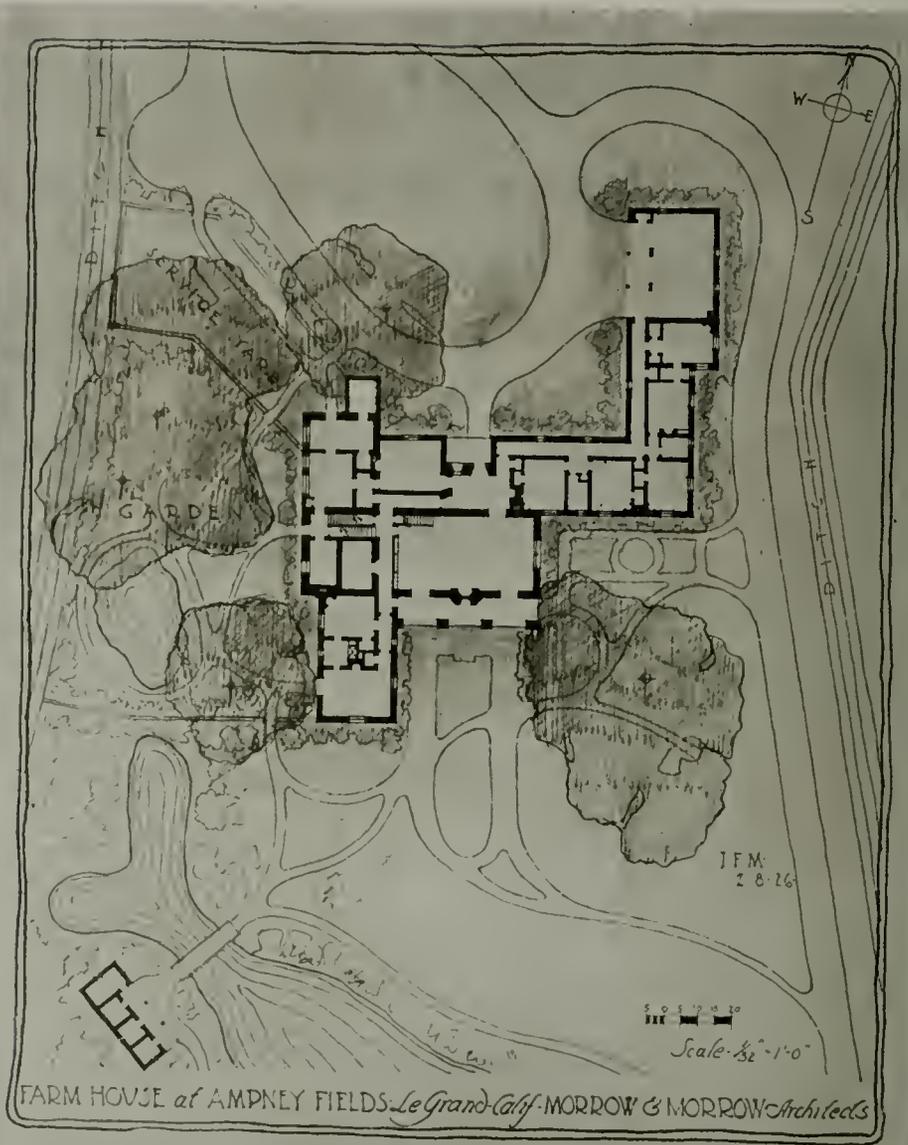


See also Pages 42 and 43

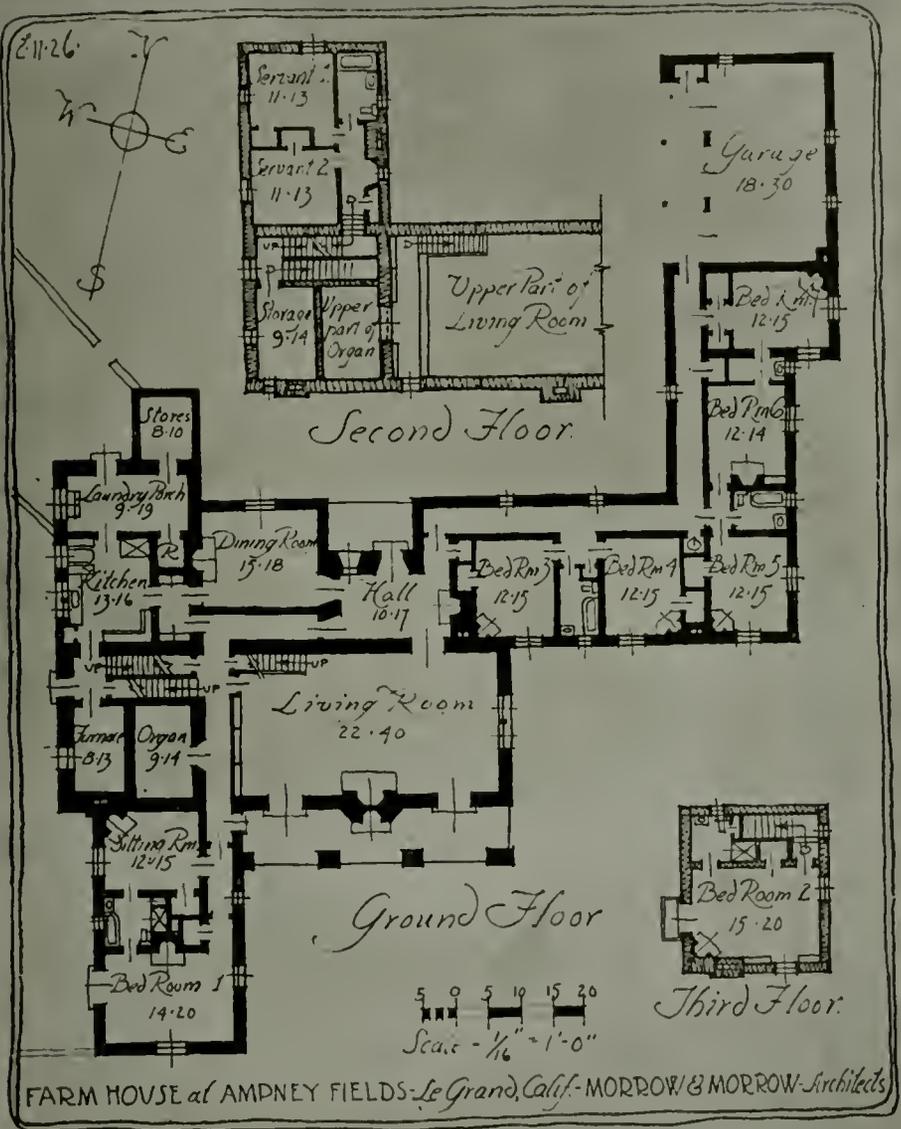
HOUSE OF MR. R. LEE CHAMBERLAIN, BERKELEY  
C. C. DAKIN, ARCHITECT



HOUSE OF MR. R. LEE CHAMBERLAIN, BERKELEY  
C. C. DAKIN, ARCHITECT



BLOCK PLAN, FARM HOUSE AT AMPNEY FIELDS, LE GRAND MORROW AND MORROW, ARCHITECTS



PLANS. FARM HOUSE AT AMPNEY FIELDS, LE GRAND MORROW AND MORROW, ARCHITECTS

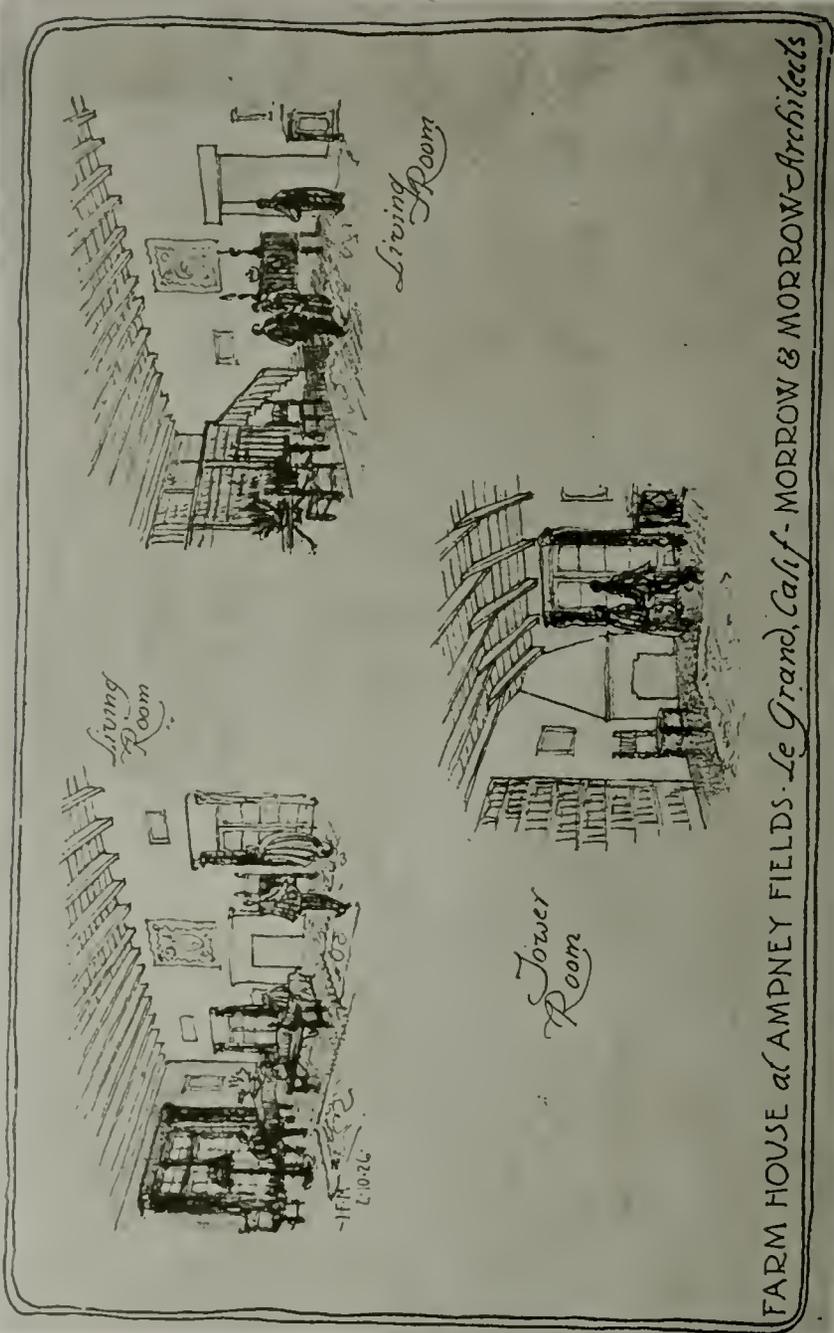


FARM HOUSE AT AMPNEY FIELDS, LE GRAND, HAMPSHIRE

FARM HOUSE AT AMPNEY FIELDS, LE GRAND  
MORROW & MORROW, ARCHITECTS



FARM HOUSE AT AMPNEY FIELDS, LE GRAND  
MORROW AND MORROW, ARCHITECTS

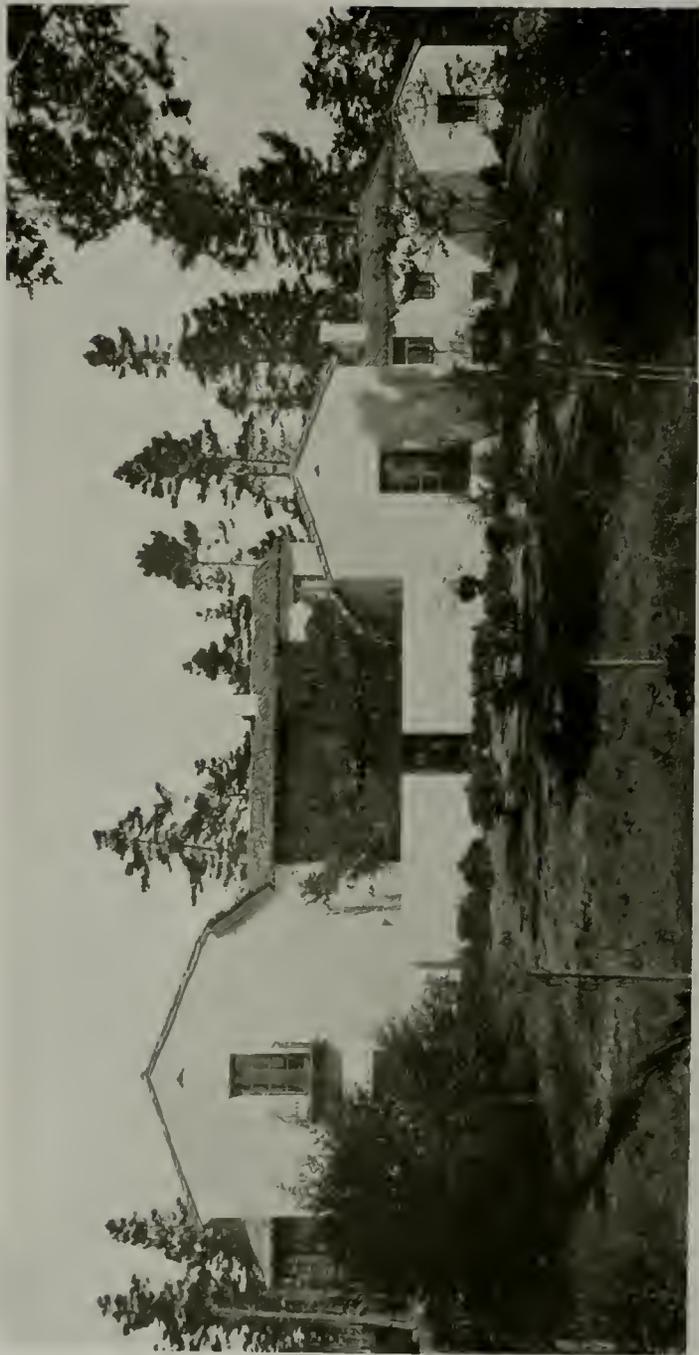


FARM HOUSE at AMPNEY FIELDS. Le Grand, Calif. MORROW & MORROW Architects

FARM HOUSE AT AMPNEY FIELDS, LE GRAND MORROW AND MORROW, ARCHITECTS



FARM HOUSE AT AMPNEY FIELDS, LE GRAND MORROW AND MORROW. ARCHITECTS MORROW AND MORROW.



See also Page 37

HOUSE OF MR. AND MRS. HARRY C. HUNT, PEBBLE BEACH  
CLARENCE A. TANTAU, ARCHITECT



HOUSE OF MR. AND MRS. HARRY C. HUNT, PEBBLE BEACH  
CLARENCE A. TANTAU, ARCHITECT



HOUSE OF MR. AND MRS. HARRY C. HUNT, PEBBLE BEACH  
CLARENCE A. TANTAU,  
ARCHITECT



HOUSE OF MRS. CHAS. WHEELER, JR., PEBBLE BEACH  
CLARENCE A. TANTAU, ARCHITECT

See also Pages 38 and 39



HOUSE OF MRS. CHAS. WHEELER, JR., PEBBLE BEACH  
CLARENCE A. TANTAU, ARCHITECT



HOUSE OF MRS. CHAS. WHEELER, JR., PEBBLE BEACH  
CLARENCE A. TANTAU, ARCHITECT



HOUSE OF MRS. CHAS. WHEELER, JR., PEBBLE BEACH  
CLARENCE A. TANTAU, ARCHITECT



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CLARENCE A. TANTAU, ARCHITECT



HOUSE OF MRS. CHAS. WHEELER, JR., PEBBLE BEACH  
CLARENCE A. TANTAU, ARCHITECT



HOUSE OF MR. AND MRS. W. F. COWAN, SANTA ROSA  
MILLER AND WARNECKE, ARCHITECTS.

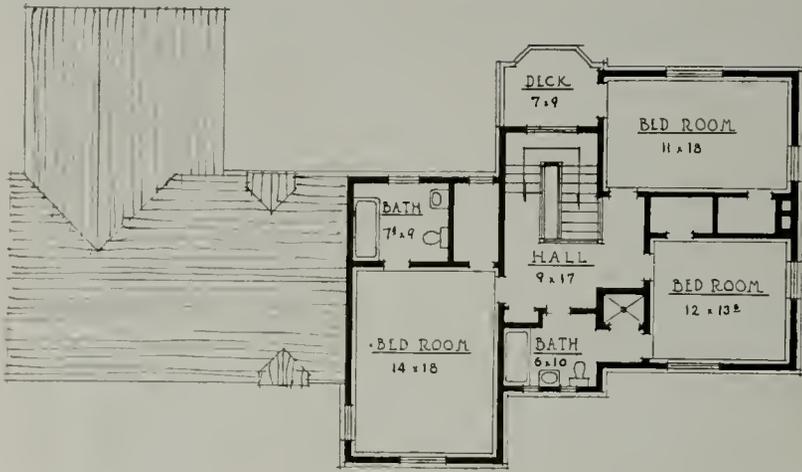


See Page 94 for Plan

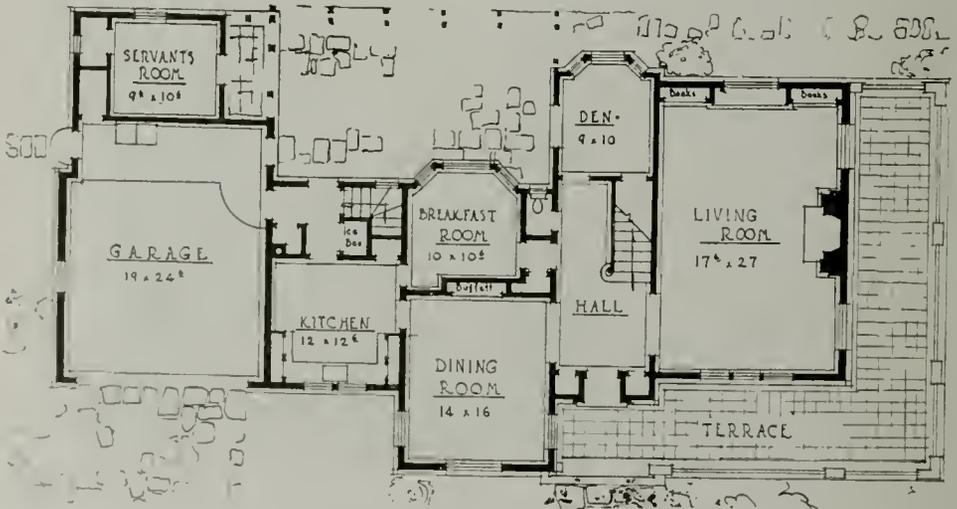
HOUSE OF MR. AND MRS. W. F. COWAN, SANTA ROSA  
MILLER AND WARNECKE, ARCHITECTS



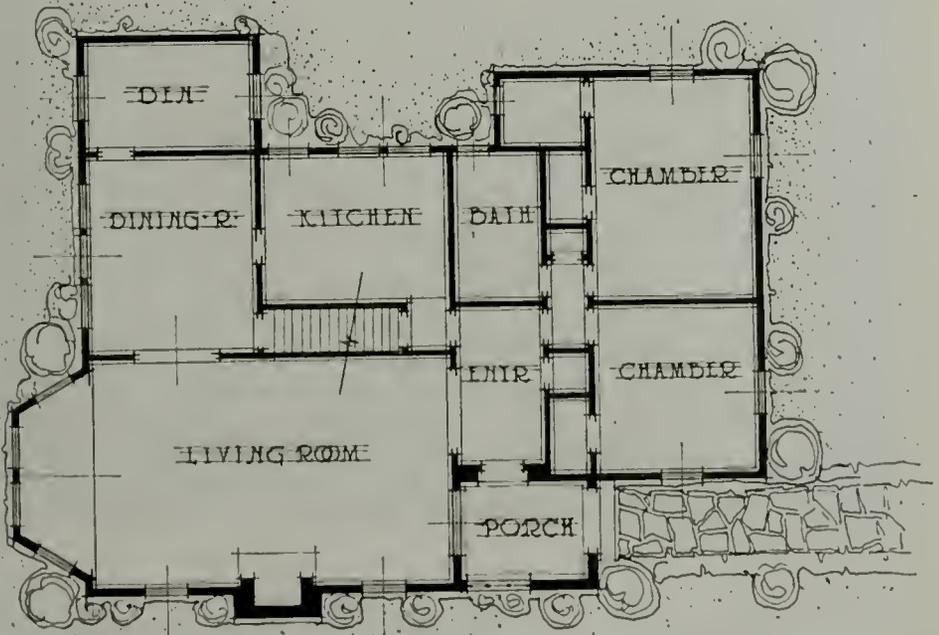
HOUSE OF MR. AND MRS. W. F. COWAN. SANTA ROSA  
MILLER AND WARNECKE, ARCHITECTS



SECOND FLOOR PLAN



FIRST FLOOR PLAN, HOUSE OF MR. AND MRS. W. F. COWAN, SANTA ROSA  
Miller and Warnecke, Architects  
See Pages 91-2-3



HOUSE FOR MR. SISTON, BERKELEY  
R. REEDE HARDMAN, ARCHITECT



HOUSE OF MR. W. R. DAVENPORT, SAN FRANCISCO  
MASTON AND HURD, ARCHITECTS



HOUSE OF MR. W. R. DAVENPORT, SAN FRANCISCO  
MASTON AND HURD, ARCHITECTS



HOUSE OF MR. W. R. DAVENPORT, SAN FRANCISCO  
MASTON AND HURD, ARCHITECTS



HOUSE OF MR. W. R. DAVENPORT, SAN FRANCISCO  
MASTON AND HURD, ARCHITECTS



HOUSE OF MR. E. J. SEYMOUR, FLINTRIDGE  
HARWOOD HEWITT, ARCHITECT



HOUSE OF MR. E. J. SEYMOUR, FLINTRIDGE  
HARWOOD HEWITT, ARCHITECT



HOUSE OF MR. E. J. SEYMOUR, FLINTRIDGE  
HARWOOD HEWITT, ARCHITECT



HOUSE OF MR. E. J. SEYMOUR, FLINTRIDGE  
HARWOOD HEWITT, ARCHITECT



HOUSE OF MR. E. J. SEYMOUR, FLINTRIDGE  
HARWOOD HEWITT, ARCHITECT



HOUSE OF MR. E. J. SEYMOUR, FLINTRIDGE  
HARWOOD HEWITT, ARCHITECT

This question of work's being Spanish because it just happens to work out so is an important one, for it presupposes an absence of stylistic preoccupation which, paradoxically as it may seem, I believe to be essential in the development of any vital style. The people who make styles probably never realize what they are doing, and those who think they are making them very likely aren't. It seems preposterous, though, that we could go on living indefinitely on the artistic capital of past ages. Already the problem of picking styles for new moving picture theatres is as baffling as the naming of Pullman cars, and competent archaeologists predict that available styles will be exhausted within the lives of men now living. Then we shall be faced with the dilemma of either discontinuing new theatres or creating.

But to return to houses. However strongly I seem to sympathize with the current California movement toward Spanish architecture, you must remember that I regard it as only a stage in evolution. I should be loath to think that we could so stagnate as to continue building "Spanish" houses to the end of time. But here we are without valid or compelling traditions, and we can't stop building until the tradition gets settled. In fact, it is only by the building we do that the tradition takes form. So we require a starting point, even if it has to be quite consciously chosen. For this purpose I consider Spanish predestined. I shall not stress it as a physical inheritance, because I have already admitted that it is not really a spiritual one. But here it was to start with, for all of that; and it is in such admirable harmony with the general temper of our climate and landscape that it most conspicuously "belongs."

However fortuitous this advantage, it seems entirely reasonable under the circumstances to avail one's self of it. That is why I said a while back that I thought those architects who are importing a distinctly English or Colonial expression are not on the most fruitful path. But let me emphasize that to me the Spanish is not a goal toward which we should be working. I regard it as a promising starting point, a stimulating background for efforts which I venture to hope will be really creative.

So here, my dear Ernest, you have, rather loosely set down, my reactions to some of your reactions to California domestic architecture. Allow nothing so trivial as the pressure of business to interfere, but let me hear shortly what you think of the photographs enclosed, as well as of the ideas I have sketched out. In the meantime believe me your most interested and devoted friend,

Irving F. Morrow\*.

Note.—The general view of the house of Mr. Arthur K. Bourne is from a photograph by George D. Haight; the detailed photographs are by Wm. M. Clark. The other photographs of Mr. Neff's work are by Margaret Craig.

The photographs of Mr. George Washington Smith's work are by J. Walter Collinge.

\*Member of firm of Morrow & Morrow, Architects, San Francisco.



PERGOLA OF A CALIFORNIAN GARDEN, WITH TERRA-COTTA GARDEN POTS

## Garden Pottery for the California Home\*

By EDWARD F. O'DAY

**F**OR your new garden . . . your real Italian garden . . . brings in a new element—that of perspective, architecture, decoration; the trees used as building material, the lie of the land as theatre arrangements, the water as the most docile and multiform stage property.”

Thus Vernon Lee, who has written with sympathy and insight about the lovely old gardens that give wings to the imagination when it dreams of Italy and that so thoroughly satisfy the aesthetic sense when the dream becomes a reality and the dreamer a tourist sight-seeing in the garden country of the Mediterranean.

California has been endlessly compared to Italy. There are certain obvious elements of similarity. The same citrus fruits grow to beauty under the same kind of sunshine. The same soft sky of blue purity lives with the same lovely lakes. There are the same glorious outlooks upon salt water, and indeed in many of its moods the Pacific is akin to the Middle Sea. But there is room for further development of this pleasant similarity. We have not yet fully realized in this Garden State of ours how deep-seated, and how abiding is the charm of formal gardens.

True, there are in all sections of California, north and south, east and west, splendid garden spaces that speak in high terms of the landscape artists in our midst. But there are not nearly as many as there should be at this stage of our development in culture and in riches. The case is not one for pessimism, however, for there is more work,

\*Photos by Gladding, McBean & Co.



WALL FOUNTAIN OF TERRA-COTTA AT THE END OF A PAVED GARDEN WALK  
OF A CALIFORNIA HOME

and more significant work for the landscape artists of California with every year that passes. Eventually this garden spot of America will be spotted with gardens. The trees will be used as building material in the special subtle sense that Vernon Lee intends, the lie of the land will be dramatized, water will be used as a stage property—all this in a region to delight the soul of the most exacting admirer of old Italian gardens.



FORMAL LANDSCAPE ARCHITECTURE IN CALIFORNIA, A TERRA-COTTA GARDEN  
SEAT SUPPLEMENTING TREES AND HEDGES

Side by side with the rise of a most excellent school of Californian landscape architects has come the development of garden pottery. Vernon Lee, in the same essay that has already been quoted, speaks of "a new sculpture" undertaking to make something which "will continue the impression of the trees and waters." It was in this "new sculpture" that the ceramic artists of California developed the garden pottery that is so distinctive a feature of Californian gardens. The landscape



POTTERY AND FURNITURE OF TERRA-COTTA AT THE DISPLAY GARDEN OF GLADDING, McBEAN & CO., SAN FRANCISCO



A LOS ANGELES GARDEN — LILY POOL  
WITH TERRA-COTTA FOUNTAIN FIGURE

architects have made this beautiful ceramic ware the handmaiden of their garden plans. Their most plastic conceptions seem to have borrowed a new freedom of outline from the plasticity of the terra-cotta that has been placed at their disposal.

While the Californian manufacturers of terra-cotta are producing garden pots worthy of comparison with the finest that old Etruria ever made for the adornment of Roman villas, it is not in pots alone that the landscape architect hereabouts is finding inspiration and help in the completion of his garden designs. The ceramic artists are giving us fountains and fountain figures calculated to establish friendly relations with splashing water and lazy lily-pads; wall fountains that snuggle up to flowering creepers; garden seats that maintain a proper dignity in the company of the most venerable trees; and pedestals supporting dials that remind us, with the assistance of the sun, that garden hours are all too short.

The development of garden pottery and garden furniture in California is beholden in a striking way to the artistic ideals of our western manufacturers of clay products who have taught the landscape architect to rely upon terra-cotta for the rounding-out of his plan of garden loveliness. In the plants up and down the State there have been produced a variety of pieces that in conformation and color would surely command the admiration of the great poet who immortalized the Grecian Urn.

\* \* \* \*

### A. I. A. Convention

Call is out for the fifty-ninth annual convention of the American Institute of Architects, to be held May 5 to 7 in the new Chamber of Commerce building, Washington. President D. Everett Waid signs the call which reads:

"The program will include certain features of entertainment. Notable men will address the convention and the delegates will have opportunities for discussion of subjects upon which there are divergent opinions.

"Chapters should be warned that there is possibility of some new policies being inaugurated and of some old ones being modified. The delegates (and as many members as possible who are not voting delegates) should know their Chapter's mind and be ready to discuss 'The Small House Service Bureau,' 'The Scientific Research Department,' 'The Structural Service,' 'State Registrations and Architectural Education,' 'Significance of the Fine Arts,' 'Architecture and the Public,' 'The Proposed Development of the Octagon Property,' 'The Plan of Washington,' and 'The Proposed National Department of Public Works.' The convention will consider also the raising of dues, etc., and the election of new officers and other directors.

\* \* \* \*

### To Cut Cow Brands On College Hall

It is a long jump from the branding iron to the steel chisel—a shift from the cowboy's art to that of the builder—but the designers of Garrison Hall, a class room to be erected on the campus of the University of Texas at Austin, have decreed that 32 famous cattle brands shall be cut in the stone of the new building. In this way a record of cattle marks which have helped to make Texas history will be preserved for all time. Even now, many of the old but well-known brands have become extinct except for crumpling records handed down by pioneer cattlemen. The brands are to be carved at the base of the third floor of the university edifice and along the eaves.

## Hand-Wrought Ironwork for the Modern Colonial Home

By HARRIET SISSON GILLESPIE in *The House Beautiful*

**S**INCE so great an element in the decorative beauty of Colonial architecture lies in wrought-iron fittings, the renaissance of the mediaeval craft among latter-day architects, artists, and artisans will serve to stimulate fresh interest in fine hand-wrought metal and will also materially aid in preserving the integrity of the type as it has come down to us from early New England days.

The character of the work produced possesses all the charm of the fine examples wrought in that halcyon period when ornamental ironwork formed an inherent part of architectural design, but is marked by distinct individuality of expression as well, for the pioneers are men who honor tradition, but who, like the craftsmen of old, put into their efforts the fire of their own genius.

The movement has already exerted a marked influence on the decorative treatment of city houses; the novel group in Sutton Place, New York, for example, affording an admirable illustration; there original hand-wrought iron railings, balconies, area and entrance gates form delectable touches of exterior embellishment, while the interiors abound in aesthetic features of an equally inviting sort.

In these days of crass materialism and quantity production, it seems an anomaly to run across an urban smithy patterned on Colonial lines; yet an increasing number of these primitive institutions have sprung up in response to the demand, where the toiler at his forge is to be found painstakingly and lovingly transmuting the molten metal into an article of grace and beauty later to become a factor in the architectural ensemble of the town house or country home.

Crude as is the environment of the primitive forge, it is a world of enchantment to the lover of fine hand-wrought ironwork; for in this industry the elemental metal lies in close juxtaposition with the product of the hammer and anvil, in all its pristine beauty. Here are ravishing grilles of Spanish flavor for overdoors, windows, and fireplaces; graceful scroll-like receptacles for vines, suggestive of Italian influence; mirror frames fashioned on French motifs of the Empire period, or lighting-fixtures following



A quaint and rugged lantern of Colonial design hung from a heavy wrought-iron bracket.



This hexagonal ceiling light shows the charming effect to be achieved by silhouetting simple ornamental forms against the light.

English tradition, such as Tijou designed in the seventeenth century, and even the more ornate balustrades for which the Brothers Adam were famous.

None of the work is more enticing, however, than the quaint lamps or lanterns that lend such decorative distinction to the Colonial home, whether indoors or out. To large extent they follow English or Early American design. Some of them belong to the period when lanterns were first affixed to the walls, and when every doorway was wont to hold a set of brackets of iron, with rings, from which the lanterns were suspended, one popular type dating back to the time when Lincoln's Inn in London was the first of England's parks or squares to be so illuminated.

James R. Marsh, son of Fred Dana Marsh, National Academician, one of the group of younger artists to lend their aid to the renaissance of hand-wrought iron hardware for house decoration, has developed many original and charming expressions of this type of lighting-fixture. His work is represented in a wide assemblage of choice designs.

Some are fashioned after the ship-light, stagecoach, or Paul Revere types. One is similar to the old-fashioned street lamp, which most of us can still remember with a thrill of pleasure at its picturesque appearance. Invariably, though, Mr. Marsh has wrought into his designs his own artistic conceptions. A large number, too, are wholly original.



A GRACEFUL GRILLE FOR OVERDOOR, WINDOW OR FIREPLACE FENDER

Mr. Marsh's greatest achievement in this field of house illumination is an octagonal lantern, the ribs or frame of ornamental iron, and in the center of each window a novel motif that when lighted stands out against the golden glow of the amber mica in a sharp silhouette. The bottom is formed of a series of graceful arabesques or scrolls surrounding a group of animal forms, reminiscent somewhat of the old Norse or Icelandic symbols, all welded together into a design of exceeding grace and beauty.

Equally effective is a six-sided lantern, in which the same motif appears; and, while the style savors of Italian influence, in feeling it more nearly approaches the early English work produced in the post-Renaissance period. Mr. Marsh recently introduced an interesting group of these lanterns in the study-room at Rosemary Hall, Greenwich, Connecticut, with marked decorative effect.

Suitable for a small hall or living-room is a quaint four-sided lantern, resembling somewhat the early American street-lamp in contour. The strength of the metal makes itself keenly felt in this example, for the simple beauty of the hand forging is more apparent, and the design of wild geese welded into the roof sections, while exceedingly graceful in conception, is quite as robust in feeling. The slender spirals of metal in the upper corners of the lantern also lend lightness and grace, as the quaint animal motifs about the base do piquancy and charm. Such a lantern will enliven the dark corner of a living-room, and two hung in a long hall not only will provide adequate illumination, but will lend both character and distinction to the surroundings.

On a number of old houses at Salem, Massachusetts, the primitive four-sided lanterns, held by one long arm, are still affixed to the doorway. In the older parts of Paris, too, one frequently runs across one of the same sort jutting out into the street and casting a genial glow upon the often dreary surroundings. To meet with this type of lantern affords one a sense of physical pleasure akin to the warmth and glow of an open fire—by reason of old associations, no doubt. It harmonizes with Colonial architecture, particularly with houses of the early American farmhouse type, emphasizing the quaint simplicity of the style.

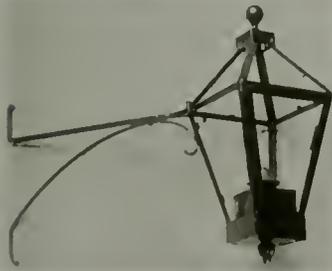


A lantern for a Colonial doorway, simple in design and original in treatment.

All of Mr. Marsh's lanterns are made to fit standard conditions and requirements, for electricity has long since taken the place of sperm oil and candlelight; but the electric wires are enclosed, according to law, and so in no wise interfere with their primitive effect. In cases where his judgment is sought the artist bases his selection on the general lines and architectural feeling of the house for which the lantern is to be designed.

A nicer discrimination will be made between the relative merits of original hand-wrought metal and the substitutes offered in its place, particularly when the public comes to understand that much of the genuine costs little, if any, more than spurious imitations of it. A stair balustrade, for example, consisting of a flight of fourteen steps, can be forged for \$150, approximately the same price as for wood. The rail will be severely plain in design, slender in appearance and metal all the way through, but without curves which add materially to the expense. The newer post will be very decorative and there will be artistic motifs welded in the center of every alternate or every third group of spindles, to form a rail of extreme refinement and grace.

Besides lamps and lanterns, it is possible to design wrought-iron console tables, gayly finished in polychrome, and lovely grilles such as the one designed for a fireplace fender, in which wild geese form the conventionalized design. This also is applicable to an overdoor, window, or wherever such a decorative bit is needed. In addition to these more strictly domestic features are picturesque weather-vanes, a wide group, illustrative of ancient legends or those in which some especial fad of the owner or peculiarity of the site is incorporated.



An old-time lantern for the exterior of the house of a type common in Colonial times.

A prominent decorator declares that no house should lack at least a few good examples of fine hand-wrought metal work. It is commonly accepted that black adds a smart accent and enlivens both wall fabrics and wall surfaces. Good metal work is mentally stimulating, too, and may prove an incentive to a greater familiarity with the romance of iron,—than which the history of none of the industrial crafts is more appealing,—to say nothing of honoring Colonial tradition and the work of those conscientious craftsmen to whom we owe so much.



RADIO ROOM, HOUSE OF MRS. EDGAR MORGAN MILLS  
K. HOPE HAMILTON, INTERIOR DECORATOR



K. HOPE HAMILTON STUDIO, SAN FRANCISCO

## Color in Home Interiors

By K. HOPE HAMILTON

**C**OLOR is an elusive quality, and is not the sentimental thing some make of it. To those who understand color the utter lack of fear in its use by novices is impossible to understand. Color is as intricate a science as sound. Who would attempt to compose a piece of music without studying at least the elements of harmony? Yet few there are that would hesitate at the composition of a color scheme for a room.

Color is an easier art to master than music. To understand color, you must first understand that it is made up of three elements—Hue, Value and Intensity. Hue is the name of color itself. Value is the amount of light in a color and is sometimes confused with Intensity, which expresses the force of a color.

All decorators should take into consideration the psychological effect of the color scheme to be used. It is true that the novice when selecting color is apt to be carried away by emotion. A color expert understands and thinks in the language of color and is not guided by fad or individual preference, but instinctively determines the choice of color, making his selection according to the exposure and natural light of the room.

Color endows a room with brightness; harmony expressing a sense of sheltered brilliance, or vivacity when carefully selected, creating interiors grave or gay, cool or warm, sympathetic, swathed or repellant. Color has the power to arouse or sooth, to depress or cheer the tender emotions, and its instant appeal with emotional effect has made it a dominant element in the language of interior decoration. The color harmony keyboard is used extensively today with great success by artists, decorators, master painters and individuals in the working out of specific problems.



LIVING ROOM, HOUSE OF MRS. EDGAR MORGAN MILLS



LIBRARY, HOUSE OF MRS. EDGAR MORGAN MILLS



DINING ROOM, HOUSE OF MRS. EDGAR MORGAN MILLS



HOUSE OF MRS. JAMES EDWARDS  
WILLIS POLK, ARCHITECT

## THE Architect and Engineer

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*I AM a firm believer in city planning as a means of eliminating waste, raising living standards, and achieving higher standards of community life. Good city planning is one of the first obligations which we owe to the future as part payment of our debts to past generations.—Herbert Hoover.*

### SAFEGUARD GOOD ARCHITECTURE

The fine arts are eminently supreme and stand alone in interpreting immortal manifestations of world progress; they exalt and foster every phase of advancing civilization; they inspire and convey universal thought and understanding; they glorify human progress and humanity; they are the essence of civilization.

Material progress and the fine arts simulate plant life and its fruits; because they are indispensable to each other; they perpetuate each other. To constantly improve material progress, we pursue such policies which recommend

themselves as best. Is it not also essential to foster the fine arts, by adopting policy recommendations which seem best?

Architecture is the flower and fruit of construction. Most structures bear inferior architecture. Structures, which are intentionally devoid of architectural design, are usually less offending than the majority of structures pretending to possess it, and possessing it offensively.

Structures simulate growth; plants may be devoid of flower and fruit, without being unattractive; structures may be devoid of architectural intent and yet be inoffensive to the observer. But, to condone inferior fruits and create inferior architecture unguardedly, is not truly beneficial to anyone. Every expression in the fine arts must be enhancing, to be of value to civilization.

Commercially the importance of the fine arts is inestimable. People visit foreign lands for many reasons. They embody the sciences, manufacture, agriculture, transportation, education and general travel, for study, observation and pleasure. The traveler is primarily actuated by desire to make personal observations of aesthetic creations.

Architecture is conceded the most pronounced epitome of national and racial expressions; it is essentially the mother art and science, whereby every industry, science, religion and art have been fostered.

All peoples manifest keenest interest in the Arts; they are manifestly essential to culture. It is a universal desire to create expressions artistically, but it seldom is attained. We see innumerable efforts which were intended to possess the illusive element of art, but in which the element is wholly lacking.

People are innately conscious of good design. Art produces a wel-

come sense of joy and inspiration which is difficult to analyze. All forms of artistic expressions are illusive to analysis and dubious to create. Most people are keenly appreciative of aesthetic expression; few people are capable of creating an aesthetic expression, even though they have had every cultural advantage.

The importance of good architecture to every state, community and individual is self-evident. Regardless of that fact, there is no determined effort extant, whereby commendable results are uniformly insured.

Community building codes only cover stability of construction, sanitation, electric and hygienic regulations essential to life, property and health protection. These essentials possess tangible qualities, governable by regulations which anyone can comply with, and which will then entitle a proponent to build.

Art cannot be similarly prescribed in a building code; it cannot be created by any known formula. The aesthetic element in architecture is destined to remain an unknown factor, until discovered, relative to each design, as is true of all art.

It may be possible to reasonably assure good design for every proposed structure, provided, by act of state or community, judicative courts are vested with authority to approve designs before construction is permissible.

The fact must be made known, that it costs no more to construct a good design than a poor one; that it is frequently possible to build a good design at less cost; that good architecture produces a substantial asset, whereas, a poor design produces a loss to property values, also, to a community.

Provision for good architecture will serve only as a protective measure, whereby the rights, interests and values of state and commu-

ities are protected and enhanced. It is in no sense prohibitory against free exercise of best interest of individual rights. It is a definite, beneficiary provision to individual and community.

An act to provide that members of judicative courts shall be elected, the electors to be licensed architects of the State of California, divided into groups, one for each district, or community. Electors shall add to their group an equal or greater number of voters. Voters to consist of persons who are eminently qualified in the fine arts residing within the State.

Any elector may announce his candidacy for membership of the judicative court, elections to take place at stated intervals. The number of jurors to be adequate to promptly and effectively accomplish the work of their specific district or community. The cost of this protective measure would be insignificant, compared with the benefits derivable therefrom. The benefits would be mainly to realty values and commercial business.

It is a measure, designed to abolish incalculable damage and loss, such as is directly attributable to extensive construction in accordance with poor design. Its purpose is, to guide individuals who propose building, to insure greatest value to their investment, and without added cost to the investor.

When this protective measure has been inaugurated, then the fine arts will become one of the greatest assets to the individual, and to the State of California.

—L. C. Mullgardt.

*OUR government rests upon religion. It is from that source that we derive our reverence for truth and justice, for equality and liberty, and for the rights of mankind. Unless the people believe in these principles they cannot believe in our government. There are only two main theories of government in the world. One rests on righteousness, the other rests on force. One appeals to reason, the other appeals to the sword. One is exemplified in a republic, the other is represented by a despotism.* President Coolidge

# With the Architects

Building Reports and Personal Mention

## In Memorium

The following tribute was paid by the San Francisco Chapter, A. I. A., at its meeting on March 16, to the memory of the late Albin R. Johnson:

The San Francisco Chapter of the American Institute of Architects recognizes that the Institute and the architectural profession have suffered a distinct loss in the death of Albin R. Johnson of the firm of Frederick H. Meyer and Albin R. Johnson.

Although Mr. Johnson was modest and retiring in disposition his sterling character, artistic ability and capacity for achievement were known and appreciated by his many friends in the profession and the building industry. Many younger men now engaged in architecture remember with gratitude his friendly help and encouragement in earlier days.

He devoted about thirty years of his life to active connection with architectural practice on important work in the San Francisco district applying himself conscientiously, cheerfully and enthusiastically at all times, although handicapped in latter years by poor health. Continued or greater achievement was prevented by his premature death at the age of forty-seven years.

The members of the San Francisco Chapter, A. I. A., extend to his widow and immediate family their sincere sympathy.

COMMITTEE:  
Will G. Corlett  
Harris C. Allen

The following tribute to the late Sylvain Schnaittacher was read before the San Francisco Chapter at its meeting March 16 and inscribed upon the minutes:

### OBITUARY

#### SYLVAIN SCHNAITTACHER

Elected to membership in The American Institute of Architects in 1905.

Died in San Francisco, February 11, 1926.

In the death of Sylvain Schnaittacher the City of San Francisco has lost a notable figure from the architectural profession.

Born November 30, 1874 in the city which he loved so well, he received his training in its Grammar and High schools and at the Mark Hopkins Institute of Art.

He entered the office of A. Page Brown for practical experience, and before beginning his independent practice spent a year in European travel and architectural study.

Among the buildings of note designed and erected by him may be listed:

Paige Motor Car Company building, Argonaut Club building, Beresford Country Club, and many apartment houses.

In association with other architects he designed and erected: Temple Emanu-El, State Agricultural building, Mt. Zion Nurses' Home.

He acted as a member of the Jury with Henry Bacon and William Mitchell Kendall for the Capitol Extension building at Sacramento, California, and as advisor in several important private building competitions.

Ever generous in giving his time to public service, and in the interest of his profession, he served for many years on the Examining Committee for the State Civil Service Commission for the examination of architectural draftsmen. Was secretary of the California State Board of Architecture for sixteen years; secretary of the San Francisco Chapter of the A. I. A. ten years, and served as its vice-president, and finally as president during the years 1918-1920. At the time of his death he was a member of the Board of Direc-

tors of the American Institute of Architects, with its headquarters at Washington, D. C., acting as Regional Director of the 9th District.

It is difficult to realize that he is no longer with us, for we always liked him, and trusted him, and had faith in his wisdom and good sense and stability, and though he achieved distinction in his profession, and created many beautiful buildings to testify to his skill, he left to us, besides these, a richer heritage; memories filled with thoughts of his fine qualities and loyalty, mellowed by gracious kindness. And we shall go forward cherishing in our hearts this heritage.

W. B. FAVILLE  
WM. MOOSER

## Passing of W. J. Wythe

Architect Willson J. Wythe, 15 Hill Road, Rockridge, Oakland, senior member of the firm of Wythe, Blaine & Olson, died at his home early in March after an illness of two years. Mr. Wythe was for several years assistant professor of mechanical drawing at the University of California, and a member of the official board and president of the benevolent fund of the First Methodist church. He was also a member of the Orpheus Club and of Live Oak Lodge, F. M., and the Scottish Rite. During recent years Mr. Wythe designed a large number of churches in San Francisco and the East Bay section.

## Granted Certificates

The following applicants were granted architects' certificates at the last meeting of the California State Board of Architecture, Southern District: Henry Hasenburger, 1110 Insurance Exchange building; Paul J. Duncan, 703 Pacific National Bank building; George P. Hales, 522 N. Beachwood drive; Donald Baker Worster, 5723 W. 18th street; Louis L. Huot, 715 S. Mott street, and Howard H. Wells, 510 W. Sixth street, all of Los Angeles, and Clarence Cullimore, 10 Oleander avenue, Bakersfield; Clarence N. Aldrich, 1834 Dawson avenue, Long Beach, and Herbert L. Boots, 257 Rexford drive, Beverly Hills.

## Homes and More Homes

In 29 cities and towns of the Bay region, including San Francisco, the East Bay cities, the Peninsula to San Jose and the Marin county towns, 50,722 new homes have been built in the last five years.

## Death of Portland Architect

Emil Schacht, Portland, Oregon, architect, dropped dead of heart disease March 4. He was 71 years old and is survived by a son and five daughters.

### Architectural Commission

Announcement of the personnel of the Architectural Commission of Claremont Colleges was made recently following confirmation of appointments at a meeting of Claremont Colleges Board of Fellows. The new commission is one of the first college commissions of its kind in the West, and is made up of nationally known architects and laymen.

The commission is composed of five men, including three architects: Messrs. George Spearl, Carleton M. Winslow and David C. Allison. The two lay members of the commission are Edward C. Harwood of Uplands and Bernard Hoffman of Santa Barbara. Mr. Harwood is an ex-student of Pomona college and a member of the board of trustees. He has traveled widely and has made a considerable study of architecture. Mr. Hoffman is well known in the West as the head of the Plans and Planting division of the Community Arts Association of Santa Barbara.

The new commission will synthesize the harmonious development plans of Claremont Colleges both in architecture and landscaping. It will pass upon architectural developments of all kinds for Pomona and all future colleges, including the Scripps College for Women, and will advise on the general landscaping scheme for the campus.

### Architects' Tour for 1926

An architects' tour for the coming season is announced as under the direction of Professor Albert C. Phelps, College of Architecture, Cornell University, similar to the tour of last year, which was a success.

This itinerary is to be more extended; it being proposed to leave New York on June 16 and return September 11; the tour to extend to England and the continent. Intended especially for students, the tour is open to persons of like tastes and interests. Information may be had through the Bureau of University Travel, 11 Boyd street, Newton, Mass.

### A Protest

Editor The Architect and Engineer,  
San Francisco, Calif  
Sir:

You will be interested to know that we have received a strong letter of protest or criticism of the prevailing tendency in Southern California to build flat roof houses on the slopes of the hills.

The writer of the letter complains not only of the aesthetic appearance but of the injury that is done to subsequent builders by this practice.

It is true that many of these picturesque hills have been converted in appearance almost to a series of steps. It would seem to be worthy of editorial comment if, as our correspondent implies, this tendency has become harmfully accentuated.

Yours very truly,

SAMUEL CABOT INCORPORATED,  
March G. Bennett, General Mgr.

### Fresno Architects Busy

Architects Ernest J. Kump and Arthur O. Johnson, of Fresno, report being very busy on the following work:

California Hot Springs school, Hot Springs, Tulare county; cost \$5,000.

Delano Joint Union High school, Kern county, \$20,000. This is the first building of a program of \$200,000 contemplated in the near future.

Plans are being prepared for one of the largest elementary schools in Fresno, known as the Winchell Elementary school, to cost \$125,000. Preliminary plans were presented to the Board of Education for final adoption on Tuesday, March 9th. Plans will be ready for figures on May 15th.

Plans have been completed for a \$40,000 residence for Mrs. M. R. Craycroft of Fresno, the new home is to include out buildings, swimming pool and landscaping of grounds.

Messrs. Kump & Johnson have been selected as architects by the Board of Supervisors of Tulare county for their new \$400,000 Tulare County General Hospital group, the first unit to cost \$200,000.

The firm will act as one of the three architects on the advisory commission to serve with the City Board of Education of Fresno on the standardization of plans for the \$1,800,000 school building program.

Mr. Kump's friends in the architectural profession will be interested to learn of his appointment as a member of the Fresno City Park commission.

### Los Angeles Building Code

Complete revision of the Los Angeles building ordinance in regard to all school buildings was endorsed by the Board of Building and Safety Commissioners, with the adoption of a resolution introduced by Commissioner W. H. Antram. The board instructed Superintendent of Buildings J. J. Backus to prepare and present a draft of an amendment to the building code which will restrict school buildings to fireproof construction and provide for other safety conditions. A special class for all school buildings was urged by Antram, who declared they should be taken completely out of classes A, B, C and D.

### Phillip DeLongchamps

Phillip DeLongchamps, draftsman employed by Architects Dean & Dean of Sacramento, died in that city March 29, following an attack of pneumonia. He was 37 years old. The deceased was well known in Sacramento, having been employed by Dean & Dean as an architectural draftsman for four years. Previous to that time he was associated with his brother, Fred DeLongchamps, architect, of Reno, Nevada.

### Have Much Work

Architects Schultze & Weaver, 733 Pacific Mutual building, Los Angeles, write that they have the following active jobs in their office at the present time:

Subway terminal building, between Fourth and Fifth, Hill and Olive streets, Los Angeles; Class A (three-story) addition to Pacific Mutual building, Los Angeles; Twenty-five-story Hunter-Dulin building, San Francisco.

Architect George M. Lindsey, 329 Homer Laughlin building, Los Angeles, reports: Store building for John Hoffman; School in Los Angeles; Library for city of Los Angeles; Five schools in Glendale.

Architect Charles E. Ruhe, 43 East Green street, Pasadena: Residence for G. L. Dryburgh, Pasadena; Alterations and additions to club house for University Club of Pasadena; Alterations and additions to residence for Mr. Baird, Pasadena; Residence for H. R. McCullough in Pasadena.

L. A. Parker, 1105 Kirchhoff building, Los Angeles: Alterations for Elliott-Horne Company; Warehouse for the Los Angeles Brewing Company; Additions to the Orthopaedic hospital-school, and new north unit to same institution.

### To Address Chapters

Representing the Producers' Research Council and the Copper & Brass Research Association, Mr. John F. Gowen is touring the United States, addressing prominent chapters of the American Institute of Architects and local bodies of the National Association of Sheet Metal Contractors. He will include Los Angeles and San Francisco in his itinerary.

The Producers' Research Council, which is composed of manufacturers or associations of manufacturers of building materials, is organized for the purpose of promoting better relations between architects and manufacturers, looking toward their mutual benefit. To further acquaint architects and sheet metal contractors with the aim and purposes of this movement in the construction industry is the aim of Mr. Gowen's extensive trip.

### Frame Houses Once More

Advices received by building information agencies tell of a novel departure in England. While building circles in the United States are discussing the feasibility of introducing the all-steel house, English builders are introducing the equal novelty in Great Britain of the all-lumber house. The London County Council, which has undertaken an extensive housing program, has just let a contract for the erection of two thousand all-wood houses, and for one thousand houses largely of wood, but partially using steel frames. Altogether the Lon-

don County Council is erecting six thousand houses, three thousand being of brick and concrete.

So completely had wood gone out of use for permanent structures, since the virtual deforestation of England two centuries ago, excepting for joists, partition studding, and the like, that there were actually many serious discussions in England (analogous to that going on in this country now about steel construction for dwellings) as to whether wood was feasible. The experience of Scandinavia and the United States with frame buildings was brought forward, and learned arguments were presented to the London County Council setting forth the cheapness, durability, comfort and healthfulness of lumber built houses. Curiously enough, this investigation brought out the opinion that owing to depreciation from rust an all-steel house would not last as long in the damp English climates as lumber construction.

In view of the fact that of late years there has been a tendency to depreciate lumber as a material for dwellings and other small houses, the eighty per cent of home owners of the United States whose houses are built of lumber will find much satisfaction in the action of the London County Council.

### Personal

Professor John W. Gregg, head of the Landscape Design Division, College of Agriculture, University of California, has been elected a councilor of the American Civic Association.

Architect F. Frederic Amandes, who has been associated with Architect M. T. Jorgensen, will hereafter engage in the practice of architecture by himself with offices on the 11th floor of the Hearst building, San Francisco.

Architect F. Eugene Barton, for a number of years associated with Lewis P. Hobart, announces the opening of an office, Room 907 Crocker building, San Francisco. He will be pleased to receive trade literature and catalogs.

Mr. N. A. Dickey, president of the California Brick Company, of San Francisco, at the last annual meeting of the Hollow Building Tile Association of America, was elected a director of that organization. Mr. Dickey will serve in the Pacific Coast Division, Group Ten, comprising the entire Pacific Coast states.

### Fireproof Hospitals

All hospitals to be built in the future in Berkeley must be fireproof, of class A or B type, and must be equipped with all possible safety devices, the Berkeley city council having ordered City Attorney Earl Sinclair to draft an ordinance to that effect.



DETAIL OF JOHNSON BURNER INSTALLED IN OAKLAND RESIDENCE

## Oil Heating For the Home

By JAMES C. KNOLLIN

**W**HEN an oil burner is installed in the home, another room is added to the house.

Thus does a prominent oil burner manufacturer aptly express the cleanliness and safety of oil heating. He points out that the basement becomes liveable, transformed. It may be used for a childrens' play room, a billiard room, a storage place for treasured possessions or a drying room for the family laundry.

Oil heating does away with all the dirt and ugliness usually associated with coal heating. The storage space required for fuel is made available for other purposes, since the oil is kept in an outside, underground tank. And the old "bugaboo" of ashes and clinkers is no more.

In larger homes and apartments, janitor service may be entirely dispensed with.

There is no annoyance to the occupants of the building in delivery of fuel. The outside oil tank is filled from a tank truck, without noise or dirt.

Housewives notice immediately the lack of smoke and soot. Cleaning and redecorating expense, according to the testimony of many owners, is cut in half.

Modern oil heating is safe. Burners are now supplied with automatic control devices, approved by the Board of Fire Underwriters, which are positive in their operation. If any thing goes wrong with any part of the mechanism, the fuel supply is cut off and the burner is stopped immediately.

The burner is controlled automatically by room temperature. A clock thermostat may be set to supply any degree of heat desired at any certain hour. Upon retiring, the owner may simply set the thermostat for, say, 70 degrees at seven A. M. And upon arising he will find the house heated to the desired temperature. The comfort and convenience of oil heating are winning thousands of new devotees yearly.

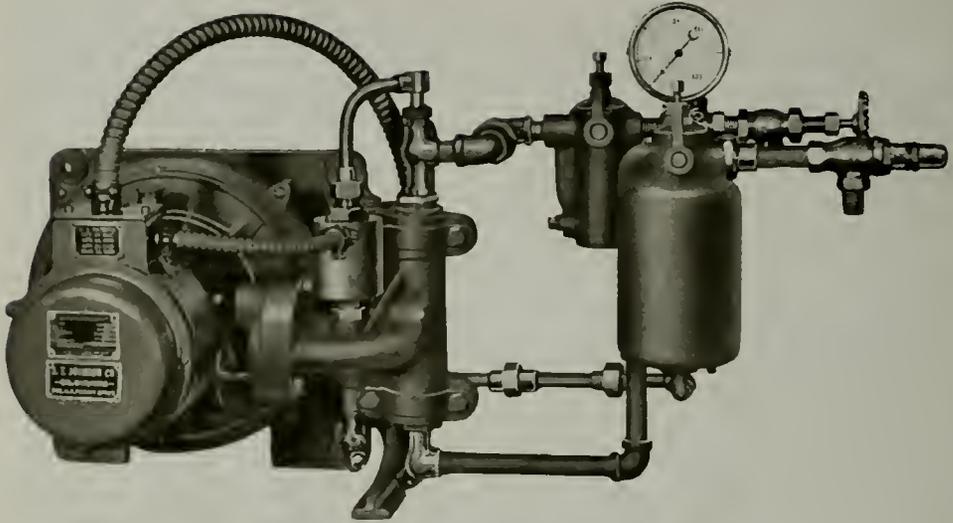
The expense of installation is practically the only expense, since many present-day burners are made according to the highest standards of manufacture and are practically trouble-proof—capable of giving many years of efficient service.

The expense of operation varies according to climatic conditions and the relative cost of coal and oil. But many owners in districts where oil is plentiful and coal relatively expensive, have reported savings in fuel cost as high as 70 per cent.

Irregardless of fuel expense, however, most owners of oil burners are so enthusiastic over their great comfort, convenience and cleanliness that they would never consider returning to other heating methods.

The modern burner is quiet in operation also—overcoming an early objection to this type of heating plant.

One very successful burner, internationally distributed by an Oakland manufacturer, is of the rotary or centrifugal-atomization type. A small electric mo-



THIS ROTARY OIL BURNER MAY BE INSTALLED IN ANY TYPE OF HEATING PLANT

tor operates a fan which draws in air around the motor, insuring cool operation. The air is then forced through a nozzle, surrounding a cup which revolves at high velocity, breaking the oil into tiny particles. The oil is then vaporized by mixture with the air from the blower.

The fire is ignited by a gas pilot light. But if for any reason the pilot is extinguished, the fuel supply is cut off.

A clean, soft flame, evenly distributed over the exposed surface of the firebox, produces quick heat. The firebox is lined with fire-resistant material for added safety.

Other than this, there is no change in the heating plant. The burner may be installed in any type of furnace—steam, hot air, vapor or hot water. The burner is as readily installed in an old, as in a new furnace.

Early day burners (and some now manufactured) required distillate for fuel. But the one described uses low-grade fuel oil. Because of the availability of this fuel on the Pacific Coast and also because of climatic conditions, oil heating has become especially popular in far western states.

One advantage cited by California owners is that the burner operates only part of the time during mild weather, frequently being shut down several hours a day. Also it provides quick heat, mornings and evenings, when most needed. Family health is protected by the fact that all rooms are heated uniformly, instead of some rooms being shut off during colder weather as is the practice in many California homes heated by other methods.

The prevalence of colds among children is said to be due in many cases to this practice of heating only part of

the house, and permitting the children to go from one room to another.

The many advantages of oil heating are best evidenced by the amazing growth of the oil burner industry, which now ranks as one of the great industries of the United States, with several hundred manufacturers devoting all their resources to the making of oil burner equipment.

#### San Francisco Architectural Club

Due to an expired lease, unfavorable locality, as well as inadequate accommodations, the San Francisco Architectural Club quarters at 77 O'Farrell street, have been abandoned and the club now enjoys the reality of a dream long cherished—a home of its own. The club has obtained a lease of the building at 523 Pine street and the structure has been nicely fitted up for the needs of the organization. Located just around the corner from Chinatown and in the heart of the financial district the new quarters are destined to become an oasis for the members during their "off" hours.

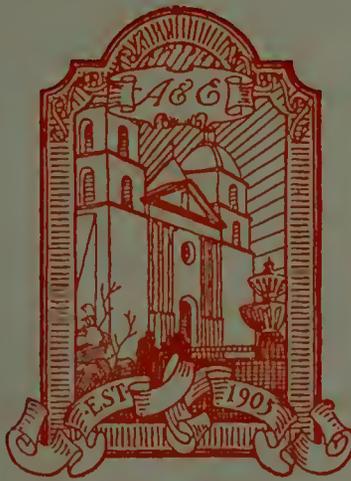
#### Partnership Dissolved

The architectural firm of Woollett and Lamb, Sacramento, was dissolved March 15th and Mr. Woollett has taken offices in the Mull building, 1027 Tenth street, Sacramento. This building was designed by Woollett and Lamb four years ago and cost \$175,000. The firm was in partnership for eight years, prior to which Mr. Woollett was associated with his brother, Wm. L. Woollett, in the Newhall building, San Francisco. In 1912-13 Mr. Woollett was State Architect of California.

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*Community Apartments and Women's Club Building*

*The*  
ARCHITECT &  
ENGINEER



MAY 1926

*Published in San Francisco*  
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# What's the

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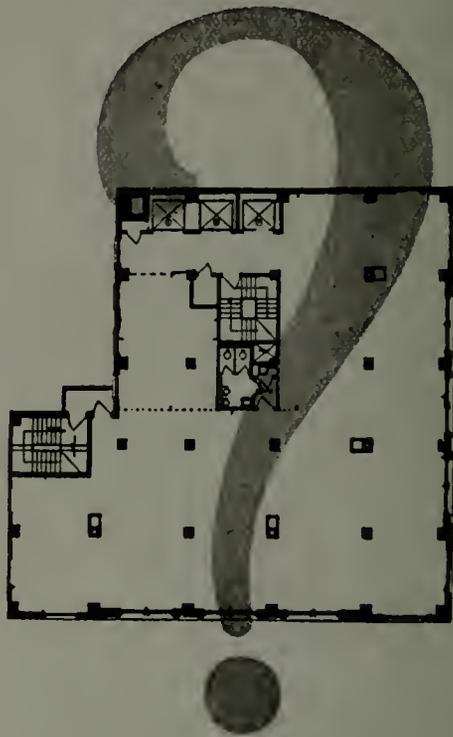
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The Architect and Engineer  
May, 1926

ASBURY APARTMENTS, LOS ANGELES  
NORMAN W. ALPAUGH, ARCHITECT

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# THE ARCHITECT AND ENGINEER

MAY  
1926



Vol. LXXXV  
No. 2

## The Asbury Apartments, Los Angeles

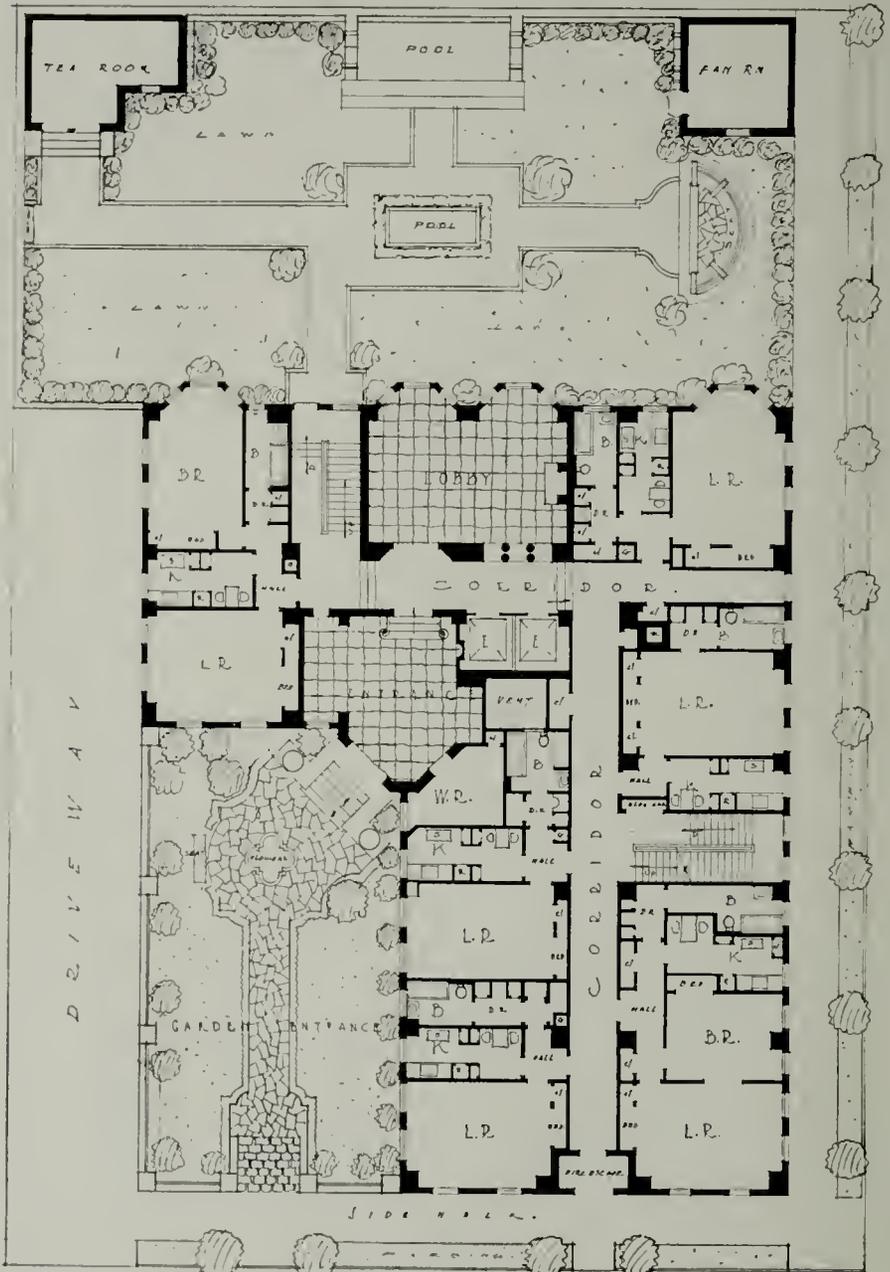
By NORMAN W. ALPAUGH, Architect

THE Asbury Apartment building is located on the northwest corner of Sixth and Carondelet streets, lot 100 by 150 feet, Los Angeles. The building is co-operatively owned. As will be seen by referring to the first floor plan, the builders have left considerable ground space around the building which will insure good light and ventilation for all time. The garden in the rear is 50 by 100 feet. The front court is approximately 34 feet by 50 feet, both courts being beautifully landscaped. There is a two-story garage situated under the rear garden with a driveway on the west side of the building. This enables tenants to enter and leave the building by taking elevators directly to the garage. This is the first building of this nature erected in Los Angeles. The rear garden over the garage contains a tea room and fan room, the latter being used for ventilating the garage in which the air is changed every twenty minutes. The garage has a capacity of 52 cars.

A feature of the pool or fountain on the north wall of the rear garden is the fact that it is not only an ornament but it cools the refrigerating water for the entire refrigeration plant, thereby eliminating all waste of water.

The main building is a thirteen-story, "Class A" reinforced concrete building throughout. The basement, or really the street level story, is devoted to two stores, commissary department, trunk storage, refrigeration plant, servants quarters, etc. The sub-basement houses the laundry room, linen rooms, heating plant for hot water and the electrical equipment. There are eighty-five apartments in the building, divided into two, four, five and eight-room suites.

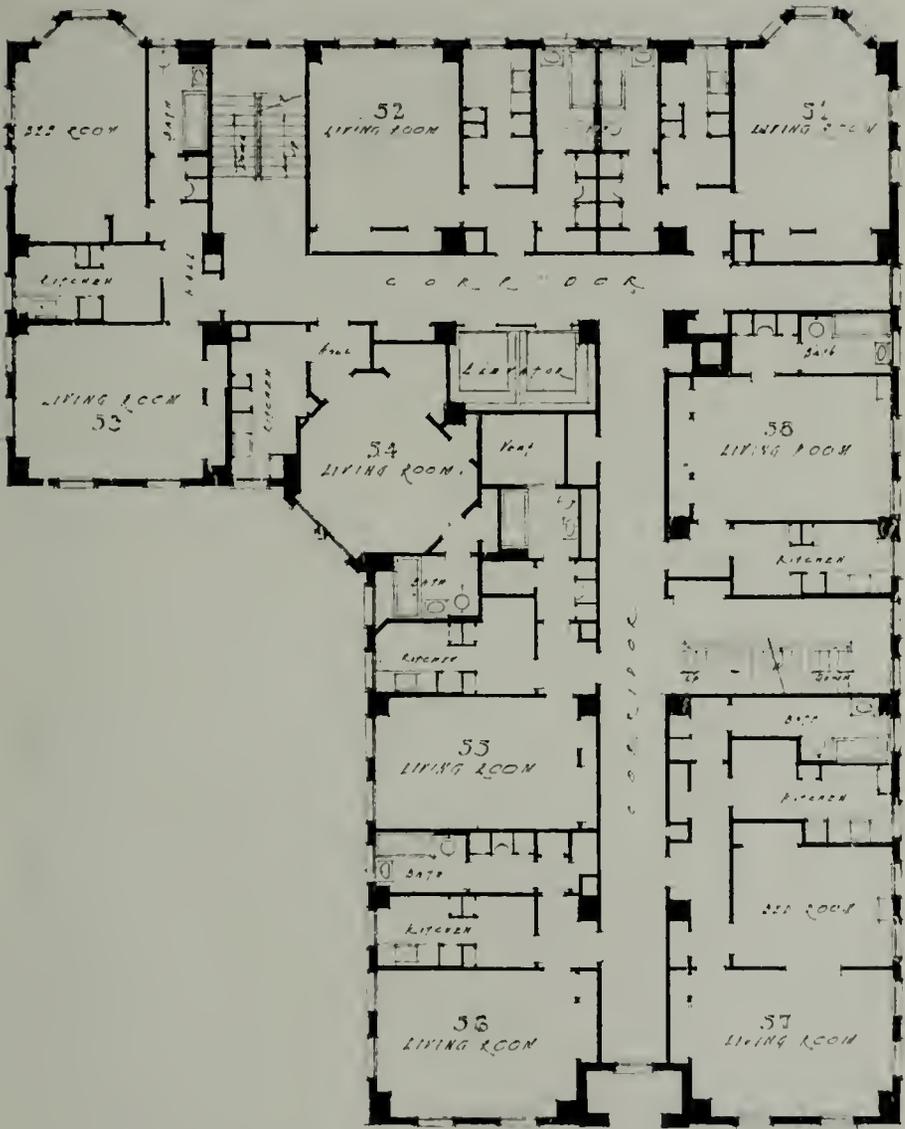
The building is electrically heated throughout and is the first thirteen-story apartment house in Los Angeles to be so equipped. The various apartments are finished in mahogany while all bath room and kitchen floors are of Linotile. The bath room walls are of hexagonal tile with a cap mould. On the roof space of the building is a large recreation room for dances and card parties.



FIRST FLOOR PLAN  
 ASBURY APARTMENTS  
 Los Angeles, California

NORMAN W. ALPAUGH  
 ARCHITECT  
 2408 WEST SEVENTH ST. L. A.

The building differs from the average apartment house in the matter of containing a large and spacious lobby. The Asbury is really a "House of Homes" and for that reason the entrance lobby and lounge room have been kept on a little smaller scale and have a more home-like



TYPICAL PLAN, ASBURY APARTMENTS, LOS ANGELES  
 Norman W. Alpaugh, Architect

atmosphere. It is possible to enter the garden directly from the main lounge room on the first floor, a very popular feature.

Each kitchen is furnished with an ice box which is supplied from a central refrigeration plant in the basement. Each ice box contains its own apparatus for making ice cubes.

The exterior finish of the building is plaster with art stone trim. The entire exterior was given a coat of Minwax waterproofing which contained a light cream color. The building cost in the neighborhood of \$850,000 complete.



ENTRANCE LOBBY, ASBURY APARTMENTS, LOS ANGELES  
NORMAN W. ALPAUGH  
ARCHITECT



GARDEN ENTRANCE, ASBURY APARTMENTS, LOS ANGELES  
NORMAN W. ALPAUGH, ARCHITECT



LOUNGE, ASBURY APARTMENTS, LOS ANGELES  
NORMAN W. ALPAUGH, ARCHITECT



LOUNGE ROOM, ASBURY APARTMENTS, LOS ANGELES  
Norman W. Alpaugh, Architect



GARDEN FOUNTAIN, ASBURY APARTMENTS, LOS ANGELES  
Norman W. Alpaugh, Architect



ENTRANCE, BROCKLEBANK APARTMENTS, SAN FRANCISCO  
CHAS. PETER WEEKS AND WILL P. DAY, ARCHITECTS.



BROCKLEBANK APARTMENTS, SAN FRANCISCO  
Chas. Peter Weeks and Will P. Day, Architects

## A Building Designed and Built to Withstand Earth Shocks

By WILL P. DAY, C. E., of Weeks and Day

IN view of the fact that earthquake insurance on reinforced concrete buildings is, in many instances, less than on steel frame buildings, it seems odd that the lay public is so easily misled by the terms "Class A" and "Class B," as used in San Francisco. The occurrence of these terms in our Building Ordinance is for the purpose of classifying as to type, only, and makes no pretense of indicating the adaptability of one over the other from a structural standpoint. It is the layman who has, without justifiable cause, permitted himself to believe that the expression "Class A" indicates the "very best" and that a structure must be Class A in order to successfully combat earthquake and fire. As a

matter of fact the expressions "Class X" and "Class Y" would have performed, just as significantly, the classification distinction intended to be covered in the ordinance.

The Building Ordinance of the City of Los Angeles, conformant to which millions of dollars worth of construction has been done, places steel frame buildings and reinforced concrete buildings in the same class, namely Class A. Again this classification means no more than it does in San Francisco. It is simply a means of indicating that certain structural provisions in the Ordinance are to apply to buildings made of certain materials and except for the frame itself, the requirements for the two types are identical.

It may not be generally known that insurance companies are inaugurating a new procedure in determining earthquake and fire insurance rates. They investigate the professional standing and experience of the architect, the engineer and the contractor, in addition to careful consideration of the natural character of the foundation bed, whether or not regular tests of materials were made and, if so, the results thereof, whether or not a permanent inspector was on the work, the type of walls, the wall openings, etc. They are beginning to recognize, with the complete approval of reputable engineers, that the hazard depends on these matters rather than upon the point as to whether a building has or has not a structural steel frame or as to whether a building falls in the ordinance classification "A" or "B" of the San Francisco codes.

Nor is it generally known by the public that our local Building Ordinance requires the same type of fireproof floors, partitions, walls, etc., for both Class A and Class B buildings. The only difference between them is that, in the case of Class A buildings, a skeleton frame of structural steel is encased in a fireproof material while, in the Class B type, the skeleton frame is made of concrete reinforced with steel rods. In all other respects, the requirements are identical. Either type may have brick or tile walls, concrete, tile or plaster partitions, but both types must be made, with exceptions as to wood trim, of fireproof materials. Manifestly, a brick or tile wall in a reinforced concrete frame cannot resist earthquake stresses as well as a reinforced concrete wall, made of the same material as the frame and integrally cast with it. Our ordinance, however, permits brick or tile walls for both Class A and Class B buildings, the use of which is carefully considered by the reputable companies establishing rates.

The Santa Barbara earthquake, the effects of which were not altered by subsequent fire, offered an unusual opportunity for studying the effects of a severe shake. The University of California Publications in Engineering, Volume 2, No. 6—November 17, 1925, contain the following comments and general recommendations for effective resistance to earthquakes:—

1. The natural foundation bed must be reliable. It should preferably be native rock, because the amplitude of alluvial soil may be three or four times that of the underlying rock.

2. All parts of a building must be so tenaciously tied together and so stiffly braced laterally that the entire building will tend to sway as a unit, so that its contortions will be elastic and not fractural.

3. The strength and mode of attachment of the parts of a building must be such as to be able to overcome inertia of their separate masses.

4. Outside walls, floors, etc., must be attached to the frame, so that there may be no relative motion of the latter with respect to the former.

5. It is mechanically and economically feasible, within proper limitations for each type, to construct buildings of timber, of reinforced concrete, or of structural steel frames to conform to these general requirements for resistance to earthquakes. Such buildings will successfully resist any earthquake such as has occurred in California during the last century and a half.

The reports of reputable engineers regarding the Santa Barbara earthquake bring out conclusively the fact that buildings of reinforced concrete which were properly designed and well tied together with reinforced concrete walls, suffered very little damage. The absence of a reasonable number of structural steel frame buildings prevented a comparison of structural steel frames with reinforced concrete frames. Of the reinforced concrete buildings, the Granada theater, Lobero theater, St. Vincent orphanage, Cottage hospital, State Normal school, and the new High school are examples of those which suffered no material damage. These were not only well designed, but they were well tied together with walls of reinforced concrete and the materials and workmanship were good.

In Tokyo reinforced concrete stood the combined earthquake and fire test extremely well, and compared favorably with structural steel. Of a total of 593 reinforced concrete buildings investigated by the Tokyo Building Department, 8 entirely collapsed, 13 were badly damaged and had to be pulled down, 42 were badly damaged but repaired, 69 suffered slight damage, and 462 were not damaged at all. There were 16 structural steel frames in Tokyo at the time of the earthquake. Six of these were absolutely undamaged, while 10 sustained more or less damage. In each instance of severe damage, both as to structural steel and reinforced concrete frames, it was determined that the damage was due to inadequate foundations or to the absence of proper wall bracing. The latter condition was particularly noticeable in factory buildings where there was practically no wall, the space between the columns and the beams at each floor being filled with glass. The common characteristic of the 6 undamaged structural steel buildings was their use of reinforced concrete wall construction.

There has recently been completed in San Francisco an apartment house known as The Brocklebank, located at the northeast corner of Sacramento and Mason streets, in the design and construction of which particular attention was paid to the earthquake and fire hazard. As a result, the insurance rate on this building is lower than on a steel frame building in the same neighborhood. It may be of interest to consider just what features of the construction warranted the low insurance rate. In other words, how nearly did the conditions governing the design and erection of this building conform to the recommendations of reputable engineers and to what extent were the lessons learned from previous disasters utilized by the owners. In the first place the structure is founded on solid rock, the primary requirement for successful resistance to earthquake shocks. The walls are of reinforced concrete, cast integrally with the frame and well tied to the floors. These walls are 8 inches thick and heavily reinforced with steel, and in this regard attention may be called to the fact that our Building Ordinance permits walls in both Class A and Class B buildings to be 6 inches thick, and many Class A buildings are so built. The enclosing walls of shafts on the interior of the building are of solid concrete, reinforced with steel, instead of the usual construction of light tile or plaster, as permitted

by law in both Class A and Class B buildings and almost universally used therein. The proportion of solid walls on the exterior is great, giving lateral stiffness, a vital requirement. The usual method of making concrete by guesswork was not followed. The ingredients were tested by a reputable laboratory for their individual characteristics and fitness, and thereafter were scientifically proportioned. Samples of the concrete as it came from the mixer were regularly taken and tested in machines. These tests showed the concrete to be 20 per cent stronger than was required to successfully perform its function. A specialist, acting under the instruction of the engineer, was present during the making of all concrete, and passed upon its quality. Special mechanical appliances were used to accurately hold the reinforcing steel in position and special methods adopted for protecting the work during the process of hardening. The result is apparent and may be readily recognized by inspection of the building. The ceiling of the lobby itself is of concrete, the decoration being applied directly thereto. It was of such quality and so free of blemish that it did not require covering other than the decoration.

\* \* \*

### To Clean Marble

In connection with the various investigations being made at the Bureau of Standards, Department of Commerce, Washington, relative to the use and maintenance of interior marble, one problem that is being studied is the effect of certain ingredients of trade cleaners on the marble. The Bureau has previously pointed out that cleaners of the scouring type are too harsh for use on polished marble because the grits usually employed are harder than marble and gradually destroy the polish. Another question which appears to be of considerable importance in connection with marble cleaning is the effect of such detergents as soda ash and trisodium phosphate. When such salts are frequently used they crystallize in the pores of the marble and in some cases exert enough pressure to deface the surface. Sufficient evidence has been developed to justify a limitation of the use of such detergents, especially in cases of costly marble installations where it is desirable to preserve the highly prized tones and character of the original material.



STORE BUILDING, TELEGRAPH AVENUE, BERKELEY  
W. H. Ratchiff, Architect

## Maya or Aztec Architecture

By ROBERT B. STACY-JUDD, Architect

YOU ask why I selected the art of the Mayas as a dominating theme for the Aztec Hotel in Monrovia. Perhaps it was a succession of minor reasons covering a period of many years. To begin with, I am, and have been for many years, exceedingly interested in Egyptian architecture and the arts of the Orient. As a child I developed an uncanny desire to travel throughout the East. I studied its many mysteries, tried to grasp its magnitude, pestered my learned acquaintances for information and as a result of my passion for this knowledge the mother of John Oliver Hobbs (pen name of Mrs. Craigie) dubbed me "Rameses," and as such I was known among her circle of friends. Indulgent clients allowed me to express my Egyptian interpretations in theatres and homes, and in sequence of events the mysteries of Easter Isle lured me. Small wonder I was intensely fascinated by the infinitely more mysterious discoveries of ancient cities in Yucatan and Mexico.

Of course it must not be understood that I discarded my love of the Orient for a more fascinating subject. I believe in the early stages I was but mildly curious, but the more thought I gave, the more I was astonished to trace a remarkable resemblance in details, as well as fundamental principles, to almost all of the recognized styles of architecture.

Apparently many students of Maya Art have noticed the similarity of ornament and architectural principles to Indian, Chinese, Greek and Egyptian, and to say the least it certainly is disconcerting to meet with so many replicas and not believe they are due to a common origin. Yet, Dr. Spinden repudiates any such thought and emphatically states that the Mayas, ancient though they be, reflect none of the dignity of Eastern antiquity.

Dr. John L. Stephens in his book "Incidents of Travel in Yucatan," says the architecture of the Mayas is peculiarly their own. Ancient races did not come here with their old ideas of cutting into solid rock and excavating, such as the great temples of India, and there were no columns. Yet according to Edward H. Thompson and others "Sepulchres of High Priests 90 feet beneath the crown of the pyramid 50 feet in solid rock" and columns galore have sprung from the magic touch of the various exploration parties.

However, I cannot help but notice the remarkable resemblance, I might say almost a replica, between the two columned doorways in the east wing of the upper range of a palace in Labna, Yucatan, and the Rock cut tombs of Beni Hasan in upper Egypt. The latter is the earliest example of what is known as the five classic orders of architecture and is the prototype of the Doric order and was built during the twelfth Egyptian dynasty B. C. 2778-2565. The Doric is the first of the five classic orders.

\* \* \* \*

It does not require an abundance of intelligence to copy the planning, design and ornamental details of any of the ancient Architectural

*EDITOR'S NOTE—Mr. Stacy-Judd is the first architect to our knowledge to attempt to adapt the principles of the arts and architecture of the Mayas to modern structures, and the Aztec hotel, here illustrated, is the direct result of these pioneer efforts.*

*It is, without question, one of the most daring adaptations in architectural treatment ever attempted, and for the actual finished product a great deal of credit must go to the Board of Directors of the Monrovia Community hotel, for their unflinching and very appreciative support of Mr. Stacy-Judd's mental conception.*



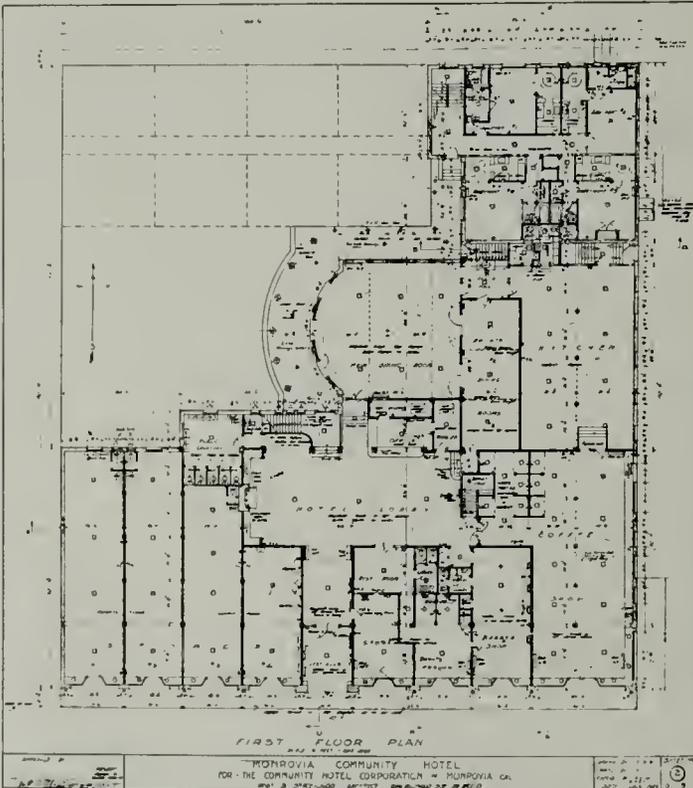
FACADE, COMMUNITY HOTEL, MONROVIA  
ROBERT B. STACY-JUDD ARCHITECT



DETAIL OF CORNICE, COMMUNITY HOTEL, MONROVIA  
ROBERT B STACY-JUDD, ARCHITECT

styles. It is little more than the amusing occupation of a child, arranging the wooden bricks, windows, doorways, cornices and pediments to build the quaint little toy houses; all according to the vividly painted erection charts accompanying each set. It does not require even the inventive brains necessary to complete a jig-saw puzzle.

The degree in culture of any nation, ancient or modern, is expressed in architecture, painting and music. Architecture must come first, because the first demand of a human being is a shelter. Architecture is the art of designing a shelter. The love of home develops all that is beautiful in a home. It develops pride in public buildings. Progress



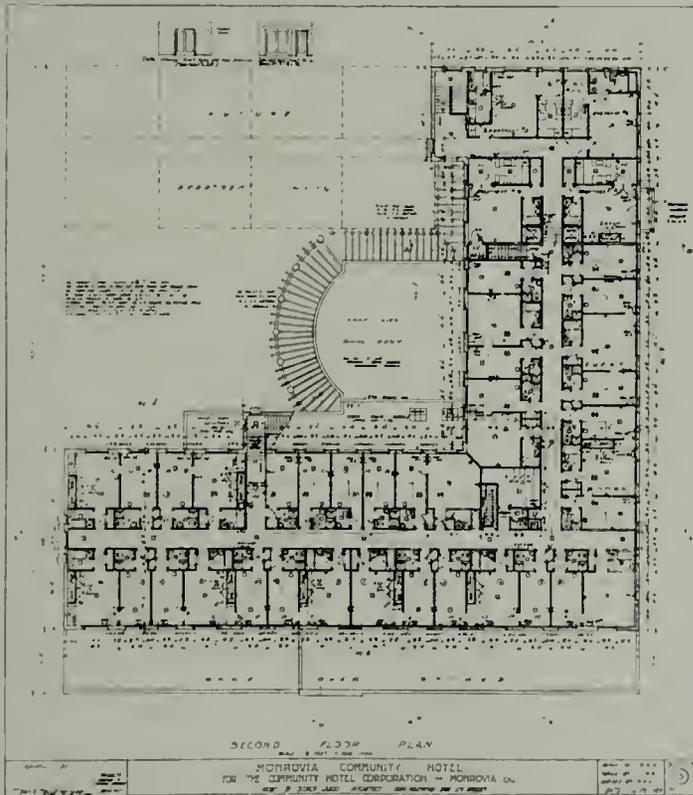
FIRST FLOOR PLAN, COMMUNITY HOTEL, MONROVIA  
 Robert B. Stacy-Judd, Architect

runs in sequence starting with utility, then ornament. Those with beautiful homes want beautiful things to grace the interior, such as paintings, ornaments and tapestry. The craving for comforts is innate. It is a human prerogative. Comfort can become luxurious when embellished with music, literature and poetry. When nations have attained this degree of perfection, reaction sets in, and they become food for historians. It is not essential that a nation or race become extinct. They may die constructively, mentally choked to death by complacently over feeding on dishes of self-importance and conceit. Wealth means cast and cast brings all the undermining qualities which corrode the steel

structure of high moral practice. A succession of wars can bring to a standstill a nation's progress, and if subservient to a conquering nation, degeneracy follows in natural sequence, as witness the Toltecs, Aztecs and Mayas.

So that to copy is to go backwards, to retrograde, principles may be used, motifs followed, but they should be used merely as a basis of a theme.

In designing the general scheme, decorative detail and mural paintings for the Monrovia Hotel, I carefully studied the works of the Mayas. In creating a panel or decorative group care was taken that only what



SECOND FLOOR PLAN, COMMUNITY HOTEL, MONROVIA  
Robert B. Stacy-Judd, Architect

might be termed the principles of Maya design were used. In some cases, such as the ornament surrounding the entrance to the ladies' room in the lobby, a decorative unit from a date tablet was used as the theme. In other cases, such as the multiple column grouping, the unit was faithfully employed. As it is not entirely clear what the exact reason was for the peculiar medley of carved pieces, cubes and the many quaint shapes forming some of the Maya panels, I did not duplicate any particular original panel of the temples, but assembled the curious units to my own fancy.

The grouping of decorative ornament on the exterior was designed



GRILL, COMMUNITY HOTEL, MONROVIA  
ROBERT B. STACY-JUDD, ARCHITECT



MURAL "GOD OF LUST," COMMUNITY HOTEL  
ROBERT B. STACY-JUDD,  
ARCHITECT



LOBBY, COMMUNITY HOTEL, MONROVIA, CALIFORNIA  
Robert B. Stacy-Judd, Architect



LOBBY, COMMUNITY HOTEL, MONROVIA, CALIFORNIA  
Robert B. Stacy-Judd, Architect



LOUNGE, COMMUNITY HOTEL, MONROVIA  
Robert B. Stacy-Judd, Architect



GARDEN VIEW, COMMUNITY HOTEL, MONROVIA  
Robert B. Stacy-Judd, Architect

under difficulty. Cost, being a great factor, necessitated curtailment. Yet there was a large surface to treat. To avoid spottiness, and yet form a continuity, created an aggravating problem. Balance was entirely discarded as my theory was that the diversification of line would provide a mental link with the next group of ornament.

Upon entering the outer vestibule two mural paintings are depicted, one on each wall. That on the left hand wall as you enter is a modification of the famous wall panel "The Kingdom of Darkness" of the "Middle of the Earth." To the left of the painting is the "God of Death." On the right is "The Goddess of Death." In the center is the figure of a man falling into the nether regions, and over him is the moon. To the left and right of the center will be seen the turkey and the eagle representing demons of darkness.

The mural painting on the East wall of the outer vestibule and the one on the East wall of the inner vestibule are original compositions of mine and represent "Feast of Good Harvest" and the "God of Joy," respectively.

The stone carved effects on the four walls of the lobby are merely original designs of mine based on Maya art. It will be noticed that the arch over the entrance from the vestibule to the lobby has an uncanny similarity in general outline to the common arch of the Chinese. This likeness was not discovered until after I had completed the colored drawing of the lobby interior. It is interesting to note the remarkable resemblance of Maya details to details of practically all the established styles of architecture throughout the world.

The murals on the South wall of the lobby are original adaptations of mine. The one next to the inglenook fireplace represents the Sun God blessing the crops. The mural next to the ladies' room entrance represents the God of Lust with the symbols of the days linked to his body.

The ceiling is an adaptation of an intricate mosaic of the Mayas. The three pendant electric fixtures in the ceiling are original conceptions representing carved stone.

In developing a suitable decorative scheme for the Community Hotel of Monrovia, I desired to originate a design which would instill an urge in the minds of all lovers of art and architecture to become better acquainted with what may prove to be one of the oldest examples of culture in the world, certainly on this great continent of the Americas.

The word "Inco" did not appeal, although known in a general sense. The word "Maya," hardly familiar, was also very unsuitable to my mind. "Toltec" seemed to be a better suggestion, but the word "Aztec," I came to the conclusion, was the best known of all the Yucatan or Mexican terms.

In naming a hotel, care must be taken that pronunciation is easy for all. It may or may not have a meaning, but it must be sibilant, so "Aztec" it was, and I trust, if there has been any tendency in the past to criticise the new hotel cognomen, what I may term my multum in parvo explanation, will obviate any further discussion.

## Ten-Story Medical Building

San Jose is to have another skyscraper in a ten-story office building for the Medico-Dental Fraternity of that city. Architect William H. Weeks is preparing the plans for a \$350,000 structure.



READING ROOM, CHINESE Y. M. C. A., SAN FRANCISCO  
 Frederick H. Meyer and Albin R. Johnson, Architects

## Chinese Architecture for New Y. M. C. A. Building, San Francisco

By FREDERICK H. MEYER, Architect

THE early traditions of California and its development are so intimately bound together with the Chinese who migrated to this State, and the tremendous assistance they rendered in the pioneer work in connection with the building of the railroads, can leave but a feeling of respect for this most interesting people. Their descendants, a mere remnant, however, who now reside in San Francisco in what is known as picturesque Chinatown, as an indication of their progress in the ways of the western civilization, have assisted in the building and financing of a Young Men's Christian Association Building, for the use and guidance of the Chinese youth.

It is commendable that the leaders of the Young Men's Christian Association entered into the project wholeheartedly and some of them, particularly Captain Robert Dollar, contributed most generously to the project.

The pictures show a building picturesque and full of interest, and blending the Chinese architecture with our modern type of building, so that the effect is pleasing and free from the discordant notes that prevail about Chinatown at present.

N. Clark & Sons have succeeded in applying the glaze to the terra cotta and tile used in connection with the entrances to both the men's and boy's department so the body of the terra cotta shows through in



CHINESE Y. M. C. A. BUILDING, SAN FRANCISCO, CALIFORNIA  
FREDERICK H. MEYER AND ALBIN R. JOHNSON, ARCHITECTS



ARCH. CHINESE Y. M. C. A. BUILDING, SAN FRANCISCO, CALIFORNIA  
FREDERICK H. MEYER AND ALBIN R. JOHNSON, ARCHITECTS



ENTRANCE, CHINESE Y. M. C. A. BUILDING, SAN FRANCISCO, CALIFORNIA  
FREDERICK H. MEYER AND ALBIN R. JOHNSON, ARCHITECTS



VESTIBULE, CHINESE Y. M. C. A. BUILDING, SAN FRANCISCO, CALIFORNIA  
FREDERICK H. MEYER AND ALBIN R. JOHNSON, ARCHITECTS

a truly Chinese manner. These brilliant spots of color blend perfectly into the background of the plain wall.

The Chinese who have visited the Temple of Heaven at Peking recognize the balustrade leading up to the terrace overlooking the play ground and can not help but have a home feeling upon entering this very important addition to the life of Chinatown.

The building is a completely equipped Y. M. C. A., having a gymnasium, swimming tank, billiard room, social rooms, class rooms and, in the upper part of the structure, bedrooms which are rented at a reasonable price. Special provision has been made for the housing of important Chinese citizens passing through San Francisco and two suites of rooms have been set aside completely furnished and with bath adjoining, for this purpose.

\* \* \* \*

## Stopping Heat Leaks in Buildings

**I**F YOU are called upon to find the cause of cold drafts in rooms or buildings, here are some of the things to look for, as given in a recent bulletin of the Department of Commerce:

Cracks around windows and doors, broken window panes and unprotected heating pipes. All such places should have prompt attention.

Go over all windows to see that putty is in place around the panes.

The use of weatherstripping will take care of most of the cracks around a window, and the saving of coal will be well worth while in a large number of houses.

Look to the outside doors. Doors are often poorly fitted and air passes freely both above and below them. The crack below the door is often so large that cold air sweeps across the floor, keeping the room cold. A strip of cloth or felt nailed to the floor or to the door will keep out much of the cold. Hinges are not always well fitted into the door and frame, allowing much cold air to enter the house. This can be remedied by resetting the hinges.

In houses where there is no firestopping between the studs of the wall, cold air can pass freely from the attic to the basement. In such homes, if the plaster goes down only a little below the top of the baseboard, much air enters the rooms under the baseboards, where they do not fit closely. Such cracks should be closed.

In some houses the warm air can pass from the basement upward between the studs. If such is the case it is advisable to close up the openings between the joists with old brick, or some other material. Basement doors and windows should be examined and made as tight as those in the rest of the house. Cold air entering the basement cools the heating pipes and furnace and the floor above.

The covering of the furnace and of steam and water heating pipes, especially in the basement, is advisable. Although insulation may be expensive it is well to consider the cost of fuel and saving that can be effected.

There are things that can be done to keep the house comfortable that do not cost money, but require some time and attention.

The locking of windows when closed, the drawing down of shades, the turning off of heat in an unused room or at night when windows are open, periodical care of heating equipment, all require a little time and thought, but will save heat. This means the saving of fuel for the nation and lessened household expense.

## Two Women's Club Buildings, Oakland

THE design for the Business and Professional Women's Club of Oakland, located on Webster street, between Fifteenth and Seventeenth streets, Oakland, was an unusual problem inasmuch as the building, situated in a narrow lot, 50 by 150 feet, had to answer two purposes—a club home and joint store and office space.

The club rooms were placed in the rear with a combination main entrance to both club and offices on one side and a tradesmen's entrance on the opposite. The English Colonial type of architecture was used so as to be able to retain some club feeling to the building as well as to incorporate quaint Colonial stores in the front facade. The three stores are designed with Colonial type bay windows divided with wood muntins. The layman calls it old fashioned but at least it retains for some of us a bit more interest than black and yellow tile.

The exterior is red brick laid up with white mortar joints and white wood trim. The roof is of slate.

The main floor has the large club room, 44 by 80 feet, seating 250, with foyer, 20 by 20 feet, and stage and a kitchen to serve large gatherings.

The interior of the clubroom is designed with large arched windows having French doors opening onto a small side garden. The ceiling treatment is Italian with wood beams, dark walnut in color. The walls are rough troweled plaster, golden buff tone, with burnt orange color drapes and blue stencils. The balconies and electric fixtures are of wrought iron. There is a large fireplace on the side wall, opposite the French doors, which lends an air of cheerfulness to the room.

The mezzanine floor has the club lounge and committee room. These are directly above the club room.

The top floor has the main dining room with access to the roof garden. This room is 32 by 44 feet, simple in design with tables and drapes furnishing the decorative effect. The roof garden is equipped with colorful tables and awning umbrellas and has a trellis and flower boxes, with bright colored flowers in season.

The kitchen for the dining room is a fully equipped hotel kitchen.

The Rock Ridge Women's Club, also illustrated here, is located in the Claremont District between Oakland and Berkeley, on Keith avenue. It is designed in a free type of English architecture. The exterior has a pleasing combination of brick, half timber and beams, rough plaster walls and slate roof.

The plan incorporates an entrance patio with covered loggia, a foyer and entrance room, a small committee room, and a large club room with stage and a kitchen.

An English brick Ingle-nook fireplace with balcony above, furnishes secluded places for bridge parties and group meetings. Off the main club room is a garden court with flower beds and oak trees.

The interior of the club room is designed in English style with half timber on the walls and warm buff color, trowelled surface plaster. The ceiling is done in wood with beams and boards; all wood stained walnut.

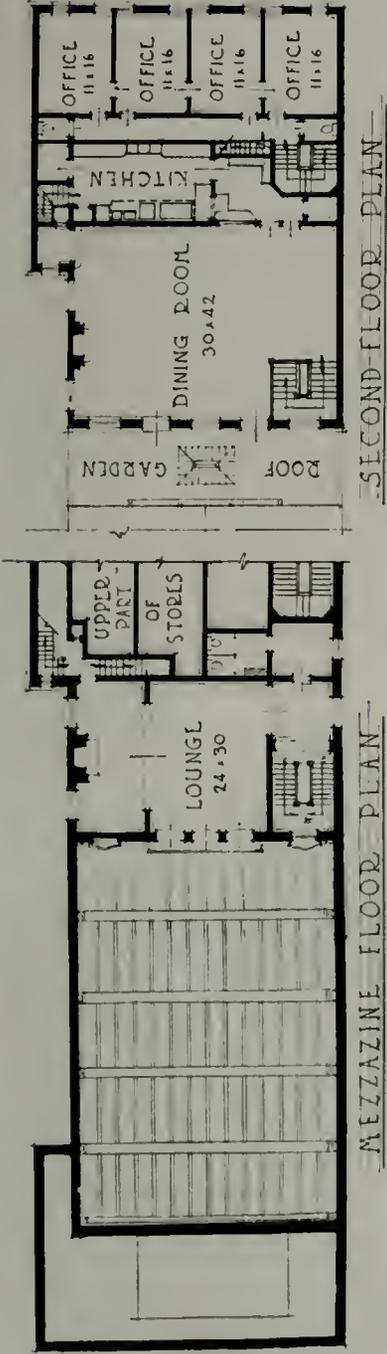
The entrance foyer has wood panels and plastered ceiling.



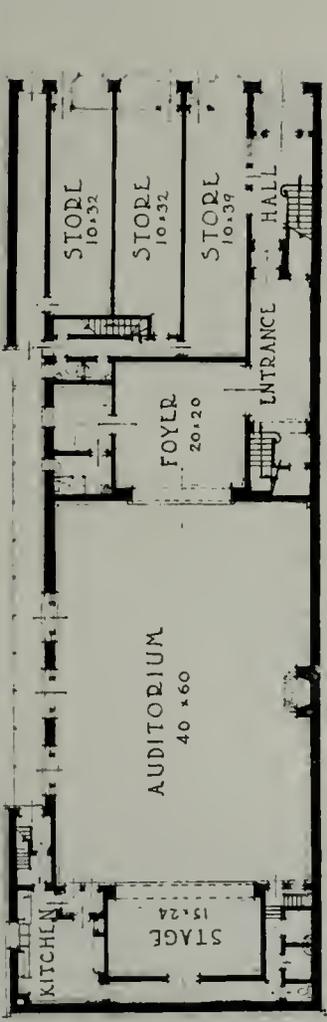
BUSINESS WOMEN'S CLUB, OAKLAND  
Miller and Warnecke, Architects



RECEPTION ROOM, BUSINESS WOMEN'S CLUB, OAKLAND  
Miller and Warnecke, Architects



MEZZAINE FLOOR PLAN



FIRST FLOOR PLAN

SECOND FLOOR PLAN

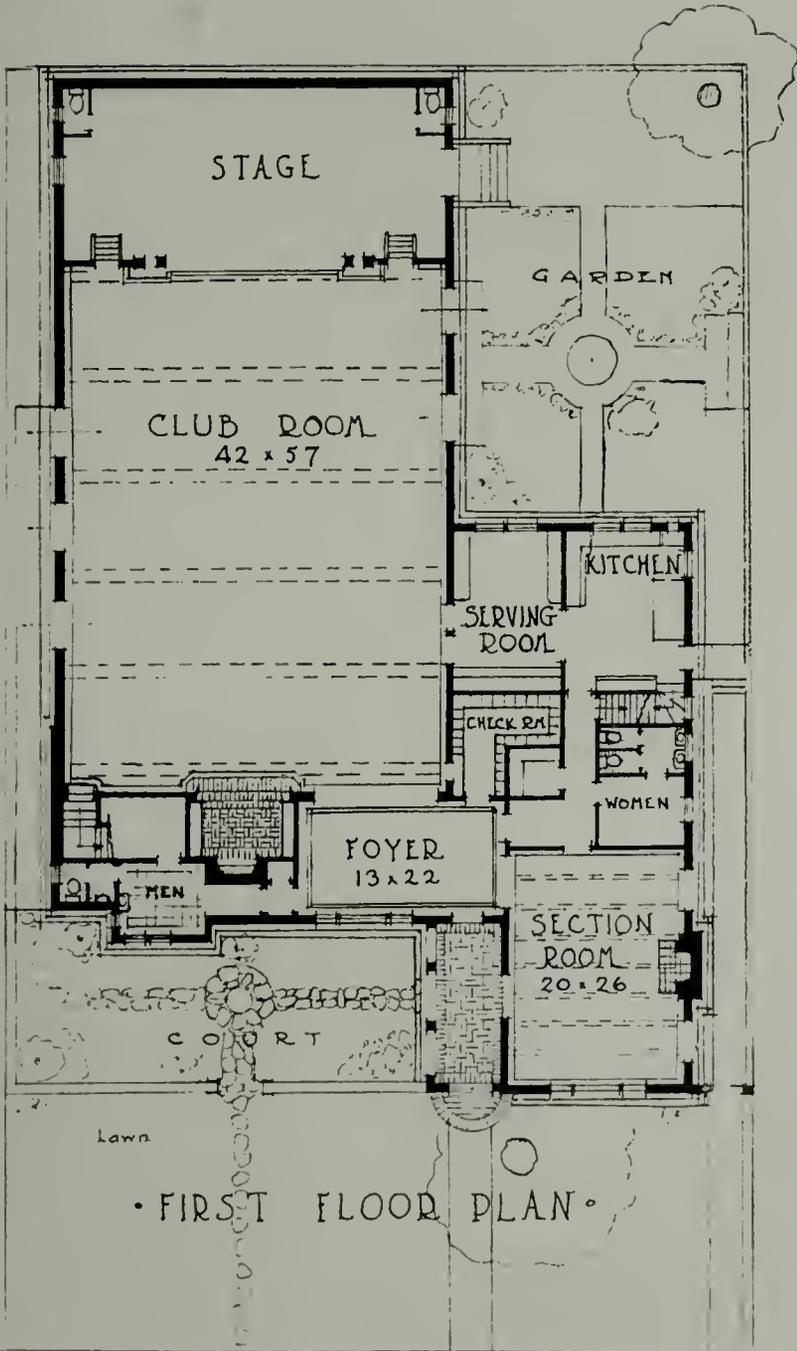
PLANS, BUSINESS WOMEN'S CLUB, OAKLAND  
MILLER AND WARNECKE, ARCHITECTS



PEN PERSPECTIVE, ROCKRIDGE WOMEN'S CLUB  
Miller and Warnecke, Architects



ROCKRIDGE WOMEN'S CLUB, OAKLAND  
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PLAN, ROCKRIDGE WOMEN'S CLUB, OAKLAND  
MILLER AND WARNECKE,  
ARCHITECTS



BUSINESS WOMEN'S CLUB, OAKLAND, CALIFORNIA  
MILLER AND WARNECKE, ARCHITECTS

## The "More Deadly" Client

By CHAS. PETER WEEKS, A. I. A.

WOMEN start in while very young to become "Interior Decorators." In fact as soon as they are able to hold a doll. They decorate the doll until they are fairly out of babyhood, then they start decorating themselves, generally their first attempt (and if Mama catches them, the last) is made with their Mother's clothes. That would not be so hard to do today as formerly. From then on through life, their time is spent in studying effects of color, effects of line, and painting and decorating generally. By the time they are about to build a home for themselves, having acquired a family, they know more about Interior Decoration and House Architecture than is taught in all the Art and Architectural Schools in Europe and America combined.

Having decided to build, the "More deadly" client selects an architect, not that she really needs one, as she confides to a "close female friend," at least only some one to draw out on paper her ideas. Her "yes man" the "less deadly" has persuaded her that this is advisable, having built without an architect before and paid for it.

She, Mrs. Mora Deadly, and the 'yes man,' Mr. Lester Deadly, arrive at the Architect's office, present themselves, he with a roll of papers, she with a large handbag. After the preliminaries, during which the Architect has held out successfully for ten per cent even though she 'had it all worked out and all he need do is to draw it on paper,' the comedy begins. That is it would be a comedy if it were not so damned serious.

"Now Mr. T-square, I brought along this design for a china closet for the dining room, that I got from the 'Ladies Home Journal.' Isn't it just lovely?" "Yes, indeed, Mrs. Deadly, but ....." "And here is the fireplace for the living room. Isn't it a dear? I think I got that from the 'House Beautiful,' or maybe we should use that one. Where is that December number or the Arts and Decorations, Les?" "You have it there, haven't you?" "Yes, dear." "Now what do you think, Mr. T-square?" "Well, Mrs. Deadly, you know we really should start out with a plan of the house. These details can follow. We should know what rooms you want, size of your lot, etc., etc." "Oh yes, you have that little sketch I made of the floor plan, haven't you, Les?" "Yes, dear." "Oh yes, here it is, Mr. T-square. You see we want the Living room here and the Dining room there. Oh, and this is the stairs. You can work that out. You know I never could draw stairs, and here is the second floor. Oh, and I forgot to show a Breakfast room...." "Now, Mora, don't you think we could ....." "No, Les, I must have a breakfast room. You know everybody has a breakfast room." "Yes, Mora." "And I must have a breakfast nook in the kitchen for the help." "You can make a beautiful house for us can't you Mr. T-square?" "Well, I'll try, but...." "Oh, yes, I forgot to show you this 'texture plaster' we want in the Hall. What were you saying, Mr. T-square?" "I would like to take these suggestions of yours and work them out and show you some sketches next week." "Oh, can't we start right in?" "I suppose it does take several days to make plans." "Yes, it takes several days all right. There are lots of problems in working out a design for a residence that the layman does not understand, for instance, your second floor is much larger than your first floor." "Oh, is that so"—not getting the point—"I

guess you can work that out." "I'll try, and I'll phone you when I have some sketches ready."

"What do you think of mauve for the bedroom with a chaise lounge in the corner by the window, and smoke blue in the dining room. I just love 'smoke blue,' etc., etc., etc."

The next day Mrs. Lester Deadly accompanied by the "Close female friend," arrives at the architect's office with an entirely new set of ideas promulgated by the "close female friend."

"Mr. T-square, this is Mrs. C. F. F. You know Mrs. C. F. F. is so clever, she should be an Interior Decorator. She has made some suggestions that I want you to have. I'm sure she could be of great assistance to you." Then follows a lengthy discussion on the part of the ladies about "smoke blue," "mauve," "period furniture," what Mrs. S... has in her bathroom—and the lovely stairway in "Ella's" new house. They leave and the architect starts to study the problem. He first visits the lot, notes its elevation, exposure, the type of surroundings, etc., and begins to dream a house having the general requirements given him. He makes a few rough sketches, including floor plans, a rough perspective of the exterior with color notes, and a view of the Living room and Dining room with color notes. He has the picture of the completed house in his mind, its architecture, its decoration and has become quite enthusiastic about it, is in fact enjoying himself very much.

The next interview:

"Oh, isn't that cute. What period of architecture is that?" "Well, it's not a pure type of architecture." "No? well, where can we see one like it?" "Well, there is nothing just like it but don't you see how lovely it will be on your lot? See how well this first floor plan works out. We put the guest bedroom and bath on the first floor off the hall and then the second floor is not too big to go on top of the first." Oh here, what is this, the kitchen?" "Oh no, that's the Dining room. I'd like to give that room a Chinese color scheme, lots of gold, a bit of lacquered red, a line or two of black...." "Oh, Chinese? Oh, I don't think I'd like that. You know Mrs. C. F. F. says that Adam style is all the rage now, and you've left out my China closet. You know I must have that, and please, Mr. T-square, make the ceilings low, they are so cozy you know. What kind of an exterior will go with that? I wont interfere with the exterior, you can do just as you please with that."

What should he do? Throw up the job or give her what she thought she wanted? After the "Adam" plans were finished and being built there came the "interior decorating." Mrs. C. F. F. was very active at that period. The architect said he did not mind that, neither one of them knew anything about architecture, did not realize the importance of an architectural background to any decorative scheme, but when that woman who, in spite of all her training from babyhood in the beautiful adornment of the female figure, came into the office with a gown and a hat that 'only the Queen of England could get away with,' and tried to tell him about interior decorating, he was through.

So after he finished the house and decorated it as Mrs. C. F. F. dictated, Mr. and Mrs. Lester Deadly, especially Mora Deadly, said that he was a fine architect and they are friends to this day. The Society for the Prevention of Murder, thereafter awarded him a medal of gold inscribed, "In hoc signo vinces."

## Earthquakes and Chimneys

By K. W. DOWIE

IN Caracas, the "City of Earthquakes," we are told by an old writer, "There are no turret-like brick chimneys, as these would expose the architect to the vengeance of an excited mob." This would seem to indicate that the people of California are tame compared with the Venezuelans, and moreover that architects in America are able to "get away" with some things that ought to be taboo.

As a matter of fact, chimneys built in the usual way are bound to topple over in a good quake. Why not, for a modest expenditure, make them earthquake-proof? And this without going to the extremes of folks in Caracas, for there we read on, 'all chimney flues terminate near the eaves in a perforated lid'! In other words, all the fireplaces in Caracas smoke! It would not take an "excited mob" in America long to wreak vengeance on their architects for such a condition as this!

Of course we are very good forgetters. Some splendid recommendations as to safe buildings were made soon after the San Francisco earthquake, but the great majority of people would be unable to bring them to mind today.

This was also true at Messina, at Tokyo, and at Santa Barbara. But one of the things that is supposed to characterize us humans is that we are teachable. Most of us have little use for the man who, upon being asked if he had been out to Santa Barbara to see the ruins, replied "Oh, no, I'm going to build the same way I always have, and leave the rest to God."

To make what follows intelligible, it may be well to set down here a few of the facts about earthquakes and definitions of terms. For one thing, there seems always to be a vertical component of the motion, but this is quite unimportant for builders, who are concerned solely with the horizontal tremors.

### DIRECTION

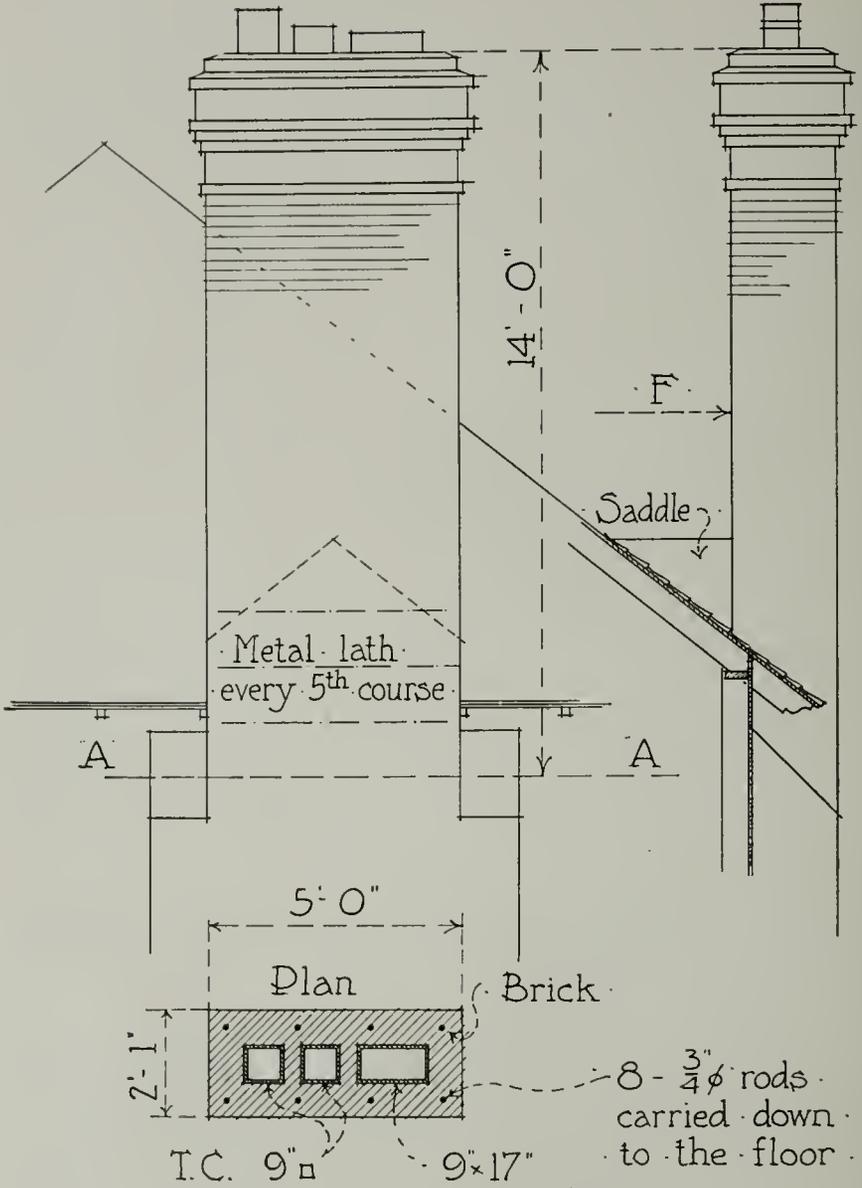
Study of fault lines and seismological history of the location may tell in which direction the shake is liable to occur, but this information is not always available, and of somewhat dubious value.

### AMPLITUDE

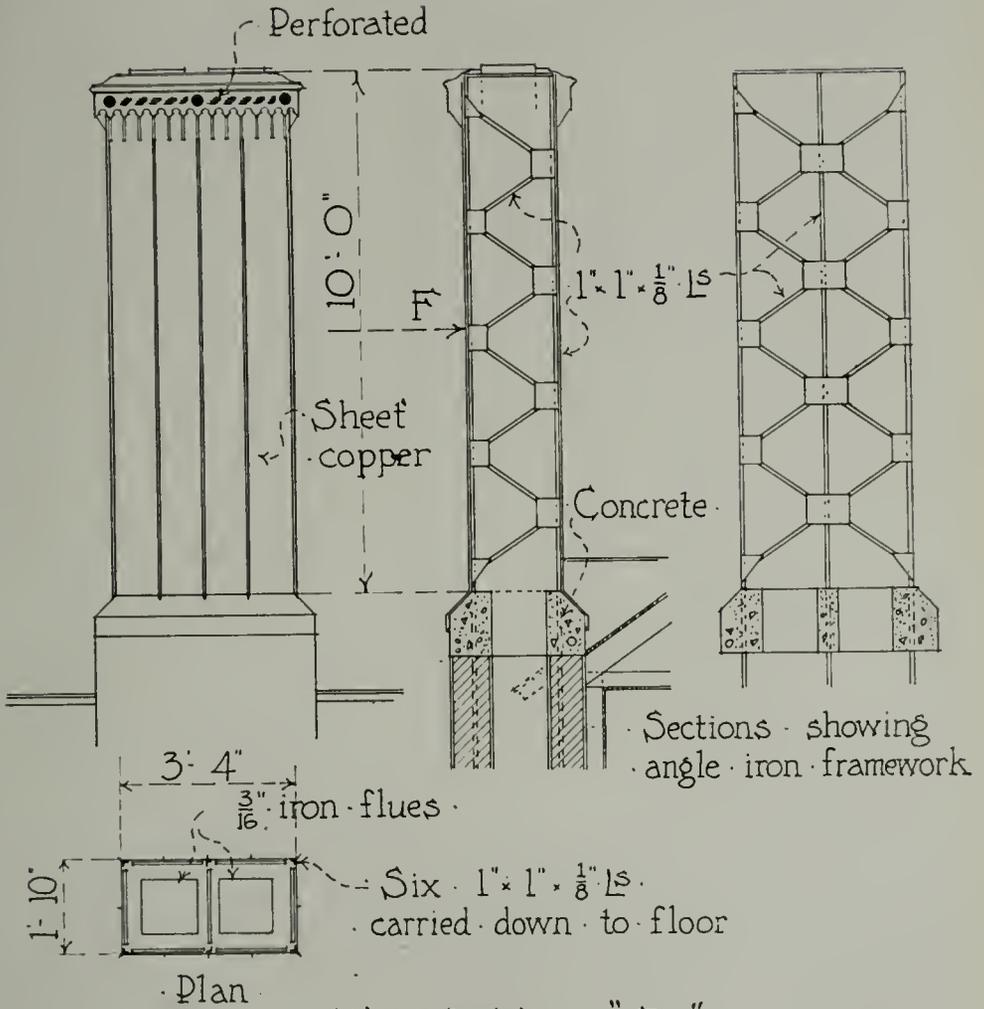
By this is meant the distance a moving point makes from the point of rest. It will usually be about half the total displacement, as the particle will move to one side, then pass through the point of rest and go to the other side before returning. The greatest amplitudes are never measured, but calculated from the known motion of bodies. Of course, if a building is directly over a fault line, no reasonable precaution can prevent its destruction, but where it is off the fault line, the amplitude may be as great as one foot in soft ground, and probably never more than two inches in stone. An amplitude of one-half inch, provided the period is short, say one second, represents a forcible quake, of intensity 8 in the Rossi-Forel scale. A quake of amplitude one inch and period three-quarters of a second is a destructive one, being intensity 10 of the same scale. Amplitudes of  $\frac{1}{4}$ " to  $1\frac{1}{4}$ " are common.

### PERIOD

Obviously, the most destructive shake is one of large amplitude and short period. By period we mean the time taken by a particle to move from rest to an extreme position, then through the point of rest to an



# TYPE "A"



# TYPE "B"

( Sheet copper covering is shown, but a similar framework might be covered with cement stucco on metal lath )



extreme on the opposite side, and back to the point of rest again. For large shocks, this period is usually from one to two seconds.

#### ACCELERATION

The acceleration, or rate of change of the velocity of a moving particle, gives us the real measure of the destructive power of a 'quake. The relation between amplitude, period, and acceleration is given by the well-known expression: where  $A$ =Acceleration,  $a$ =Amplitude,  $T$ =Time or period,  $TT=3.14159$ .  $A=4 TT^2a \div T^2$ .

Several scales have been used to classify earthquakes according to their intensity. The best-known is perhaps the Rossi-Forel, mentioned above, but it is based upon the effects upon structures and people, and is therefore not so exact as that of the eminent Japanese seismologist, the late Prof. Omori. A comparison of the two scales is given below:

Acceleration in feet per sec. per sec.	Rossi-Forel	Omori
.065	1	—
.13	2	—
.20	3	—
.26	4	—
.36	5	—
.5	6	—
1.0	7	1
1.64	8	1
3.0	8	2
4.0	9	3
6.6	10	4
8.2	10	5
13.0	10	6
More than 13.0	10	7

Now as to what acceleration we should allow for in designing a building to resist earthquakes, there will be no unanimity of opinion. Dr. Bailey Willis recommends seven feet per sec. per sec. in soft or filled ground. In the particular instance, however, of designing chimneys, where the difference in cost will be small, we think it best to use the greatest value in Omori's scale, viz, thirteen feet per sec. per sec.

It is a matter of common observation that house chimneys often fail in earthquakes. This should be a matter of no surprise, for every earthquake puts tension on one side of the structure, and brickwork, or unreinforced concrete is notoriously weak in tension. When the chimney is built into the center of a gable wall, from which it gets support for the greater portion of its height, the danger of fracture is small. When, however, it is carried up as high as the ridge, and is unsupported from the eaves up, it is particularly ill-adapted to resist shock in a horizontal plane. Indeed, in a frame house, with an earthquake of moderate intensity, the chimney is often the only part damaged. Rossi-Forel describes an intensity No. 8 quake as one accompanied by falling chimneys and cracks in walls, whereas No. 9 gives the partial or total destruction of some buildings.

Let us state at this point our conviction that an earthquake-proof chimney can be constructed of any non-combustible material. The lighter the chimney the better. The force to be overcome is directly

proportional to the mass, or weight, of the chimney. Nothing could be worse than blocks of stone, for these would give us great weight and no ability to carry the bending stresses induced. By the same token, nothing could be better than sheet metal.

If a chimney were so built as to be free, and quite independent of any part of the building for support, it is obvious that an earthquake would produce maximum stresses in it at the plane of the foundation or ground, but practically, these conditions are never realized. Although good building ordinances insist that all wood framing be kept two inches away from the chimney, the chimney is none the less secured by metal ties frequently throughout that part of it which is enclosed with the building. In fact it seems a fair assumption that the chimney will be prevented from motion in a horizontal direction by the inertia of the house, so that we should calculate it as a vertical cantilever beam, fixed up to the point where it emerges from the roof. Naturally the maximum bending moment will occur at this point. This assumption is justified on practical grounds, as witness the fractured chimneys after a moderate quake.

Let us see what forces we have to resist in order to make the two chimneys here illustrated, types "A" and "B," secure from earthquake shock. Type "A" has eight-inch brick walls, and its weight above the plane A-A is about 13,000 lbs., making its mass  $13,000 \div 32 = 406$  poundals. Now, if we wish to calculate for an intensity No. 10 quake of acceleration 13 feet per sec. per sec., and seek to find the equivalent force  $F$  applied at the center of the unsupported portion of the chimney, we have  $F = m A$ , or  $F$  in lbs.  $= 406 \times 13 = 5,280$  lbs., say. Thus we must take care of a shear at A-A of 5,280 lbs. and a bending moment, also in this plane, of  $5,280 \times 7 = 37,000$  foot pounds. If we use ordinary brick with 1:3 cement mortar, and calculate the moment of inertia of the chimney in foot units as 3.73, we find the stress in extreme fibres to be  $1.04 \times 37,000 \div 3.73 = 10,400$  lbs. per sq. ft.  $= 72$  lbs. per sq. in. Deducting the compression in fibres due to the weight of the chimney above A-A, we still have tension on one side of  $72 - 11 = 61$  lbs. per sq. in., showing that the chimney will surely fracture in such an earthquake. The most sensible procedure would seem to be to put in sufficient steel to take this tension. For this, neglecting altogether the tension value of the mortar, and placing the rods 4 inches back from the outer face, the stress in rods on one side will be  $37,000 \div 1.4 = 26,400$  lbs.  $26,400 \div 16,000 = 1.65$  sq. in. required. Four  $\frac{3}{4}$ -inch rods will be sufficient, as their combined area is 1.77 per sq. in. They should be carried well below plane A-A, in order to develop the stress, and if possible should be buried in the concrete slab at the hearth of the floor below. As to the shear, we can count on the adhesion of the mortar if it is rich in cement, but it seems reasonable, (with the analogy in mind of a reinforced concrete beam with stirrups to carry the shear), to place a sheet of expanded metal lath in about every fifth course, especially near the place where fracture is liable to occur.

Thus it is seen that it is neither difficult nor expensive to make a brick chimney proof against earthquakes. It is also obvious that the unreinforced brick chimney will fail. In a locality like California, for instance, what is the answer?

In type "B," we have iron flues, which might be rectangular or circular, surround them with a rigid braced frame of angle irons, and

cover the whole with some weather-proof material, such as sheet copper or stucco on metal lath. The weights of chimneys of type "B," figured for copper covering and stucco, and of dimensions illustrated, will be as follows:

B <sub>1</sub> Copper covering.....	140	B <sub>2</sub> Stucco .....	150
Iron flues .....	760	Iron flues .....	760
L uprights .....	75	L uprights .....	75
L web members.....	95	L webs .....	95
		Metal lath .....	35
		3/4" Channels .....	70
		Ls for lath.....	25
	1,070 lbs.		1,210 lbs.

Taking the heavier type B<sub>2</sub>, and finding F, for an acceleration 13 ft. per sec. per sec. we have  $F=mA=1,210 \div 32 \times 13=490$  lbs. Moment  $M=490 \times 5=2,450$  foot lbs. The vertical members, in the direction of the least width of the chimney, are 1.7 feet apart, and therefore the stress in them is  $2,450 \div 1.7=1,450$  lbs. This can be easily carried by 3—1"x1"x1/8" Ls each having an area of .24 sq. in. and the three together being good for  $.72 \times 16,000=11,500$  lbs. in tension.

Maximum stress in small web members will be  $490 \times \text{Sec. } 56^\circ=890$  lbs. These might be made of flat bars, but for the sake of the greater rigidity, we prefer to use here 1"x1"x1/8" Ls and to connect them to the vertical angles with gusset plates, using two rivets or bolts in each connection.

As to the covering of this angle framework, sheet copper, while somewhat more expensive, has the advantages of being both light in weight and attractive in appearance. At the same time its flexibility of form gives the architect the opportunity of working out interesting problems in design.

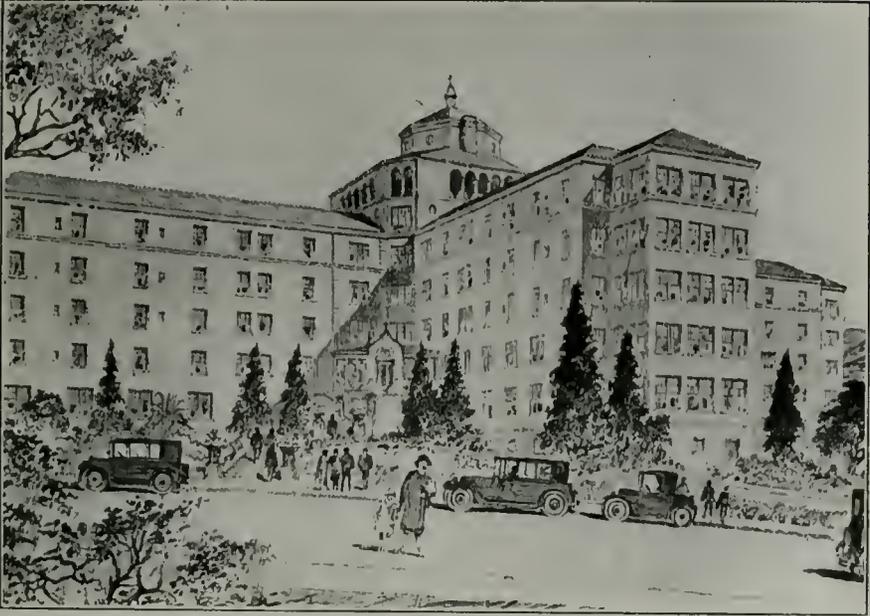
We have calculated the weights of four chimneys, of various materials, all of 10 feet height, and having two 13"x13" flues. As before noted, the weight of such a chimney if covered with sheet copper, is 1,070 lbs. Calling this unity, we find those of other materials to weigh as follows:

Sheet Copper	Cement Stucco	Concrete	Brick
1	1.13	6.0	7.4

This is equivalent to saying that it is six times as hard to meet the stresses induced under earthquake shock by using type "A" chimneys as by using type "B." Nothing need be said further to demonstrate the superiority of the lighter type.

Summarizing our conclusions:

1. Earthquake-proof chimneys may be built of any material.
2. If of brick, concrete or stone, these materials should always be reinforced with steel.
3. The most desirable type of chimney, on account of its lightness, is of metal flues, covered with sheet metal or stucco on metal lath.



PROVIDENCE HOSPITAL, OAKLAND  
R. A. Herold, Architect, C. C. Cuff, Associate

## The Beauty and Utility of Steel Casement Windows

By DAN WHITMAN, JR.\*

**I**T is refreshing that current architectural development is reviving the romantic and artistic lore of our ancestors as a nice balance to the modern cry for greater and greater efficiency and more and more practicability.

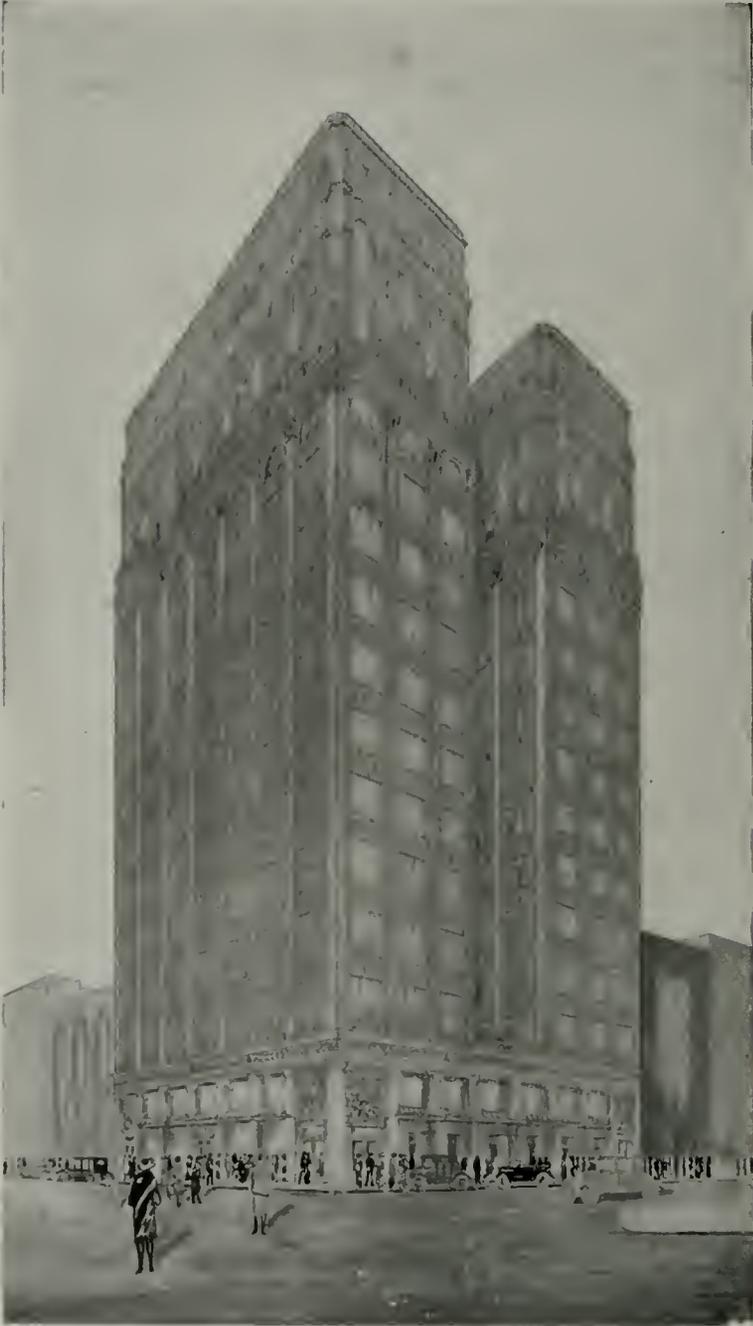
Steel casement windows are a uniquely typical example. Such windows express the artistry, the romantic associations and the beauty of Europe in the middle ages while meeting the insistence of utility and durability in this present age of steel. No matter what period motif may be adopted for the structure under consideration—early Tudor or 1926 cosmopolitan—steel casement windows are entirely in harmony. Romeo can still be Romeo beneath the moonlit balcony of his lady fair, yet by day the selfsame casement window, if of steel, yields happily to the gentle touch of the wielder of cleansing compound and cloth.

Nor is the ease of cleaning the most marked of the advantages of modern day steel casement windows. There is the greater value of weathering, the absence of sticking in rainy weather and rattling in the dry summers, and the neat, trim effect when the glazing is on the exterior side.

Windows serve three purposes, primarily—the admission of light, ventilation and decorativeness to the room. It is desirable, therefore, that in each of these the window achieve the practical maximum, with a nice balance between the three, and one eye out for cost. Admittedly, one solid sheet of glass put into the framing would furnish the most light, but what of ventilation and decorative effect.

Here is the opportunity for steel casements. In any given wall

\*Manager, Steel Window Department, Michel & Pfeiffer Iron Works, San Francisco.



LATHAM SQUARE BUILDING, OAKLAND  
MAURY L. DIGGS, ARCHITECT



LAKESHORE DRIVE APARTMENTS, OAKLAND  
MAURY I. DIGGS, ARCHITECT



STEEL CASEMENT WINDOW LENDS ATMOSPHERE  
OF REFINEMENT TO THIS RESIDENCE HALLWAY



HOUSE IN SOUTH BERKELEY, CALIFORNIA  
ROLAND I. STRINGHAM,  
ARCHITECT

opening, a steel casement window will admit approximately twenty per cent more light than a wooden frame window, and do it more effectively. The narrow steel frame and slender steel muntin bars are trim and sightly, particularly with the glazing on the exterior, and they hold the glass tightly in wet weather or dry.

Ventilation may be reduced to a science with double swing steel casement windows. A sliding friction hinge, which is used by the makers of better casements, holds the window firmly in place at the



CLEANING SIMPLIFIED BY USE OF THE SLIDE HINGE  
IN BERKELEY HOME

desired position, but at the same time permits easy opening or closing. On warm, still days both windows may be swung wide to admit a full measure of air and sunshine. Or, should the wind blow strongly from one side or the other, one window only may be opened to admit fresh air, while deflecting the direct force of the wind. Thus a casement window is capable of admitting double the amount of air which can pass through a double hung wood frame window of the same size. Case-

ment windows can also compensate for direction and force of wind and eliminate drafts—a feature entirely lacking in common windows.

The use of the sliding friction hinge has an important bearing on another phase of ventilation—screening. Screens may be neatly and easily installed on steel casement windows equipped with the sliding friction hinge, as there are no large, cumbersome projecting hinges on the frame nor unsightly stay bars for holding the windows open. The hinge is set inside the frame, out of sight, and acts as an effective stay



LEADED GLASS AND STEEL CASEMENTS MAKE A PLEASING COMBINATION

bar, as well. Quite obviously such an arrangement makes for greater neatness and a more pleasing appearance, not only of the screen but of the window opening as a unit.

The sliding friction hinge is also the factor which simplifies and accelerates the window washing detail. As the casement window is opened, the "blind side" pulls away from the frame as well as opening out, this aperture being six to eight inches at the maximum. This is



HOME IN THOUSAND OAKS, BERKELEY  
Equipped with Steel Casements

ample for the cleaning operation and makes possible the greatest speed and thoroughness, as both sides of the glass are within easy reach at the same time.

Entirely aside from the matter-of-fact points of light, ventilation and cleaning come the decorative possibilities of steel casement windows. There is nothing which gives distinction and good taste to a room as easily as casement windows. They are the nobility of windows, with ancestors dating back well into the hazy past.

With a range of sizes available in steel casements, the architect can plan his exterior and interior with a free hand. The ultimate interior decorative scheme is just as easily achieved, with the windows actually forming a pivotal point in the scheme. Add to this the possibility of highly satisfactory screening, and steel casement windows step to the front as an extremely useful and pliant tool for the architect who is keeping abreast of the times.

Mention has been made of cost. Contrary to the more or less general impression, steel casements are not expensive. The newest types, originating largely on the Pacific Coast, are no higher in cost than equivalent wood frame windows. Furthermore, steel casement windows are practically indestructable. This and the moderate cost feature are the specific points of appeal to the owner. Steel casements are built up from adequately heavy, specially rolled sections of copper steel. Thus they have the strength to prevent warping or sagging, they cannot shrink and they escape the ravages of rust because of the copper in the steel.

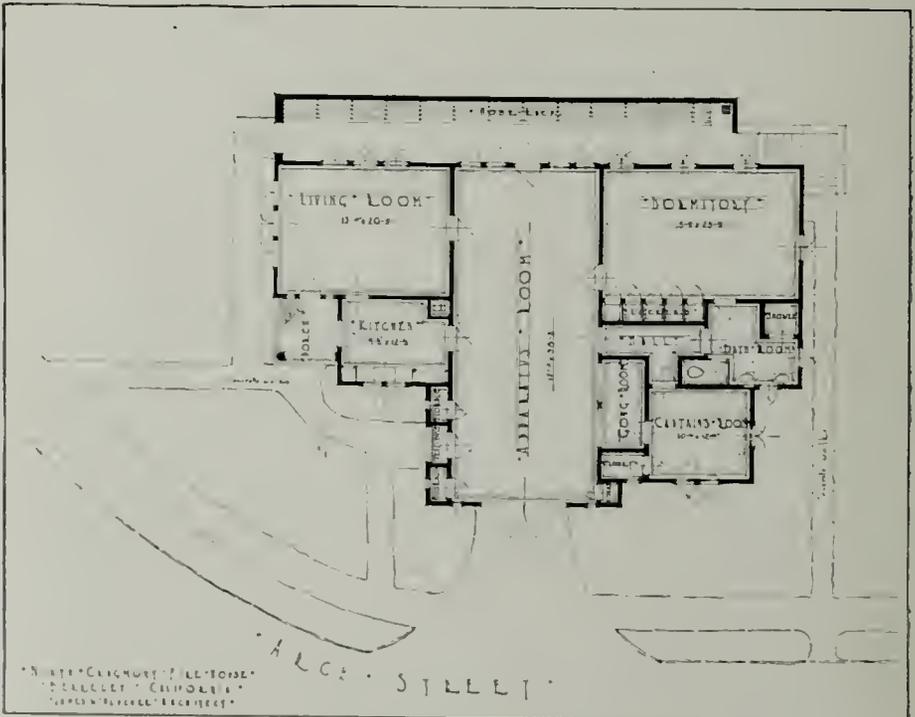
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BUNGALOW FIRE HOUSE, BERKELEY  
James W. Plachek, Architect



PLAN, BUNGALOW FIRE HOUSE, BERKELEY  
James W. Plachek, Architect

## Electric Heating in the Modern Home

By H. E. SANDOVAL  
Sandoval Sales Co., San Francisco

FOR the past three decades a person was considered as having an electric home first, when he had his home wired for electric lights; second, when he installed lamp-socket appliances such as the electric iron, vacuum cleaners, washing machine, and similar equipment, and third when he added the electric range.

Today a person does not have an electric home unless all energy for lighting, heating, cooking and power purposes is received through the electric meter and one bill from the electric company covers everything.

The equipment in this home consists of 110-volt lamps and fixtures, 110-volt appliances, such as toasters, waffle irons, cleaners, and the like, an electric range, an electric water heater, large-capacity electric air heaters (1,000 to 6,000 watts), an electric ironer and an electric refrigerator.

The wiring consists of a heavy 3-wire 110-220-volt main service, usually 3 No. 2 wires; 110-volt lighting circuits; 110-volt appliance outlet circuits; a 3-wire 110-220-volt range circuit; a 220-volt water heater circuit, and a 220-volt circuit for each heater or heating device over 660-watt capacity.

Before going further it is well to state that the all-electric home is made possible by a favorable combination of two factors, namely, climatic conditions and low rates for electric energy. This article has to do primarily with climatic conditions as found in California, and a combination lighting and heating rate for electricity in that territory for an eight-room house, as follows:

First— 30 kw-hr. per month at 7c.

Next—150 kw-hr. per month at 3½c

All over 180 kw-hr. per month at 2c

A yearly minimum of approximately 50 cents per month per kilowatt of connected load is in effect.

In an average home of eight rooms or less 30 kw-hr. ordinarily covers the lighting, 150-kw-hr. covers the cooking, and the heating is considered as being carried on a 2-cent rate.

The most important thing regarding the all-electric home is the cost of operation, and it is interesting to know that there are many homes of from five to eight rooms using from \$200 to \$300 of electricity per year. This is put on a yearly basis rather than monthly on account of the heating. This amount is divided about as follows:

Electric lighting and appliances, \$30 per year

Electric cooking ..... 60 per year

Electric water-heating . . . . . 60 per year

Electric heating . . . . . \$50 to \$150 per year

Making a total of \$200 to \$300 per year

Compare this with the ordinary home, and for this purpose the following figures should be adjusted to local rates and prices:

Electric lighting and appliances, \$30 per year

Gas cooking ..... 25 per year

Gas water-heating ..... 50 per year

Heating (coal and wood) . . . . . 75 per year

Making a total of ..... \$180 per year

Most people see only the fuel item which enters into the cost of operation of a home, whereas this is only one of several, and sometimes not the most important. The items contributing to the total cost are as follows:

1. Interest and taxes on first cost.
2. Maintenance.
3. Depreciation.
4. Labor necessary to operate.
5. Fuel or energy.
6. Health and safety.
7. General desirability.

In new construction, the first cost of the all electric home and equipment is usually less than for other types, as chimneys, flues, ducts and pipe lines, can be largely eliminated, and excavations for basement, foundations and fuel storage are not necessary or can be kept to a minimum.

At present most power companies maintain the equipment free of charge during the first year and thereafter charge for material only. The maintenance on electric equipment is generally less than for competitive equipment but the maintenance of ceiling, walls and furnishings must also be taken into consideration. Because of the absence of combustion in the Electric Home, it is mostly free from dirt, grease, and soot.

Depreciation on electric equipment is very low, in fact, most of it will last as long as the home itself. In general the depreciation is low on the entire home as well as the equipment.

Electricity is always the ready servant, available at the turn of a switch and, hence much labor is eliminated, especially in heating and cooking. The time and labor of attending a furnace is saved as well as the dirt from the ashes and fuel storage.

Tangible values can be placed on the first five factors and electricity is the lowest of all, except 5 (fuel), which is practically the entire cost. However, there are certain intangible values in the last two items which often prove the deciding factor for electricity. When the sum total is taken it will be found that the electrical home is just as economical as any other and far more desirable.

The all-electric home appeals primarily to that family in moderate circumstances which is buying its own home and where the wife with a couple of kiddies to look after is doing her own work. A servant is expensive and hardly can be considered, but a few extra dollars for electrical servants produce most satisfactory results and prove far more economical and dependable. A "boy" to wash the dishes after dinner and to clean on Saturdays, adds the finishing economical touch to this modern home.

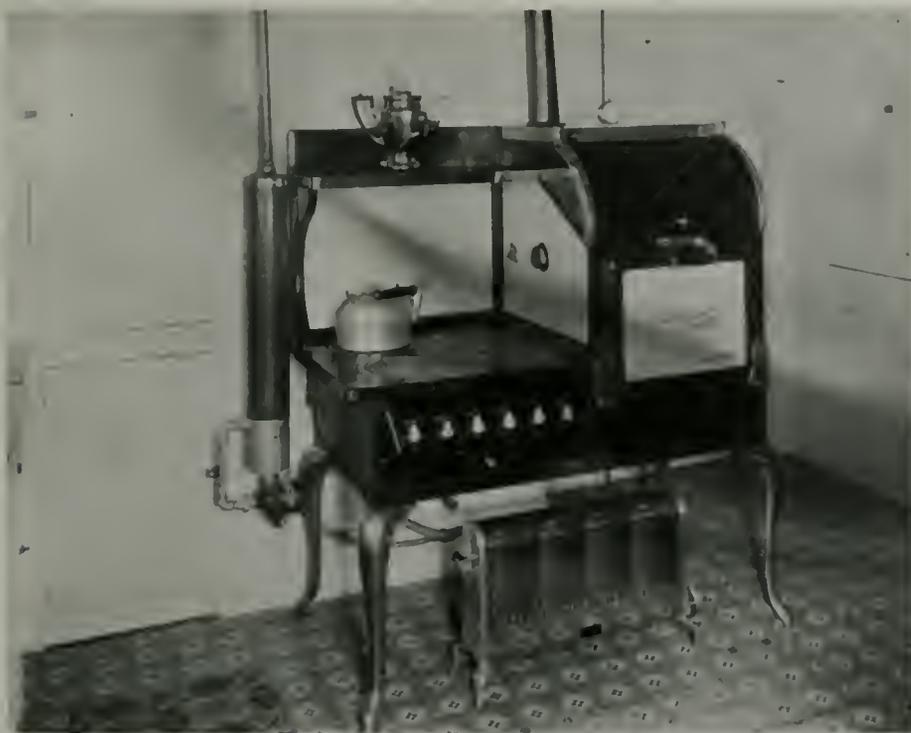
Electric cooking has made such rapid progress during the last few years that it has become an accepted fact by most progressive housewives, and it is only a question of time and opportunity when the electric range takes its place in the kitchen. Housewives have come to know that it really costs nothing to operate an electric range, for the savings in time, labor and food more than pay the electric bill.

Not so much is known of electric water-heating and electric air-heating by the public and these, although just as meritorious, require a little more educational work before they are used universally.

With electricity at 2 cents per kw-hr, the cost of operation is the



MODEL HOME, ELECTRICALLY EQUIPPED, INGLESIDE TERRACE, SAN FRANCISCO



KITCHEN WITH ELECTRIC STOVE, HOT WATER AND AIR HEATERS



LIVING ROOM SHOWING ELECTRIC HEATER IN FIREPLACE



TWO TYPES OF ELECTRIC HEATING ARE SHOWN IN THIS PICTURE  
(Fireplace at left, and Portable Heater in Dining Room)

dominating factor in electric water-heating and practically determines the type of equipment used. Intermittent heating is the cheapest method of heating water, as radiation losses are minimized and less hot water is used than where a supply of hot water is available at all times.

An external circulation type of heater banks the water at the top of the boiler where it can be drawn off readily after the heater is started.

A 5-kw. heater is the most popular on account of its speed in intermittent heating. All boilers and pipes should be lagged thoroughly which minimizes radiation losses and tends to keep the tank hot after the heater is turned off.

Heaters should have an automatic thermostatic cut-out as insurance against heater burn-outs and fire hazard. Such a thermostat also permits of turning the heater on and automatically maintaining a tank of hot water.

In the ordinary home of from five to eight rooms it has been found that intermittent water-heating takes from 150 to 250 kw-hr. per month, which at a 2-cent rate, amounts to \$3 to \$5. Where the water in a tank automatically is maintained hot and a hot-water service is always available, the consumption just about doubles, namely, 250 to 500 kw-hr. per month, or \$5 to \$10. This is due to increased radiation losses and increased use of hot water. This service is most satisfactory, but in competition with gas at \$1 per 1,000 cu. ft. it proves more costly.

In order to compete, an auxiliary tank has been developed which provides a limited hot-water service continuously without heating the main tank. This tank takes care of all ordinary wants, such as cooking, dish-washing, and similar uses, and when large amounts of water are required the main tank is heated by opening a valve. The service is quite satisfactory, and the consumption varies from 200 to 300 kw-hr. per month, which places it on a par with competitive heating.

Water heaters which are well designed and constructed are fairly free from burn-outs and require little service over a long life.

Selling electric air-heating in the home at first meets with resistance from consumers on account of previous experience with lamp-socket (660-watt) heaters. They have used these heaters on lighting rates and have failed to get sufficient heat but have received high bills for electricity.

The 660-watt radiant heater has a very definite field and when properly sold gives most satisfactory service. It is not intended to heat a room any more than a pocket flashlight is expected to light a room. Both give an intense beam over a limited area only. For spot heating, the radiant heater proves very satisfactory but for raising the temperature of any but the smallest rooms it is necessary to have heaters of 2 to 6,000-watt capacity.

Heat may be classified under two general headings—radiant heat and convection heat. A high-temperature mass gives off radiant beams which pass through air without heating it but heats solid objects upon striking them. The rays from the sun are examples of this.

Air passing over or coming in contact with a hot mass at comparatively low temperatures absorbs heat and rises, and this is known as convection heating.

With radiant heat, the solid objects in the room are at a higher temperature than the air, and heat it. With convection heating the air is at a higher temperature than the solid objects and heats them by contact. It readily may be seen, therefore, that for raising the room temperature convection heat is more effective than radiant heat.

Practically all electric heaters use one principle or the other, or a combination of the two, which seems the most desirable. A radiant convection heater dissipating the bulk of its heat by means of convection air currents but giving off a small amount of radiant heat for quick heating and coziness has proved most satisfactory.

There are four essential features to a good electric heater for room-heating in the home.

- (1) The amount of radiant and convection heat should be properly balanced.
- (2) It should contain as little mass as possible in accordance with good construction. The greater the mass, the greater the amount of heat stored in the heater that is not immediately available for heating the air.



ELECTRIC HEAT AND HOT WATER FOR THIS MODERN BATHROOM

- (3) The heater should operate at a sufficiently low temperature so that the dust particles in the air will not be scorched and burned, thereby soiling the walls and ceiling.
- (4) The heater should be so constructed as to require little maintenance and have long life.

It is customary to install a heater in each room of such a size as to give a comfortable temperature on the coldest winter days. There are few extremely cold days, and it follows that for the average winter day the heater is larger than necessary.

Heaters are all equipped with three heats so that they may be partially turned off to meet any condition. The larger heater also has the feature that, when a cold room is entered, the appliance may be turned on full heat for a few minutes which will rapidly raise the temperature, and after that it can be turned to a lower heat.

With a difference in temperature between the outside and inside of a room, a definite heat transfer takes place from the walls, floor and ceiling, and it is necessary to supply that amount of heat to the room. With ordinary good construction in a house,  $1\frac{1}{2}$  to 2 watts per cu. ft. will produce a temperature rise of 30 degrees F.

Electric heat is flexible and available in just the quantity desired at all times. With other methods of heating, the required heat is produced along with a great deal more that is wasted because the fuel cannot be exactly controlled. One or all the rooms in a house may be heated, as required, thereby effecting much saving in fuel costs. Electric heat is instantly available by turning a switch. In the morning, when heat is required quickly, there is no delay as in starting a fire or furnace. Automatic heaters will maintain even temperature, doing away with extremes of heat and cold. A hall heater usually will keep the chill off the entire house.

Portable heaters may be moved to suit the housewife's convenience, or stationary heaters may be installed in the walls where they are out of the way and take up little space.

One of the big advantages of electric heat is the elimination of flame and combustion with the consequent fire hazard, poisonous gases and explosive mixtures. This is of considerable importance in the home with small children where health and safety are paramount. It is also important in rural communities where fire fighting apparatus is not readily available. No doubt in time insurance rates will be reduced where combustion is eliminated.

Electric heaters also are used with furnace installations for those chilly fall and spring days when it is uneconomical and bothersome to start a furnace for just a few minutes but uncomfortable without some heat.

There are many advantages to the all-electric home but it seems unnecessary to enumerate them. The public generally accepts the electric home as better and more desirable than any other, but is dubious as to the operating cost. In this article I have endeavored to show how, all things considered, the electric home is just as economical as others less desirable. A comparable illustration is this—the cost of kerosene for lighting is less than the cost of electricity, but the almost universal use of electricity for lighting where available would indicate that electric lighting is more economical than kerosene lighting when fuel, labor, maintenance, fire hazard and similar factors are taken into consideration.

It is simply a matter of education, and before long in certain sections of the country the electric home will predominate. Most people are "from Missouri" and they are rapidly being "shown." At present the electric home is making most rapid progress where the housewife is doing her own work and looking after a couple of kiddies. To her it is a source of pride and the greatest labor-saver possible. Certainly she is entitled to the most modern equipment in her "business" just as her husband uses the latest equipment in his office or factory, to save time, labor and money.

There are others to whom the electric home represents something "better," and they are willing to pay a little more for comfort and convenience. The first cost of building an all-electric home is usually less than that of a similar home of different type, and after a year's operation, much to their surprise, the owners generally find that they have saved money.

Today the progressive home builder, if he does not actually electrify, at least takes the precaution to install heavy wiring so that this equipment can be added at a future date.

The electrical industry is now concentrating on the "Red Seal Campaign," which is the symbol of adequate electric wiring and the prospective buyer will do well to see that this seal is a part of his future home.

Knowledge of color is the product of the mind given to expansion, the result of long processes of observation, analysis, and comparison.

Good taste, which makes itself felt in certain homes is not a result of chance, but the result of carefully studied color harmony, producing lovely livable interiors expressing beauty and repose, composed as expertly as a piece of music that echoes its harmonious melody through the corridors of time.

\* \* \* \*

## The Improving Architecture of Small Homes

By EDWIN H. BROWN

Secretary of the American Institute of Architects

I SUSPECT that in all the fields of the building industry no one place has been quite so lacking in the spirit of architecture as the field of the small home. In the last five years, however, there has been an awakening on the part of the owner himself, and on the part of the architect to the need for architecture in this enormous field of small house building. In this way came into being the Architect's Small House Service Bureau. It is almost impossible to estimate what this has accomplished, but anyone with half an eye can see the great improvement that is taking place in the small housebuilding of the country. Newspapers and magazines are regularly publishing photographs of attractive houses, and this steady stream of good pictures is having a marked effect on the taste of those building or buying small homes. It is quite evident that the United States is going to be, ultimately, a nation of reasonably attractive and comfortable homes, probably taking second place to no other nation in the world.

The people of the United States, like the people of all the rest of the world, without realizing it, are copyists, influenced by their immediate surroundings, by the things which they see daily, and their outlook on life is limited by their surroundings and possibilities, which are given to them of seeing things. They love to imagine that they are unique and original, but they are timid to the last degree in trying anything new or anything that will be very markedly different from what is in their neighborhood. And in every community there are a few people who more or less set the fashion. They have a little more courage than the rest but they in turn are limited in what they dare to do by the restrictions of the larger field to which they have access.

But the people of the United States can change their habits and thoughts quicker than the people of other countries because of the marvelous development of the advertising field and the enormous means of publicity available. If one cares to spend the money it is quite possible to literally plaster the entire country with a given article or a given idea, or any individual fancy that one desires. If this is kept up for a

sufficient length of time people will begin to take the thing for granted, and it has become a part of the daily life. What more notable example of this than the utterly uniform way in which the clothing fashions change from year to year, and exactly the same in every corner of the country. Let us pray that this does not happen to architecture or art.

I don't know who was responsible for the introduction of the mania for styles in the building of houses. Almost the first question that is asked of an architect in regard to a house is, "What style is it?" And I don't know of any harder question to answer. This I do know is quite true: that there is no such thing as a definite style which can be followed throughout in the construction of a house. We are so close to our own methods of building that we can't say what American or French or English architecture is. Every nation is swayed by its individual characteristics. It is quite safe to say that if a large collection of pictures of buildings of the different countries were gathered together in their separate groups, and further, if these different drawings or pictures of these buildings were taken of some so-called style, Gothic for example, we would not have the slightest hesitation in saying that this group was American, this French, this English, etc. We can't get away from our own national characteristics.

What is the best type of house for your lot? Should you build a wooden house, or a tile house, or a concrete block house, or a solid brick house, or a brick veneer house? Should it be Colonial, or Dutch Colonial, or Spanish, or Californian, or Santa Fe, or Tudor, or any other favorite and much-advertised type? Can you build it for \$6,000 or more, or less? Should you have casement windows, or double-hung windows, with large or small panes of glass? Should you have sleeping porches, or ordinary open porches, or sun parlors, or a garage under the house, or a garage separate from the house?

You can find an answer, and a very positive one, either yes or no, just as you please by going to the right party for your answer. Lumber manufacturers will probably tell you that a wooden house can be made fire safe, built cheaper than any other, made warmer in winter and cooler in summer than any other type. Brick people will deny many of these statements, will assure you that the solid brick house will cost you less in the long run than any other type, and that you should build with brick. Tile people will give you all the advantages of the use of hollow tile, and concrete block people will tell you a similar story. And all the makers of stucco will tell you the advantages of a stucco house over all others.

The story that you get from each one will be largely true, and each man telling you the story will be quite convinced that what he is telling you is the truth. It is his job to believe in what he is selling or he wouldn't be able to sell it to you.

What is the answer to such a jumble as the would-be owner is going to meet when he tries to get his very earnest and important questions answered? It is very simple. Don't take the statements of any prejudiced parties as covering the entire truth of the matter. Go to someone who hasn't any particular axe to grind and ask him about what you should do. Go to an architect, a man who is trained in the design and supervision of construction of buildings of the general kind that you want to build.



HARBOR EMERGENCY HOSPITAL, SAN FRANCISCO  
MEYER AND JOHNSON, ARCHITECTS

One frequently hears this question, "But an architect costs money, anywhere from five to ten per cent of the cost of the house, and why throw so much money away when you need every cent to get the house you want?" There is a very simple and logical answer to that query, though the make-up of the American people at this time seems to be such that they cannot appreciate it. It is apparently much easier to distrust the man who has no visible axe to grind, no visible motive of self-gain for a recommendation, than to distrust the man whose job is to sell you the thing he is selling, and from which he makes his livelihood. Also the selling man, because it is his livelihood, is likely to make a much more strenuous argument for his goods than will the man who is trying to get the best article for you with no direct financial return to himself. It looks to me so very simple that I cannot follow the ordinary procedure. Everyone has to earn money to live. You cannot get anything for nothing. You can, of course, pick up bargains here and there, but if you are not sure what you are getting you better keep your eye peeled for the bargain offered you; it might and probably will be a bargain for the other chap. If you will play the game with your architect you can save his commissions several times over and get much more nearly the house that you want. It's worth trying.

While, as a rule, the great American Public is a most suspicious public, yet it is at the same time the most gullible and credulous Public that ever lived. I know of a case where an architect, and a good architect who was most proudly spoken of by his father, was called in to his father's house to discuss some changes in the heating plant. It just so happened that this architect was noted for the successful methods of heating he used in his houses. He made some simple recommendations to his father and left with the belief that the matter was settled.

The father, however, that day happened to discuss the matter of his heating plant with the shoemaker who had a little shack not far away. The shoemaker, not possessing a house of his own, not being financially interested in the deal, was able to tell of a marvelous furnace and heating layout that would solve all the problems. His account was so glowing that the father immediately had his old plant torn out and one of the new ones put in its place. And when the new plant was finally made to work, after a fashion, by which time the inventor of it had turned his attention to other fields of imagination, the cost to the owner of the house was two or three times what it should have been and he had a white elephant on his hands. Why is it that the advice of the disinterested passer-by, a man without experience or knowledge, so often has more weight than the interested and unbiased advice of the man who knows?

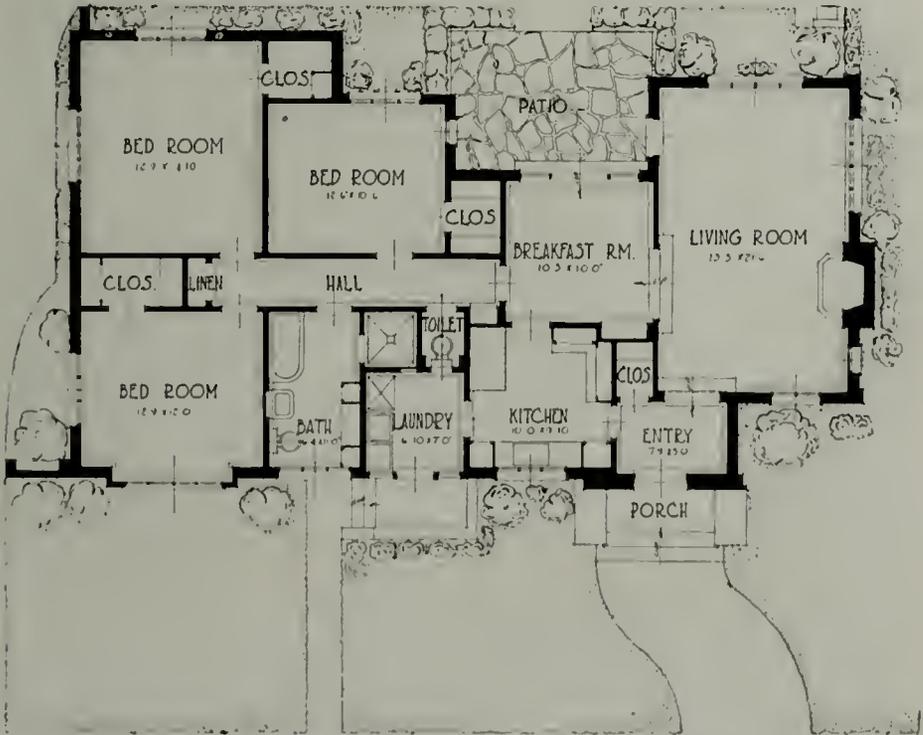
It after all would seem that one of our greatest troubles is that the general conception of architecture is that it has to do with the appearance of the house only, and not with the vital parts of the building of a house, such as materials used, methods of construction, financing the house, supervising the construction, letting the contracts, protecting the owner throughout, in actual fact becoming the owner with the advantage of trained and sympathetic knowledge at a cost which becomes negligible. In fact, when you come to consider that the entire charge of the architect is less than what you pay the bank for the use of the money or the contractor for his profit, it is funny that it is so seriously considered.



HOUSE OF MR. AND MRS. M. E. GOSS, PIEDMONT  
W. R. YELLAND, ARCHITECT



HOME OF ADOLPH FRIEDMAN, HOLLYWOOD  
Lloyd Rally, Architect



PLAN, HOME OF ADOLPH FRIEDMAN, HOLLYWOOD  
Lloyd Rally, Architect

## Economic Prospects for Remainder of 1926

By HERBERT HOOVER, Secretary of Commerce

**A**NY business forecast must be simply an appraisal of the forces in motion at home and abroad, for and against progress. All signs indicate that if we will temper our optimism with a sprinkling of caution we shall continue our high level of prosperity over 1926.

The United States produced and consumed more goods in 1925 in proportion to population than ever before in its history. Our standard of living has therefore been the highest in our history and is of course the highest in the world. This improvement, however, has been greater in the urban centers than in agricultural communities.

The dominant favorable factor in our outlook is our increased productivity, due to fundamental and continuing forces—such as the cumulation of education, the advancement of science, skill and elimination of waste. Other favorable indications on the immediate horizon are that the stocks of commodities are moderate; there is employment for practically everyone; real wages are at a high level; savings are the largest in history and capital is therefore abundant; and the whole machinery of production and distribution is operating at a higher degree of efficiency than ever before. While wholesale prices for the year as a whole have averaged about 6% higher than for the previous year it is largely due to needed advance in prices of agricultural products.

There are some phases of the situation which require caution. Continuation of real estate and stock speculation and its possible extension into commodities with inevitable inflation; the over-extension of installment buying; the extortion by foreign government-fostered monopolies dominating our raw material imports; the continued economic instability of certain foreign countries; the lag in recovery of certain major agricultural products; the instability of the coal industry; the uncertainties of some important labor relationships—all these are matters of concern. But, as said above, with caution we should continue a prosperous year over 1926.

The construction industries have played a very large part in the high business activity of the past three years. The volume of construction has been unprecedented during the past year with consequent great activity in the construction-material industries, iron, steel, lumber, cement, etc. Contrary to normal expectations this increased demand has not increased prices, for there has been a slight reduction in building costs due in a large measure to the gradual lengthening of the building season. The increasing Federal, state and municipal public works programs for next year, together with the promise of large electrical and railway extension and improvement, indicate a continuing demand for heavy construction. While it might be thought that the war deficiency in housing has been overcome, yet the high real wage in industry creates a demand for better housing and this condition, combined with the migration to suburbs due to the motor, promises to continue as long as employment remains general. We could hardly expect so exceptional a construction activity to repeat itself, but there will be a large volume in any event.

Our foreign trade in 1925 has been exceptionally satisfactory. Both exports and imports have risen materially, the former reflecting an increase in agricultural exports and the latter reflecting the large demand for foreign raw materials and tropical foodstuffs. Exports will total around \$4,900,000,000 or about 7% more than in 1924. Imports will

amount to about \$4,200,000,000 or approximately 17% more than in 1924. Roughly, one-half of this increase in both exports and imports is attributable to greater quantities exported, and the remainder to advance in prices. The major explanation of our favorable trade balance is, of course, to be found in the continued heavy investment of American capital abroad; in essence we are lending foreigners the where-with-all to buy foods from us, or are sending goods to convey our investments abroad. It is probable that the final figures will show that this country has added to its foreign investments during the year by more than a billion dollars.

In finance the past year has been characterized by increased savings, comparatively easy money conditions, the issuance of a large volume of both domestic and foreign securities, and by an extraordinary rise in the prices of stocks accompanied by marked speculation on the New York Stock Exchange.

On the whole, both our own country and the rest of the world face a more favorable outlook than for a long time past. We, ourselves, however, need to be on our guard against reckless optimism. What we need is an even keel in our financial controls, and our growing national efficiency will continue us in increasing prosperity.

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## Revise Hollow Tile Sizes

After having been in effect nearly two years, the Simplified Practice Recommendations as to hollow building tile, which reduced 39 sizes to 19, have been revised. The original conference of makers, building supply dealers, contractors, architects, building engineers and others, held on October 19, 1923, under the auspices of the Division of Simplified Practice, United States Department of Commerce, based the limitation of dimensions on results of a survey conducted by the industry. The revision, which was adopted at a meeting in Chicago a few weeks ago, instates but one size not included in the previous simplified list, and makes only slight modifications in other items.

The survey which preceded the revision conference was based on figures supplied by 143 of the 201 companies in the United States making this product. These 143 companies produce more than 78% of the total tonnage of the country; and the figures compiled in the survey were based on the number of hollow tiles made during the year 1924 and the first half of 1925. It was shown that in the "recognized sizes," the demand had steadily increased, while the orders for sizes outside of the simplified list had dropped to a negligible figure, in most cases.

In load bearing wall tile of end construction, the figures show, there were gains of 679,947 pieces in recommended sizes in an output which, for the first half of 1925 involved 2,658,830 pieces. Less than 10% of the output for the first half of 1925 was in sizes not included in the simplified list.

In hollow tile for side construction, the increase for the first half of 1925 over a similar period in 1924 in the recognized sizes was 5,082,669, while the sales in "unlisted sizes" for the 1925 period were 150,000 less than the 1924 period, and represented some 10% of the sales in the group.

In standard partition tile there was a gain of 6,513,811 pieces in the recognized sizes between the first half of 1924 and of 1925. At the same

time the non-recognized sizes decreased 1,175,000 pieces during the period.

The single size which was added under the revision program was a wall tile 8 inches by 8 inches by 8 inches, with nine-cell construction. This was found in the survey to be in growing demand as a result of building trends and requirements.

\* \* \* \*

## An Earthquake-Proof Dwelling

By ARTHUR C. ALVAREZ

Associate Professor of Civil Engineering, University of California

[Concluded from the March issue]

The  $\frac{7}{8}$ -inch rough flooring boards should be laid at an angle of 45 degrees with the sides of the house. Eight-penny nails are large enough. By laying the flooring at an angle of 45 degrees instead of parallel to the sides, the house is much more effectively braced against twisting by an earthquake. The boards of the roof also, when that is flat, should be laid at 45 degrees.

**EXTERIOR WALLS.** All the studs and plates in stories above the underpinning should be of 2 by 4-inch pine or fir, the studs being spaced usually 16 inches between centers. The upper plate of every story should be doubled and advantage of this fact should be taken to give its joints a large well nailed overlap as shown in Figure 8. In each side of each story there should be two lines of 2 by 4-inch stud bracing sloping in each direction, like CD and EF in Figure 8. To be effective, this bracing should make an angle with the horizontal not greater than 45 degrees and should extend from plate to plate, rather than as shown by GH, because a stud brace like GH is only about 40 per cent as efficacious as the brace EF. In the stories above the underpinning, it is better to fit the stud braces between the studs otherwise too many studs must be cut; stays will then not be necessary at the ends of the stud braces which terminate at the plates.

Tests<sup>†</sup> made by the writer during the early part of the year 1925 at the Civil Engineering Laboratory of the University of California show that when the 1 by 8-inch boards used for sheathing are nailed to the studs at an angle of 45 degrees with the horizontal instead of horizontally, the resistance of the wall to earthquakes is increased about 40 per cent, when the studs are also braced as shown in Figure 8 by diagonal stud braces. Moreover, since such diagonal sheathing bonds the framework of the several stories and the underpinning in such a way as to cause the entire building to act as a unit, it is strongly recommended where resistance to earthquakes is a factor to be considered. Eight-penny nails are sufficient in the sheathing. To obtain the best bracing, the joints in the sheathing, if required, should be made on the studs and midway between the floor levels; if the joints occur at the floor levels, much of the advantage of the continuity in bracing is lost.

Pieces marked J, K, and L in Figure 8, called fire stops, are required by the building codes of some cities but are entirely unnecessary in the outside walls of a building erected one story at a time, if sheathing is used. In interior partitions, however, such so-called fire stops help slightly to stiffen a wall that is covered on each side with plaster only.

Openings marked M and N in Figure 8 are correctly framed. M, because the upper header trussing is stiffer, gives a better support to the floor above, but requires more labor than N. The single-stick 4 by 4-inch header of M is better than the doubled 2 by 4-inch headers of O or Q, because it is stiffer. Supports under the ends of the sill should not be omitted as in O and Q. Q is very poorly framed because the header which takes loading from the floor above is supported at its ends by nailing only.

The tests mentioned above also show that half the resistance to earthquakes of a timber frame house depends on the wooden sheathing. Any weaker substitute, used as a ground for the stucco in place of the wooden sheathing, will accordingly increase the earthquake hazard. The resistance of a building may be increased considerably by driving three 8-penny nails instead of two, wherever each board of sheathing crosses a stud, a stud brace or a plate.

<sup>†</sup>Wall Bracing in Timber Frame Buildings, by Arthur C. Alvarez. Bulletin of the Seismological Society of America, September, 1925.

Where Figures are mentioned reader should refer to illustrations in the March issue.

**INTERIOR PARTITIONS.** The main cross partitions should have 2 by 4-inch studs, they should be well stiffened by diagonal stud braces and their plates should be adequately tied to the plates of the exterior walls, so that the cross partitions will serve to tie and brace the latter. Here "fire stops" are necessary for bracing.

The floor plates of all exterior walls and interior partitions of every story must be adequately nailed to the floor joists by 20 penny nails.

**PROVISION FOR PIPING.** It is exceedingly important that the architect make provision for all piping in the framing plans, so that plumbers will not be compelled to mutilate or remove important supports, braces or ties in order to install their fixtures. This duty of the architect should not be delegated to the carpenter. The best method is to run the larger piping between double walls.

Because of lack of space, a discussion of the stucco exterior and construction of chimneys must be omitted.

In conclusion, the adoption of the structural details in regard to framing outlined in the preceding paragraphs will add only a trifling amount to the cost of construction of a two-story dwelling, yet the writer believes that such a timber frame dwelling, when built on a reasonably good natural foundation, will survive without appreciable damage any earthquake likely to occur in California.



GARDEN VIEW HOUSE IN CLAREMONT  
W. H. Ratchiff, Jr., Architect

## Sprinklers in Motion Picture Booths

It is worthy of note that in the City of Eau Claire, Wis., in accordance with the requirements enforced by the local fire department, all motion picture projection rooms are provided with automatic sprinklers. Their installation has already proved worth while in that city, in at least one instance and prevented a film fire. The installation of sprinklers under such conditions is decidedly advisable and should meet with general adoption, says an exchange.

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## Sixteen-Story Hotel

The Marion Realty Company is having plans prepared by Architect Albert H. Larsen for a sixteen-story \$1,000,000 hotel to be erected at Ninth and Market streets, San Francisco.

**THE  
Architect and Engineer**

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upon the design and general features of this thirty-story structure, a circumstance that must be most gratifying to the architects, Messrs. Miller & Pflueger and A. A. Cantin.

OUR STATE BOARD

Governor Richardson is expected shortly to make some new appointments on the California State Board of Architecture, both Northern and Southern Divisions. The terms of all the members have expired and there are two vacancies on the Northern Board, due to the death of Mr. Schnaittacher, who served for many years as secretary, and to the resignation of Mr. Glass. The Governor is understood to be in favor of spreading his appointments over a wider area instead of selecting them all from the larger cities. He would like to have Sacramento, Fresno and San Jose represented on the Northern Board and Santa Barbara, Pasadena and San Diego on the Southern Board. The principal objection to going so far away from San Francisco and Los Angeles lies in the time and expense involved for the incumbent to attend the meetings. There is no compensation for the work, nor does the State allow expense money except once a year when the two boards hold a joint session. This year the meeting was held in Los Angeles. Next year San Francisco will probably be the objective point.

The Governor realizes that there is considerable work ahead for the two boards and he is giving the appointments careful thought to the end that his selections will result in members who will accomplish the most good. It is a notorious fact that there are all too many self-styled "architectural draftsmen," "designers" and "engineers" now practicing in Cali-

THE RANKS of the architectural profession in California have been seriously depleted since the first of the year in the passing of prominent members. San Francisco, Los Angeles and Sacramento have lost some good men, all of whom stood high in their chosen work. Their passing is a distinct loss to the communities in which they lived and builded their works. So many sudden deaths remind us of how brief and uncertain this life is after all.

NO STRUCTURE erected in San Francisco in recent years has been more generally exploited throughout the country than the new telephone building. Newspapers and technical journals here and abroad have commented most favorably

fornia without certificates. Many of these are anxious to take the examinations, but they hesitate because of an impression that the test is too rigid. Those who have successfully designed and erected buildings under their names, however, need not shy from this examination. If they have any completed work to show and it is of a meritorious character, there is not one chance in a hundred that the board will turn them down.

In view of the fact that it is expensive to secure convictions and in view also of the fact that the State Board has only a limited amount of money to carry on its affairs, the better plan would seem to be for the members to be less drastic in passing candidates. Such a policy would surely result in more applicants for licenses and less evasion of the law.

Since the above was written Governor Richardson has appointed Architect Albert J. Evers to succeed the late Mr. Schnaittacher as secretary of the Board, Northern Division. Both the Governor and Mr. Evers are to be congratulated, for the appointment is ideal and The Architect and Engineer is the more pleased since its editor was taken into the Governor's confidence and his advice sought prior to making this and the forthcoming appointments.

#### *LET US HAVE A COMPETITION*

There is some prospect of a competition for the proposed \$3,500,000 Masonic temple in Oakland. The combined Masonic bodies of the East Bay section are behind the project and a building committee has been appointed headed by Potentate Louis J. Breuner. With such a large expenditure of money as proposed the committee should feel justified in calling for competitive plans from distinguished architects identified with

the Masonic organization throughout the country. This would insure no doubt, some splendid architectural designs and the publicity that would follow such a program would be nation-wide. Oakland would not only be favored with some splendid advertising but the city would be assured of a building that would be a source of civic pride to its citizens.

#### *AUTOMOBILES AND BUILDING*

Brisbane, in his column of April 9th, started something that the entire Construction Industry may feel it incumbent to fight. He says "A good automobile is worth more than a house." Is Brisbane trying to convince the average American to purchase pleasure and defer the establishment of the foundation of our civilization? It's bad doctrine and no one should be more interested in showing its folly than the building industry. Maybe though Brisbane is only joking. You can't always take him seriously. Unquestionably there are some houses being built that we would gladly exchange for our automobile!

Seriously, an automobile is a fine thing but a home is better. The two would seem to form a combination that make for man's happiness supreme—provided he can afford the expense of both. Really when you come to think of it the automobile is a help to building in more ways than one. The great impetus recently achieved by suburban building would not have been possible without automobiles. They have proved a money saving factor in the transportation of materials and they have been a determining factor with owners in building homes remote from the business centers. Large acreages of suburban land have been developed into residence districts because of the convenient access to

town via the privately-owned Lizzie.

According to figures furnished by the Bureau of Industrial Technology the automobile is first among the country's industries with total expenditures of \$14,000,000,000 annually. Construction is in third place with an annual expenditure of \$7,000,000,000.

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#### LOS ANGELES BUILDING CODE

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As part of a program extending over a period of some eight months and designed to raise the standard of building in Los Angeles, the Los Angeles Chamber of Commerce, acting upon the recommendation of its Construction Industries Committee, recently forwarded to the Board of Building and Safety Commissioners three recommendations as to changes in the Los Angeles Building Code. The recommendations are in the following language:

1. Any column base that is less than 12' below the grade at that point shall be anchored to the foundation in an approved manner.

2. Whenever the spans of concrete or steel joists are 15' or more between centers of supports, there shall be provided at least one line of bridging so designed as to be capable of transmitting the shear equal to at least one-half the load of each joist. In case of concrete bridging such bridging ribs shall be reinforced continuously at the top and bottom with steel.

3. No concrete beam in excess of 18" in depth shall have a web of less than 6" in thickness.

In its study of the Building Code the Chamber of Commerce work is in charge of a special committee consisting of C. C. Thomas, vice president of the Dwight P. Robinson Company, as chairman, F. J. Twaits, vice president of the Scofield Engineering Company, Paul E. Jeffers, structural engineer, J. J. Backus, Los Angeles City building inspector, and Edw. W. Cunningham, structural engineer.

In consideration of the particu-

lar questions now offered, the committee called in Prof. R. R. Martel of the California Institute of Technology, who is also secretary of the Southern California Earthquake Protection Council, Mr. C. E. Noerenberg, president of the Los Angeles Building and Safety Commission, Loyal F. Watson, architectural engineer and Mr. William E. Mellema, structural engineer.

The work that has been undertaken by the Chamber's Committee undoubtedly will be of great benefit and the organization is to be encouraged for taking these matters in hand and having for its helpers such representative gentlemen. Their suggestions and advice are certain to prove of great value to the community.

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#### ILLEGAL PRACTICE

*(Monthly Bulletin, Illinois Society of Architects)*

At the March meeting of the Board of Directors of the Illinois Society of Architects, the attention of the Board was again called to the practices of a well-known alleged firm of Chicago architects. The firm is alleged to be composed of four men, all of whom are well connected socially and financially.

It is claimed that only one member of the firm has ever been licensed to practice architecture in the State of Illinois and that this member allowed his license to lapse some years ago. Consequently, it is evident that even if the law permitted an association, such as that referred to, to style themselves architects and to practice architecture with only one member of the firm registered, the fact that the architect member of the firm is not now licensed or registered in the State of Illinois, results in all of the work of this firm since the license lapsed to have been done illegally and contrary to the law of the State of Illinois.

The attention of the Director of the Department of Registration and Education of the State of Illinois has been called to this matter on many occasions, but so far as the Public Action Committee of the Illinois Society of Architects, or its Board of Directors, are advised no action by the State has been taken.

If the Registration Law of Illinois means anything, it should be enforced and it should be enforced against men of wealth and social standing equally as rigidly as against the "flatter." What is the answer?

# With the Architects

Building Reports and Personal Mention

## Pioneer Architect Banqueted

Twenty-five members of the Washington State chapter, A. I. A., at a dinner at the Rainier Club in Seattle last month feted Charles H. Bebb, for 35 years a prominent leader in Washington architecture, in honor of his 70th birthday. Among the hosts were five charter members of the chapter which Mr. Bebb helped found in 1894. These were: G. W. Bullard, Tacoma, the first chapter president; A. J. Russell, Tacoma; George Lawton, James Stephens and Carl Siebrand of Seattle.

Mr. Bebb was the first secretary of the chapter, was re-elected to that office one term and served the chapter four terms as president. In recognition of his services he was made a fellow of the A. I. A. in 1910. In 1914 he became associated with Carl F. Gould, head of the school of architecture at the University of Washington, and the two have continued in partnership under the firm name of Bebb and Gould. Many of the important projects in the Pacific Northwest have been entrusted to the firm with splendid results.

## Washington State Architects

President T. F. Doan of Bellingham presided over the March meeting of the Washington State Society of Architects held in the Arcade Building, Seattle. Forty architects were present, making a record attendance for the year.

Arrangements are being laid for a membership campaign and it is expected that there will be a 100 per cent increase in membership this year.

Secretary Jones has announced that work is well under way on the booklet, "Duties and Services of an Architect," which will be published by the society in the interests of the architectural profession and for the benefit of the building public.

## Architect Baumann Busy

New work in the office of Architect H. C. Baumann, 251 Kearny street San Francisco, includes the following: Three-story brick veneer apartment house, Webster street, south of Green, San Francisco, for Hoffman & McGahey; two buildings containing stores and apartments for Ernest Johnson of San Mateo; \$50,000 apartment house at Fifteenth avenue and Irving street, San Francisco, for Nelson & Marcussen; three-story brick veneer house for Chas. A. Johnson; and two residences in St. Francis Wood.

## S. F. Architectural Club Notes

A banquet for the members of the San Francisco Architectural Club, as well as for members of the profession not belonging to the club, heralded the opening of the new quarters at 523 Pine street, on Monday evening, April 11. There was a big attendance and a good time was had by all.

Now that the Club has reestablished itself, "Art" Janssen has instigated a membership campaign which has promise of big results.

The "Beaux Arts" activity is developing in the Atelier. The members are taking advantage of the new quarters.

The resignation of two active students was necessitated by their leaving San Francisco. Ed. K. McNinch, one of them, is now in Sacramento where he has joined Starks and Flanders, former members of the club, who are now the correspondents for the "Beaux Arts." Fritz Kruger, the other member, has left to join Fred Kramer in New York where he is developing skyscrapers for York & Sawyer.

News from two of our former students has been received lately. Jack Geering, who is employed by the Peruvian Government, developing Peruvian school buildings in that country, has reported that he is thoroughly enjoying his experience in South America. Word has been received from Orin Bullock, who is studying at Harvard, to the effect that his studies there are most advantageous and that he is getting the most out of them.

## New Secretary of State Board

Architect Albert J. Evers of San Francisco, member of the firm of Ashley & Evers, has been appointed by Governor Richardson as a member of the State Board of Architecture, (Northern District) filling a vacancy occasioned by the death of the late Sylvain Schnaittacher, also of San Francisco. The unexpired term for which Architect Evers has been appointed will end May 28, 1927.

## Architect Moves

Architect Edwin J. Symmes, who has had offices for some time with Architect W. C. Hays, in the First National Bank building, San Francisco, has moved to the Shreve building, San Francisco. Mr. Symmes recently awarded contracts for a Masonic Temple to be erected at Park street and Central avenue, Alameda.

### Circular of Advice, A. I. A.

The American Institute of Architects, seeking to maintain a high standard of practice and conduct on the part of its members as a safeguard of the important financial, technical, and aesthetic interests entrusted to them, offers the following advice relative to professional practice:

The profession of architecture calls for men of the highest integrity, business capacity, and artistic ability. The architect is entrusted with financial undertakings in which his honesty of purpose must be above suspicion; he acts as professional advisor to his client and his advice must be absolutely disinterested; he is charged with the exercise of judicial functions as between client and contractor and must act with entire impartiality; he has moral responsibilities to his professional associates and subordinates; finally, he is engaged in a profession which carries with it grave responsibilities to the public. These duties and responsibilities cannot be properly discharged unless his motives, conduct, and abilities are such as to command respect and confidence.

No set of rules can be framed which will particularize all the duties of the architect in his various relations to his client, to contractors, to his professional brethren, and to the public.

### Prizes Awarded in A. I. A. Competition

August Reuling, New York, was awarded the first prize of \$150 in the competition held by the American Institute of Architects for an Historical Device for the Octagon House, Washington, D. C. The second prize of \$100 was awarded to Harold A. Rich, Auburn-dale, Massachusetts, and the third prize of \$50 to J. T. Jacobsen of Philadelphia. Entries in the competition were sent in from various parts of the country, from Massachusetts to California and from British Columbia to Florida.

### Large Piedmont Residence

Architects Newsom, Newsom & Newsom, 14 Montgomery street, San Francisco, have completed plans for a fine large residence to be built on Seaview avenue, Piedmont, for M. E. Hills, of Hills Brothers. The grounds are to be laid out in elaborate style with swimming pool, summer house, sunken gardens, etc. A feature of the house will be a pipe organ.

### Six-Story Apartment House

Architect A. H. Knoll, of San Francisco, is preparing plans for a six-story steel frame Class C concrete apartment house to be erected on the southeast corner of Geary street and 31st avenue, San Francisco, at an estimated cost of \$140,000.

### Architect Building New Home

Architect Clarence A. Tantau has let a contract for a new home for himself to be built on the Tunnel Road, Berkeley. It will be of the Spanish type of architecture.

## OBITUARY

### Passing of Architect Herold

The death of Architect Rudolph A. Herold of Sacramento occurred suddenly April 13th in a San Francisco hospital. Mr. Herold died of malignant spinal meningitis. He enjoyed his usual good health up to 24 hours before he was stricken. Mr. Herold's last work was just beginning to show signs of completion—the million dollar Providence hospital under construction in Oakland. For some time Mr. Herold had contemplated moving his office to San Francisco where he was first engaged in the practice of his profession before settling in Sacramento.

While a resident of the latter city he designed a majority of the public buildings in addition to many of the more pretentious commercial structures. The public buildings include the Sacramento County courthouse, city hall, Sacramento county jail, the old high school at Eighteenth and K streets, now the Sutter Junior High School and the new county hospital.

Mr. Herold was architect of the Forum building of which he was part owner, the Capital National Bank building, the Masonic Temple and the Tehama County jail, in addition to many other structures.

Mr. Herold was a member of the Sacramento Lodge of Elks, Tehama Lodge of Masons and the Sutter Club. He was also a member of the San Francisco Chapter of the American Institute of Architects and was a director and past president of the Sacramento Architects' and Engineers' Club.

He was a native of California and was 54 years of age.

The surviving relatives include two brothers, P. J. Herold, formerly of Sacramento, but more recently of San Francisco, and Eugene Herold of Lincoln, and a sister, Mrs. Tillie Gustavson of Sacramento.

### Matthew O'Brien

Another death in the ranks of San Francisco architects occurred April 25 when Matthew O'Brien passed away at his home in Pleasanton, Alameda County. Mr. O'Brien had been in poor health for more than a year. He was able to be around, however, up to within a few days of his death. He contracted influenza which terminated in a fatal attack of lung congestion. Mr. O'Brien was at one time senior member of the firm of O'Brien and Werner, and under this partnership many notable buildings were designed and erected following the San Francisco earthquake and fire. Theatres designed by the firm include the Hippodrome and Tivoli.

Some years ago the firm dissolved

partnership and the two members continued to practice independently. Mr. O'Brien was 55 years of age. He was a member of the San Francisco Chapter, American Institute of Architects. Raising thoroughbred horses was his hobby, and at the time of his death he owned a one-third interest in the Pleasanton race track.

#### Alfred Dwight Foster Hamlin

Professor Hamlin, long associated with the School of Architecture at Columbia University, was accidentally killed by an automobile while crossing Riverside Drive, New York, on the night of March 21st.

Professor Hamlin was born in Constantinople, September 5th, 1855, a son of Rev. Dr. Cyrus Hamlin who was president and one of the founders of Robert College. Professor Hamlin graduated from Amherst College in 1875 and later studied architecture at the Massachusetts Institute of Technology and at L'Ecole des Beaux Arts, Paris. His entire educational career was identified with Columbia University.

#### Adolph Wegner

Adolph Wegner, well-known contractor of San Francisco and the bay cities, died suddenly of heart failure at his home, 3136 College avenue, Berkeley, April 28th.

Mr. Wegner, who was 67 years old, came to the bay district from New York in 1906 so supervise the construction of the Hotel St. Francis. He was also superintendent of construction of many other large buildings in San Francisco.

#### Beach Cottage Competition

The Frank Meline Company of Los Angeles has published in attractive book containing a series of drawings chosen from a large number that were submitted in the recent Beach Cottage competition.

The purpose of the competition was to stimulate interest in the better designing of that type of dwelling, to insure a high standard of quality in the architectural development of Pierpont Bay, and to encourage skilled training among the younger members of the architectural profession.

The Southern California Chapter of the American Institute of Architects approved the competition as to form and considered it to be of educational value. Mr. Carleton Monroe Winslow, prepared the program for the competition and acted as consultant.

## P E R S O N A L

Architect Edwin Bergstrom of Los Angeles has been appointed a member of the national board of directors of the American Institute of Architects to fill the vacancy caused by the death of Sylvain Schnaittacher of San Francisco. The appointment was made on recommendation of the San Francisco Chapter. Mr. Bergstrom was a national director of the A. I. A. from 1921 to 1924.

Architect Chas. Peter Weeks of Weeks & Day, San Francisco, has returned from El Paso, Texas, much improved in health.

Architect Martin Schacht, 1101 Yeon building, Portland, has become Pacific Coast manager of the Foundation Company of New York, with headquarters in San Francisco.

Architect Edwin J. Ivey, A. I. A., Pacific Block, Seattle, has returned from Europe, where for 14 months he has toured and studied in Italy, France and England.

Architect G. A. Pehrson of Spokane is designing a scenic country home for Louis M. Davenport, owner of the Davenport Hotel. The home will be built on the banks of the Little Spokane river about nine miles north of the city.

William L. Smith, formerly of the firm Smith & Griffiths, 401 Gerlinger building, Portland, has announced that their partnership of 12 years standing has been dissolved. Mr. Smith has established an office at 613 Henry building.

Architect Louis Svarz, Seattle, has moved from the First National Bank building to offices in a new building which he designed at 719 Second avenue.

Architect Chandler C. Cohagen, of Billings, Montana, has been appointed state deputy of the Grand Council of the De Molay of Montana.

Architect R. E. Williams, who has been associated with Architect R. F. Train for the last twenty-six years in the practice of architecture in Los Angeles, has been advised by his oculist to give his eyes a rest for a time, and temporarily he will engage in another line of business. Mr. Williams and three associates have acquired and will operate the Glacier Lodge, a splendid hunting and fishing resort near Big Pine, California. The architectural business will be continued by Mr. Train under the old firm name, Train & Williams, at 277 Western Mutual Life building.

Ivan C. Satterlee, Stockton architect has been conducting all inspections made by the office of the Stockton city build-

ing inspector, while the latter is engaged in framing a building code for the Pacific Building Officials.

Architect C. F. W. Lundberg, Provident building, Tacoma, has taken into partnership his former draughtsman, Mr. Ekvall and the firm name will hereafter be known as Lundberg and Ekvall.

Architect Paul J. Duncan announces opening an office for the practice of architecture at 730 Pacific National Bank building, Los Angeles. Mr. Duncan will be pleased to receive trade literature, catalogues, etc.

Architect A. E. Doyle of Portland, has moved his offices from the Worcester building to the tenth floor of the newly completed Pacific building, that city.

L. G. Ling of Billings, Mont., recognized as one of the leading architects of the West, has associated himself with George M. Rasque of Spokane and will move his family to Spokane as soon as arrangements can be made. Mr. Ling will retain his office in Billings as a branch.

Mr. Arthur S. Bugbee and Schirmer-Bugbee Co., architects, announce the removal of their San Francisco office to the Holbrook building, 58 Sutter street.

Architects Roger B. Sturges and A. Burnside Sturges, announce the removal of their offices from 331½ S. Western avenue to suite 216 Harth building, Los Angeles.

#### Berkeley Odd Fellows Building

Architect James W. Placheck of Berkeley has awarded contracts for the erection of a three-story Class C store and lodge building for the Independent Order of Odd Fellows on the northwest corner of Bancroft Way and Fulton street, Berkeley. The total cost of the building will be in the neighborhood of \$150,000.

#### Niles Building

Architects Wythe, Blaine & Olson, of Oakland, have let contracts for a two-story reinforced concrete and brick store, office and apartment building at Niles, Alameda County, for E. A. Ellsworth. The total cost of the structure will amount to about \$40,000.

#### Designing Concrete Warehouse

Engineer John D. Galloway, First National Bank building, San Francisco, is preparing plans for a reinforced concrete warehouse to be built in Sacramento, for Blake, Moffitt & Towne.

#### Elks Building, Fresno

Plans have been approved for a \$200,000 Elks building at Fresno. The architects are Ernest J. Kump & Company.

**Not Favorably Impressed with Florida**  
Architect Chas. Edward Hodges, formerly of San Francisco, who deserted New York a while back to join the pilgrimage to Florida, has returned to the Eastern metropolis, and in a letter to *The Architect and Engineer* says he is mighty glad to be back in New York City where building is very brisk. To quote from his letter anent the Florida situation, climate, etc.:

"The inflation of prices, combined with the embargo, and propaganda, has temporarily set Florida back. I was amused at the query of how California compared with Florida. There cannot be any comparison, as the latter is purely tropical flat country, while California is grand in its mountains and valley scenery, and the Western man is liked throughout the country. Some day I hope to be out there again.

"By the bye, the climate of Florida, certainly does not come up to the climate of California."

#### Granted Certificates

At the regular monthly meeting of the State Board of Architecture, Northern Division, held April 27th, the following were granted a certificate to practice architecture in California: Nathan O. Larson, 240 Wildwood avenue, Piedmont; Lazer L. Nusbaum, 1270 California street, San Francisco; and John B. McCool, 1304 Bernal avenue, Burlingame.

#### Los Angeles Loft Building

Architects Ashley & Evers, 58 Sutter street, San Francisco, are preparing plans for an eight-story Class A store and loft building to be erected on South Flower street, between Seventh and Eighth streets, Los Angeles, for the Parmalee-Dohrmann Company, at an estimated cost of \$400,000.

#### Berkeley Favors Skyscrapers

By a vote of five to three, the Berkeley city council adopted a resolution setting that body on record as opposed to any ordinance that would limit heights of buildings to less than the existing law of one and one-half times the width of the street. The Berkeley Realty Board was also opposed to the proposed measure.

#### Oakland Baby Hospital

Plans have been completed by Architect E. W. Cannon, 1924 Broadway, Oakland, for a two-story steel frame and brick baby hospital at 51st and Dover streets, Oakland, for the Baby Hospital Association of Alameda County. The estimated cost of the structure is \$250,000.

#### Princeton School of Architecture

Two competitive prizes of eight hundred dollars each, in the School of Architecture, Princeton University, are announced for the year 1926-1927. The winners are exempt from tuition fees.

### Apathy Wins Again

The splendid scheme for our Civic Center, designed by the Allied Architects' Association, is never to be realized. Our city council, headed by the mayor says so, in spite of advice to the contrary by every authority on traffic and city plan in the United States. The new city hall is being placed practically in the center of the proposed central esplanade of the Allied scheme which will block forever the realization of any really great solution for this our greatest civic project. Seventeen percent of the voters in Los Angeles elected the mayor and council.

The foundations will be set and the steel frame designed for the proposed great tower of the city hall, at an added cost of thousands of dollars to support the additional weight of the tower. The city council has no legal right to authorize this expenditure until such time as the charter provision limiting the height of buildings is set aside by vote of the people. It is doubtful as to whether the people will vote to allow the council to be the first to break its own charter. If the council, by a negative vote at the next election is not allowed to build the tower to the additional height, the steel and the foundations built in to support it will be like the miser's buried treasure: thousands of dollars where no one can use it. The architects will also be paid an additional fee for redesigning that portion of the building effected by the elimination of the tower. Worse than all this is the building of the city hall without the adoption of a Civic Center plan.

### Dominican College Dormitory

Architect Albert M. Cauldwell, 251 Kearny street, San Francisco, has been commissioned to prepare plans for a three-story dormitory for Dominican College at San Rafael. It will have accommodations for seventy pupils. The estimated cost is \$75,000.

### Pacific Avenue Residence

Plans have been prepared by Architect Henry H. Gutterson, 526 Powell street, San Francisco, for a two-story and basement frame residence and garage to be built on Pacific avenue near Lyon street, San Francisco, at a cost of \$50,000. The owner is Louis Sloss, Jr.

### U. S. Veteran's Hospital

Plans are being figured and bids will be opened June 21st, for the construction of several new buildings at the U. S. Veteran's Hospital, Menlo Park. The total estimated cost of the improvements is \$800,000.

### IN MEMORIAM

The passing of Sylvain Schnaittacher has deprived us of one who served the State of California as a member and officer of this Board, since nineteen hundred and ten, and one who, by reason of personal distinction and achievement, lent dignity to the Board's proceedings, and earned respect for the profession of architecture. His steadfastness and genial nature endeared him to his associates, and gained for him enduring friendship.

Therefore, the California State Board of Architecture hereby records its high appreciation of his memory and expresses its heartfelt sorrow for his loss, and sincerest sympathy to his family and professional associates in their bereavement.

Signed,

California State Board of Architecture.  
Northern District: Southern District:  
Clarence R. Ward W. J. Dodd  
James R. Miller Myron Hunt  
John J. Donovan William H. Wheeler  
A. M. Edelman  
John Parkinson

### Court Decision—Sufficiency of Performance

Where plans are required for building not to cost more than certain sum, or accepted on condition that it can be erected for given amount, architect cannot recover for services, unless building can be erected for such a sum, or increased cost is due to special circumstances or change of plans by owner—211 N. Y. S. 788.

### Los Angeles Office Building

A twelve-story Class A office building is to be built on Olive street, between Sixth and Seventh streets, Los Angeles, for W. W. Paden and Associates. The architect is Roy L. Smith, City Club building, Los Angeles.

### Le Brun Scholarship Awarded

William Ferrari has recently been awarded the Le Brun Traveling Scholarship. Mr. Ferrari is twenty-five years old and at present is in the office of James Gamble Rogers in New York.

### Designing State Building

Architect Stanley Smith of the State College, Pullman, Washington, is designing the new \$150,000 women's dormitory to be erected on the campus of the Washington State College.

### New Seattle Theatre

The Orpheum Theatre Circuit will spend \$1,500,000 in building an eight-story Class A theatre and office building in Seattle, from plans by Architect B. Marcus Priteca.

# With the Engineers

## Corrosion and How to Meet It

By FRED W. KOLB

**T**HE peculiar thing about corrosion by liquids is that in many cases it is inversely proportional to the concentration of the corrosive. For example concentrated sulphuric acid can be handled very satisfactorily in steel drums and cast or wrought iron pipe, but a half per cent solution will dissolve iron or steel in a few hours. Then, too, acids and chemicals which are harmless to the human organism, such as vinegar, fruit juices, bath salts, etc., will rapidly corrode iron, copper and brass.

Unfortunately, these dilute solutions and harmless acids are the ones which must be handled in drain lines.

In chemistry laboratories of high schools, colleges, hospitals and industrial plants, where chemicals are being constantly thrown into the drainage system, the need for corrosion resisting material has been apparent. Attention has not been directed, however, to the cause of the frequent replacements and repairs necessary in hotels, clubs, office buildings, apartment houses and even residences. Here we have grease, chemical solvents for the grease, dishwashing compounds, fruit acids, vinegar, cleaning fluids and many other corrosives thrown into the drain system which singly or collectively soon disintegrate the ordinary drain line materials. The failure and replacement of at least a portion of the drainage system has been considered a necessary evil because the cause and its remedy have not been known.

In an investigation of a large number of chemical laboratories, it was found that the average life of the various parts of the drainage system was as follows:

Sink outlets and traps, less than two years. Horizontal pipe lines, up to five years. Vertical pipe lines, not over ten years.

From this it is very evident that the sink outlets and traps, especially, and the horizontal lines, if possible, should be of a material positively known to be resistant to the widest range of corrosive action.

Many materials have been tried for this work, among which are tile, lead, brass, cast iron, enamel-lined iron, rubber and ferro-silicon alloys.

Tile pipe, though very cheap, requires great care for installation and it is almost impossible to maintain tight joints. It is resistant to corrosion so long as the

glaze is in perfect condition, but rapidly disintegrates where there is the slightest imperfection in the glaze. To encase it in concrete merely postpones the evidence of failure—since the concrete itself is rapidly disintegrated by any acid, and will not prevent leakage through the pipe or at the joints.

Cast iron is more resistant to acid action than wrought iron or steel, but is rapidly attacked by practically all acids except strong sulphuric.

Lead, if "chemical lead," is very resistant to some acids. Unfortunately, the chemical lead is very expensive, and the ordinary lead pipe used disintegrates wherever there are segregations of impurities. Besides it is soft, requires more elaborate supports, and is easily punctured by sharp objects. It should never be used with nitric, strong sulphuric, muriatic or acetic acids, iron chloride and many other common corrosives. When used for dilute sulphuric, the joints should be burned and not wiped—since the spelter in a wiped joint is more rapidly attacked by the acid than the lead.

Brass and copper are so rapidly attacked by almost all acids that they are not to be considered.

Enamel-lined iron is expensive, cannot be cut to lengths on the job, and must be made to order for each particular job, in order that an enamel may be furnished to resist the particular acid condition. Ordinary bathtub enamel contains lead oxide which is readily etched even by lemon juice.

Hard rubber is used ordinarily for muriatic acid only. It is brittle and must be ordered to exact length.

The material which most nearly approaches the ideal for handling all acid waste is a ferrosilicon alloy or "high silicon iron." The composition of such iron is usually from 12 to 15 per cent silicon with carbon, manganese, sulphur and phosphorus present in small amounts, the remainder being iron. The presence of any elements besides silicon and iron decreases the acid resistance to a marked degree. Below 14 per cent silicon there is a very rapid increase in rate of corrosion and if the decrease in silicon content is accompanied by even a slight increase in carbon the rate of corrosion may be several hundred times as great.

This fact is very emphatically shown by corrosion tests made by the U. S. Bureau of Mines and the Carnegie Institute of Technology, under actual working conditions in acid mine water containing from one-quarter to one and one-half per cent acidity. Three samples of each product were used in each of the three mines:

<b>IMMERSED IN RUNNING MINE WATER OF 1.136% TOTAL ACIDITY</b>	
Average loss on samples Containing 13-14% Silicon, 1.3% graphite or carbon 2.72 mg. per sq. cm. or 18.97% in 119 days	Average loss on samples Containing 14-14.5% Silicon, 0.2- 0.6% carbon 0.00037 mg. per sq. cm. or 0.013% in 119 days
<b>IMMERSED IN RUNNING MINE WATER OF 1.416% TOTAL ACIDITY</b>	
Average loss on samples Containing 13-14% Silicon, 1.3% graphite or carbon 4.89 mg. per sq. cm. or 12.12% in 102 days	Average loss on samples Containing 14-14.5% Silicon, 0.2- 0.6% carbon 0.00374 mg. per sq. cm. or 0.027% in 135 days
<b>IMMERSED IN RUNNING MINE WATER OF 0.2950% TOTAL ACIDITY</b>	
Average loss on samples Containing 13-14% Silicon, 1.3% graphite or carbon 2.22 mg. per sq. cm. or 13.12% in 98 days	Average loss on samples Containing 14-14.5% Silicon, 0.2- 0.6% carbon 0.0022 mg. per sq. cm. or 0.0102% in 98 days

It is evident that close control must be exercised in order to maintain the proper quantities of silicon and carbon. Such control adds to the cost of manufacture, but having decided to install high-silicon iron for permanence, the additional cost of the best (the labor cost being the same) is scarcely noticeable in comparison to the great difference in resisting qualities.

Therefore, specifications should require a high silicon iron with a minimum silicon content of 14 per cent and a maximum carbon content of 0.80 per cent, and the analysis should be made on pieces of commercial castings—not on samples, as these are sometimes made by a different method.

Duriron, as manufactured by the Duriron Company, comes well within the specification above given, and is guaranteed against failure from corrosion for a period of twenty years.

#### Oakland Suffers Hillside Slide

Conditions at the Lerida avenue hillside slide zone in Oakland became more critical after the heavy rains in April, according to a statement issued by Chester Hunt, special engineer for the Oakland City Council, who was named to investigate and devise some means of stopping the catastrophe. Hunt declared that unless the zone can be dried out and kept dry every one of forty-three houses in the area will face destruction by the slowly moving mass which is crushing foundations and moving the houses down the hill at the rate of from two to five inches a day.

Hunt declared that the consistency of the surface soil of the hillside had at the time he made his report, the middle of April, become semi-liquid in nature and was a flowing "mass of ooze." The moving hillside was exerting a pressure of ninety tons to every lineal foot, he said, and is so powerful, with a leverage of its eighteen-foot depth, that it was impossible to stop the slide by driving piles or building rip-rap walls.

Engineer Hunt will attempt to tunnel into the hillside to the base of a strata of serpentine shale which rests on a two-inch strata of water. These two stratas, he said, are the real cause of the slide. The water accumulates by seepage from the surface and by the flow of underground springs.

#### Patent on Slab Design

L. A. Perry, construction engineer for the Longview company, has been advised by patent attorneys in San Francisco that his application for patents covering the hexagonal slab design of concrete pavement has been granted by the U. S. patent office in Washington, D. C. This type of pavement construction underwent a test at Longview a few months ago and was declared to be stronger than the square and rectangular types, according to engineers. It has been used in Longview for two years.

Mr. Perry's design has been one of the most widely discussed engineering developments in the country in recent years and 12 national and local technical publications have carried illustrated articles describing the new feature. Mr. Perry has made no plans for marketing the invention. Associated with him in is H. O. Root, engineer, formerly of Longview but now of Los Angeles.

#### Pay Engineer What He's Worth!

Engineers as a class receive inadequate compensation for service rendered. Engineers themselves are more and more recognizing this fact and now comes their traditional arch-enemy, the contractor, to their support.

This writer within the last three months twice has heard pre-eminent leaders of influential contractors organizations denounce low salaries for engineers holding public office of responsibility. In each instance it was suggested that legislation be introduced providing for greater pay for such engineers.

When contractors of their own free will take up the interests of the engineer and actively seek to aid the engineer in raising himself from the underpaid category, then the millennium is just over the horizon. And that is just what has

been done by the A. G. C., at the national convention at Portland, and the Public Works Contractors Association of Washington.

Too much has been said of the romance, adventure, glory and poetry of engineering and altogether too little of the prose, hard work and low pay. May the contractors help to substantially advance the interests of engineers in the Pacific Northwest!

If engineers, contractors and all other elements of the industry will make a united effort to educate the public to the actual dollars-and-cents angle of engineering, results will be forthcoming.—Pacific Builder and Engineer.

#### San Francisco Contractor Sues

Howard S. Williams, San Francisco contractor, has commenced an action in the Superior Court at Nevada City against the Grass Valley High School District, A. Abrahams, C. A. Moorehouse, William Ducotey, Albert Crase and John Mulroy, as trustees, for the recovery of \$5108 and interest from March 3, 1926.

The complaint alleges that on April 28, 1922, the plaintiff entered into a contract with the Grass Valley High School district and its then board of trustees, by which the plaintiff agreed to construct the high school building at Grass Valley for the sum of \$79,724.

That the plaintiff constructed the building in accordance with his contract and during construction work the trustees required plaintiff to make certain deviations, alterations and additions to the building which were of the reasonable value of \$2034, no part of which has been paid.

The building was completed and accepted on March 5, 1923. The complaint further alleges that the plaintiff performed his contract and that he has received from time to time the sum of \$76,650, and that a balance of \$3074 is due.

#### New Paint Service

The growing importance of aluminum paint as an interior and exterior paint in factories, mills and foundries has aroused considerable interest among architects. While specifications for this new paint are to be found in standard reference books, those who seek further information are invited to communicate with the Research Bureau of Aluminum Company of America at New Kensington, Pa.

Here tests of various uses and mixtures are constantly in progress. The Bureau will be glad to co-operate with architects and specification men by sharing the results of its tests and discoveries.

## BOOK REVIEWS

*Edited by*

CHARLES PETER WEEKS

**Brickwork in Italy.** A Brief Review from Ancient to Modern Times. American Face Brick Association, Chicago.

To find a book so pleasing to glance through, so satisfying to study and so easy for reference is a real delight. It is compiled with much forethought for its enjoyment and usefulness. It is most profusely illustrated by charming water color sketches by Maria Barossa, by diagrams, and by a host of well selected and clearly reproduced photographs, all of which give a very graphic story of the use of brick in all types of Italian buildings from ancient to modern times. Some of the pictures are of very familiar buildings, and others, of equal beauty, are of almost unknown works. In fact, one need hardly read the text to sense the changes in the uses of brick during the passing centuries.

The text is in the form of four articles, two each by the Italian scholars Professor Carlo Roccatelli and Professor Enrico Verdozzi, taking up the use of brick in Ancient, Medieval, Renaissance, and contemporary work respectively. These give in an interesting and concise manner not only a comprehensive survey of the subject but also an immense amount of detailed information, which would undoubtedly be of great interest to the traveler and the general reader, as well as to the architect and student.

GERTRUDE COMFORT MORROW.

#### San Francisco Joins A. G. C.

The entrance of the San Francisco contractors to the A. G. C. on March 17th, is a matter of sincere congratulation here as it makes an unbroken A. G. C. front from Los Angeles to Seattle in the important cities. The high virility of the Pacific Coast Chapters is strengthened by the last acquisition, the San Francisco group even when standing alone, having been for years an exceedingly influential organization. "San Francisco knows how," said William Howard Taft. They have been exceedingly good neighbors, their joining the fold will give us all added strength in a common cause.—The Constructor for April, 1926.

#### Built Defective Grand Stand

Paul F. Mahoney, who built the grandstand at Pasadena which collapsed on last New Year's Day, causing death to ten persons and injury to 200, was found guilty of manslaughter by a jury in the superior court. Mahoney was sentenced to serve one to 10 years in San Quentin prison.

## True Colloidal Paints

By SAMUEL CABOT

IT is well known that paints, especially those intended for outdoor use, must largely be made of a drying oil of good quality as a fixative, and substantially chemically inert pigments. It is a characteristic that the fixative and pigment have little or no affinity for each other and, therefore, tend to separate.

We all have had the experience of laboriously stirring the pigment back into a can of paint after it had settled out and realize how difficult it is to keep the product uniformly mixed.

On newly painted surfaces, separation can often be detected by the eye and even where it is not visible, it is shown by the change in color.

On porous materials such as wood, brick, concrete or plaster, the oil penetrates the pores and leaves the pigment. This filtering out process tends to leave spots of light colored pigment containing little fixative oil. It also produces a plane of cleavage at the surface. One side of this plane will be surface plus fixative; the other, pigment plus a small amount of fixative. These conditions are, to a large degree, responsible for defects such as chalking, dusting, spotting, and peeling.

It has been realized for some time that if the pigment could be more finely divided, it would be improved in tinting power, would penetrate more deeply into the surface pores and would settle less rapidly. Improvements in grinding have resulted, but even the high speed, so-called colloid mills have had only limited success as the pigment particles have a tendency to clump together and settle out, the size of the clumps varying with the different fixative media employed.

The problem is not primarily a mechanical one at all, but physical and chemical. We have approached it by avoiding the usual method of disintegrating such as crushing and wiping. Crushing and wiping tend to squeeze particles together as well as to break them apart.

Our method is to pull the agglomerated particles apart by direct disruptive force. This is repeated many times and the ultimately fine particles are coated over with minute membranes which tend to prevent them from clinging together. At the same time they receive a negative electric charge. Being sub-microscopic and having all the same charge, they are mutually repellent, and have an oscillating motion known as the Brownian movement. The pigment is in what is called colloidal solution in the fixative. The particles are, most of them, invisible to the ordinary microscope. The machine

that does the work is of very low speed but considerable power.

The resulting material differs from ordinary paints in that there is practically no tendency for the pigment and vehicle to separate. Filtering or centrifuging can only separate the coarser particles.

In thin films, or when greatly diluted in solvents such as turpentine or water white coal tar distillates, the colors are transparent, in striking contrast to the muddy effect with ordinary paints. Whites appear opalescent; reds wine-like; yellows like syrups; browns like caramel, and blacks like thinned out inks, etc.

Since the pigment does not pack, brush marks are obliterated. There is such an enormous surface of pigment in contact with the fixative that the tinting power is much increased and the color is enhanced in brilliance and beauty.

The solid particles are dragged into the pores of the surface by the capillary action on the oil, thus acting as a very remarkable primer.

Spotting is eliminated and peeling is prevented as there is no apparent plane of cleavage, the pigment being carried into the pores as well as the fixative.

Improvements are being made almost daily. Impurities injurious to the colloidal condition have to be avoided, a small percentage of which would coagulate the pigments, producing a condition of precipitation very much like ordinary paint.

Pure pigments seem to give the best results. The impurities being much more difficult to bring into colloidal solution.

Each color requires its own peculiar technique and chemical medicines to keep it from throwing back to the ordinary suspension type.

Fineness of the particles varies through practically the whole colloid range.

It must be understood that though the Brownian movement retards the settling of the particles enormously, they ultimately settle, however, to some extent.

I have taken pigments that normally settle in half an hour and disintegrated them to such fineness that about half had settled in twenty months. This colloidal type of settling is very much more bulky than ordinary settling (about five times) and the pigment goes back into colloidal solution by merely reversing the container.

The result of this new process which has been in manufacture for about a year, in increased convenience, usefulness, brilliance, and durability of product, have so far fully kept up with expectations.

### Iron and Steel Well Preserved

The most important, if not the only, survey of the condition of the metal framework of a large building after more than three decades of service, has been published by the American Institute of Steel Construction in a booklet entitled "Madison Square Garden, One of New York's Architectural Landmarks."

The survey was made during and following demolition by Frank W. Skinner, Consulting Engineer of New York City, and thoroughly covers the condition of the structural iron and steel in the old Madison Square Garden. Mr. Skinner's investigations show that all of the structural iron and steel, with the exception of a relatively small proportion under special and unusual conditions in the main tower, was found in a perfect state of preservation.

This, it is pointed out, is all the more significant because of the fact that little or no care had apparently been taken for the maintenance of the framework. None of it had been protected except where it happened to be enclosed or partly enclosed in the brickwork or floor slabs. There was little evidence of periodical painting except in the case of the columns and other metal exposed in the balconies.

Indicating as it does, that with proper maintenance a building with a structural steel frame may be expected to endure for an indefinite period, the survey will be of particular interest to students in the technical schools, municipal officials, and to all whose work brings them in contact with building construction. A history of the building, one of the most famous in the world, and a brief account of the outstanding events with which it was associated during its life of more than 35 years, add to the interest of the booklet as a whole.

Copies of the booklet may be obtained from the executive offices of the American Institute of Steel Construction at 285 Madison Avenue, New York City.

### New San Francisco Manager

Mr. Paul W. Beggs has resigned the management of the San Francisco office of Warren-Webster & Company and is succeeded by Mr. Lucien J. White. The company's offices are in the Sharon building. Recent Webster installations include the Pacific Telephone & Telegraph building, Pacific Gas & Electric building, Hills Brothers factory and the Elks Club building, all in San Francisco. Webster systems are also being installed in the United Bank building, Elks Club and Highland Hospital, Oakland.

Statement of the ownership, Management, Circulation, Etc., Required by the Act of Congress of August 24, 1912.

Of THE ARCHITECT AND ENGINEER, published monthly at San Francisco, California, for April 1st, 1926.

State of California,

City and County of San Francisco

Before me, a Notary Public in and for the State and county aforesaid, personally appeared W. J. L. Kierulff, who, having been duly sworn according to law, deposes and says that he is the business manager of THE ARCHITECT AND ENGINEER, Inc., and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Name of	Post Office Address
Publisher, The Architect and Engineer, Inc.,	68 Post St., San Francisco.
Editor, Fred'k. W. Jones,	68 Post St., San Francisco.
Managing Editor—None.	
Business Manager, W. J. L. Kierulff,	68 Post St., San Francisco.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock.)

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5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is — (This information is required from daily publications only.)

W. J. L. KIERULFF, President,

Sworn to and subscribed before me this 23rd day of March, 1926.

MARY D. F. HUDSON

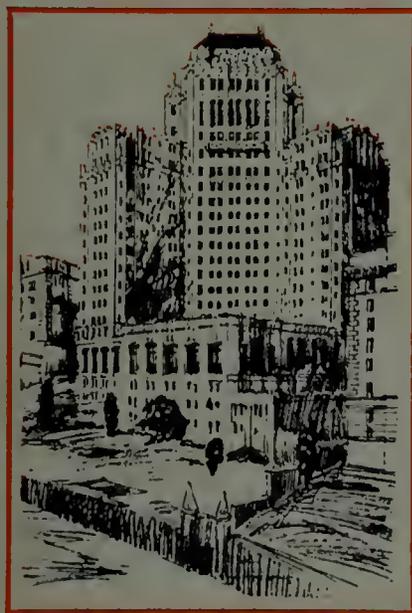
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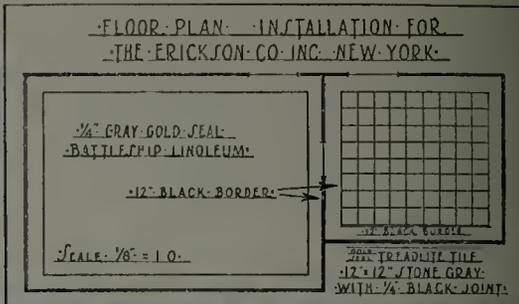
*Recent Work of A. C. Martin, Architect*

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JUNE 1926

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The Architect and Engineer  
June, 1926

ST. VINCENT CHURCH, LOS ANGELES  
ALBERT C. MARTIN, ARCHITECT

# THE ARCHITECT AND ENGINEER

JUNE  
1926

Vol. LXXXV  
No. 3



## Recent Work of Albert C. Martin, Architect

By FREDERICK HAMILTON

**S**INCE the days of the old Padres and the Missions, the story of California has been a colorful chapter in American history. Throughout all time the architectural development of a community has been a true expression of its pulse. In California this development has been expressed in a freedom of style and display of originality that has not been evidenced in any other part of the country.

One of the architects identified with this development and contributing largely to it is Albert C. Martin, of Los Angeles. Coming here almost directly from his eastern college training he has built up a clientele from all walks in life and has never specialized in any one type of building.

Of exceptional interest at this time is the new Los Angeles City Hall, which is being executed in company with Messrs. John Parkinson and John C. Austin, both of the Southern California metropolis. In studying this project it seemed that a lofty and monumental tower was logical expression, indicating the aims and ideals of Los Angeles. This made a condition contrary to the local Building Code and necessitated a special vote of the citizens. The overwhelming manner in which this vote carried indicated the spirit of progress which is foremost in the minds of the people.

St. Vincent Church, pictured in detail, presented an unusual architectural opportunity. From the beginning of the study of this project, it seemed that the only true expression for it was in the Spanish Colonial style handed down by founders of the community. In order to more faithfully develop this style an immense amount of research work was done and a trip into Mexico permitted a close-up inspection of Spanish architecture there.

True the exterior ornamentation in Bedford stone presents at the



ST. VINCENT CHURCH, LOS ANGELES  
Albert C. Martin, Architect

present time a somewhat foreign note to the warmth of California, but a few years in California's well known sunshine and the development of the Palm and Cactus planting which has been effectively done around this building, should make it appear as if it had grown from a seed dropped by one of the old Spanish Padres.

The building illustrated for the Franciscan Sisters is merely one unit of quite a comprehensive future group. The location is on a



NORTH ENTRANCE, ST. VINCENT CHURCH, LOS ANGELES  
 Albert C. Martin, Architect

commanding hilltop which overlooks the entire city and provides an excellent site and superb view of the country.

The Theatre building for the West Coast Theatres, Inc., is their largest outlying amusement house in Los Angeles and in connection with which are located the offices of this growing organization whose activities extend over the entire State.

In choosing material from such a varied practice for publication



GARDEN VIEW, ST. VINCENT CHURCH, LOS ANGELES  
ALBERT C. MARTIN, ARCHITECT



NAVE, ST. VINCENT CHURCH, LOS ANGELES  
ALBERT C. MARTIN, ARCHITECT



ST. VINCENT CHURCH, LOS ANGELES  
ALBERT C. MARTIN, ARCHITECT



STAIR TO CHOIR, ST. VINCENT CHURCH, LOS ANGELES  
Albert C. Martin, Architect

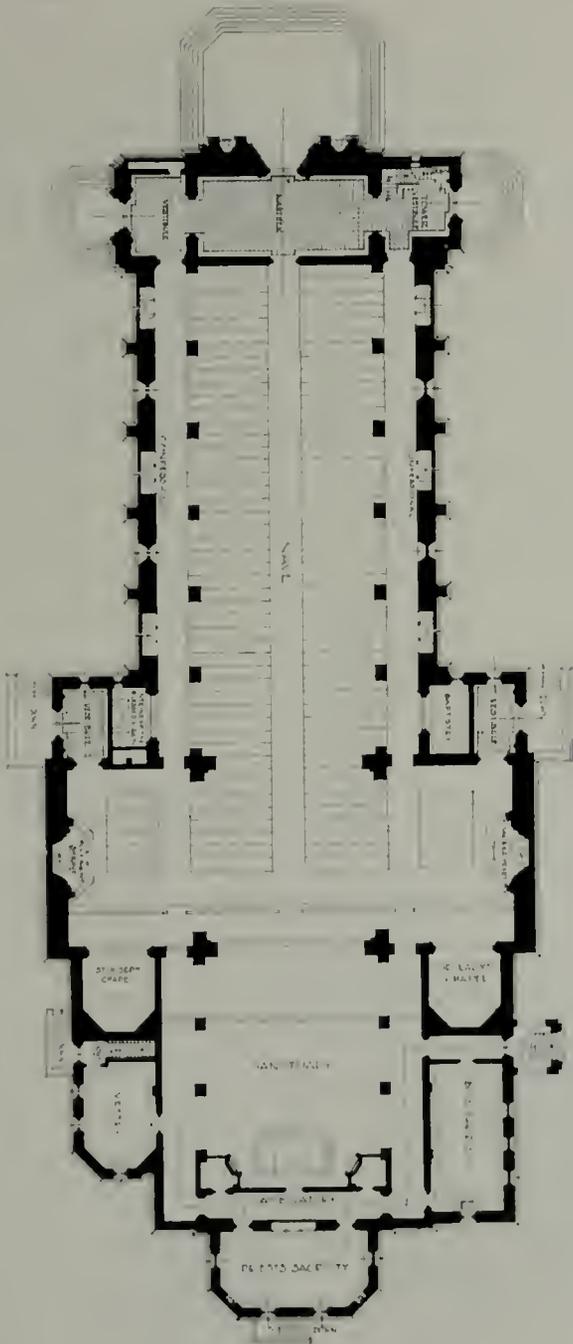
of this sort it is difficult to know just what would most appeal to the readers. The office has executed a great deal of industrial work which is not particularly interesting pictorially but is a sort of work which contributes a great deal to the back bone and future of Los Angeles. Mr. Martin's office maintains a complete engineering department in both structural and mechanical work, keeping pace with the development of Los Angeles and its environs.



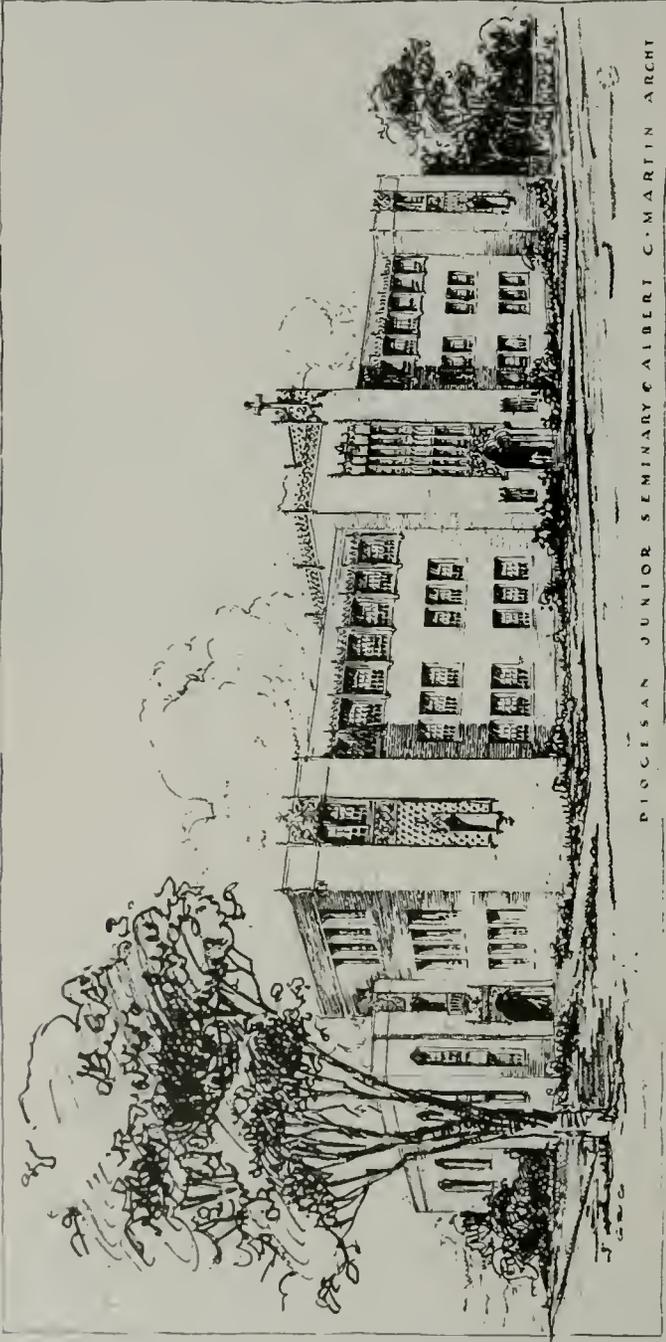
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Albert C. Martin, Architect



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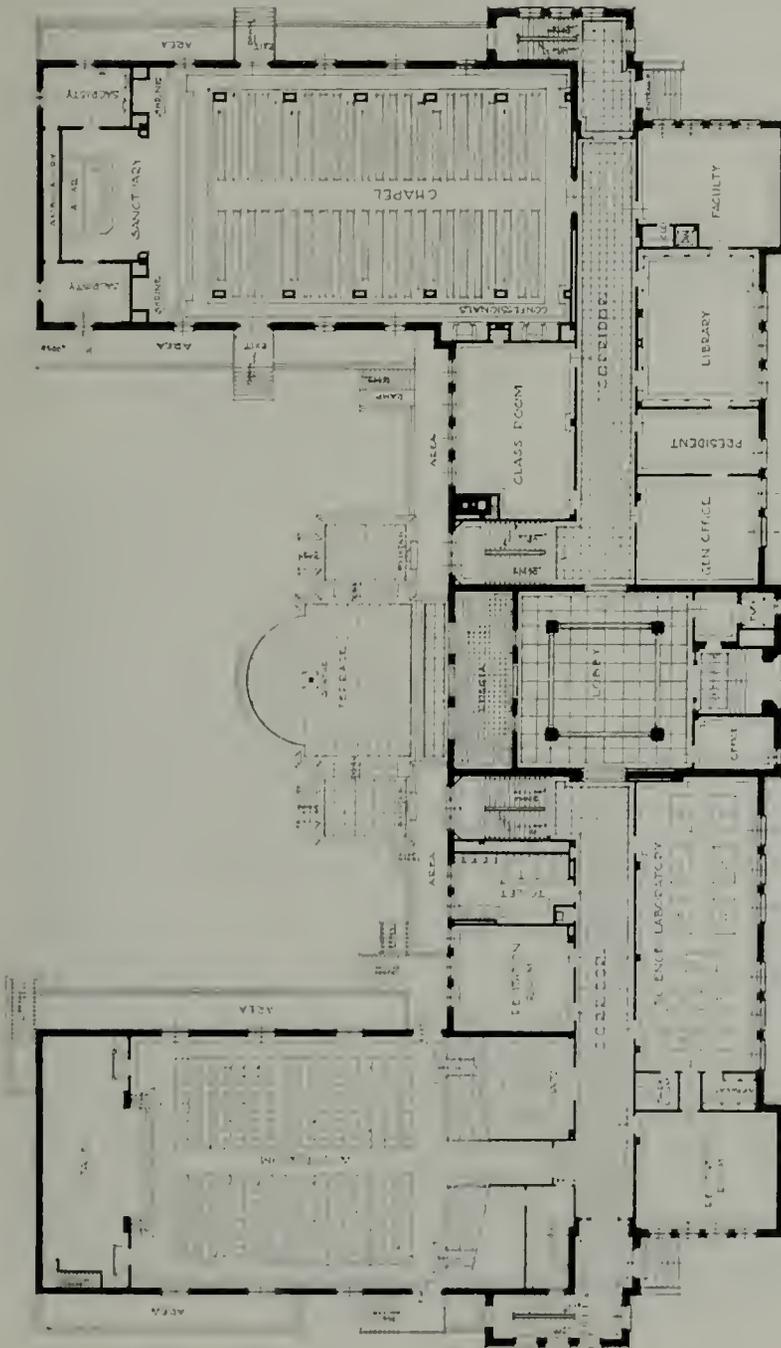


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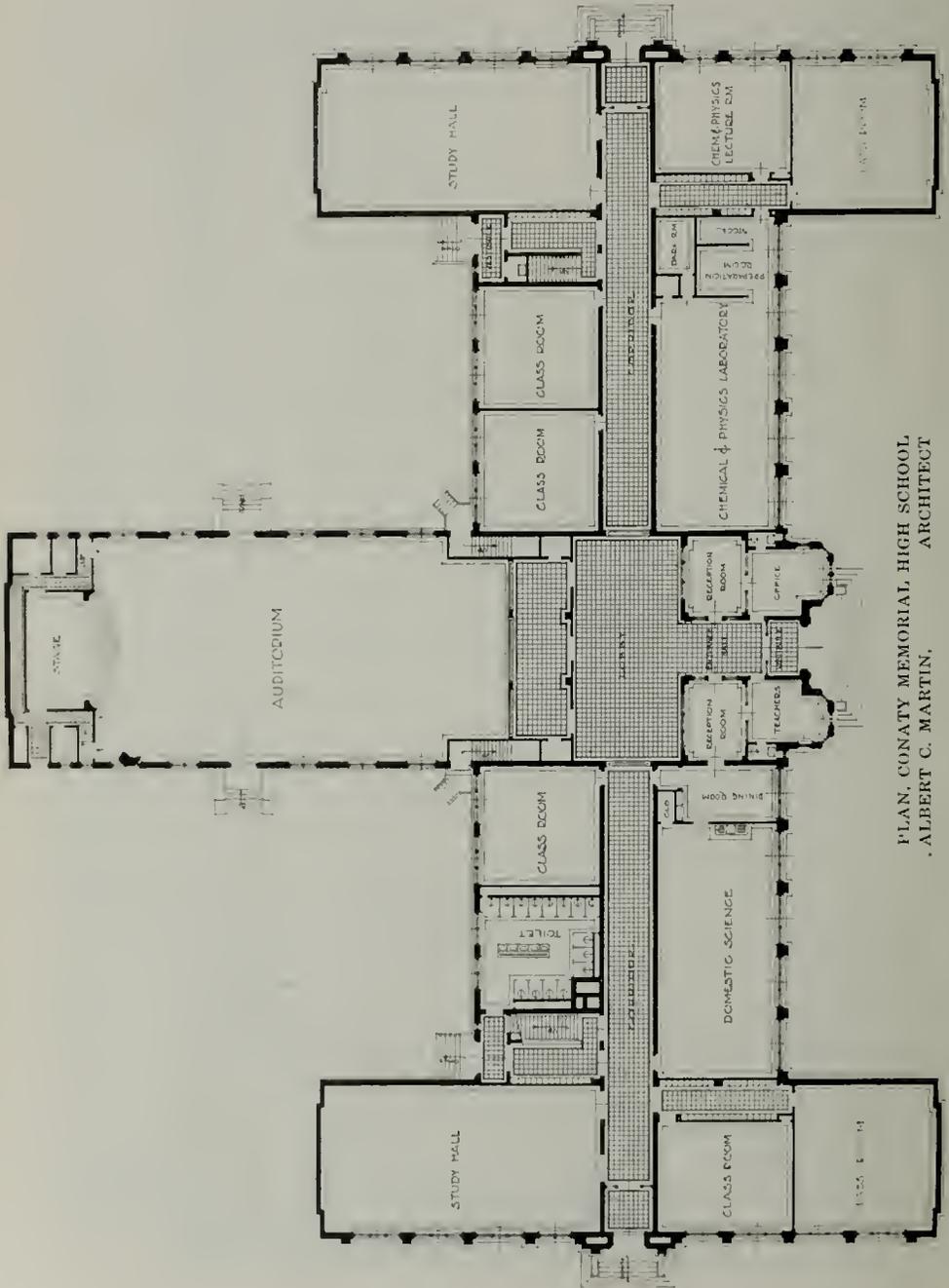
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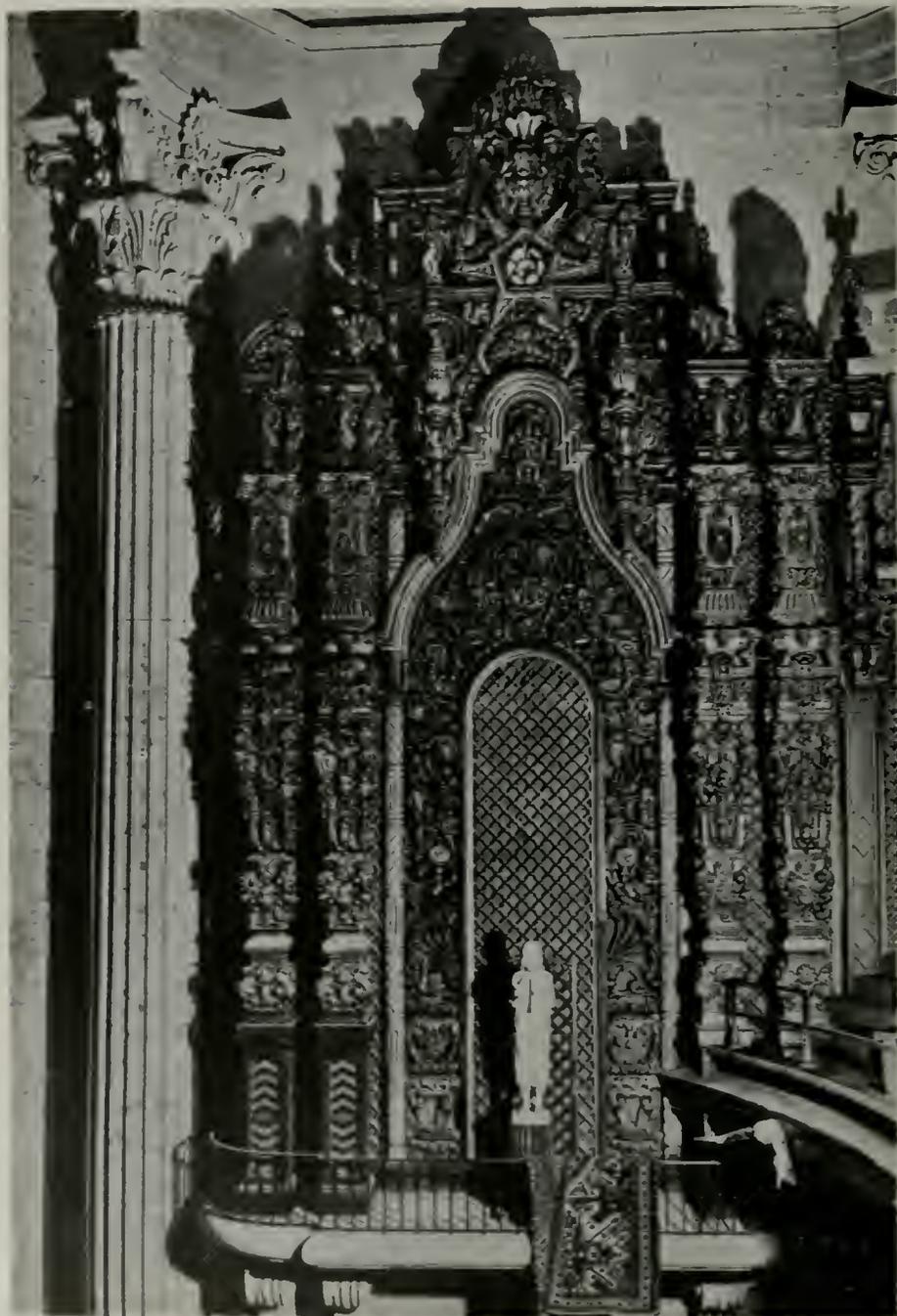
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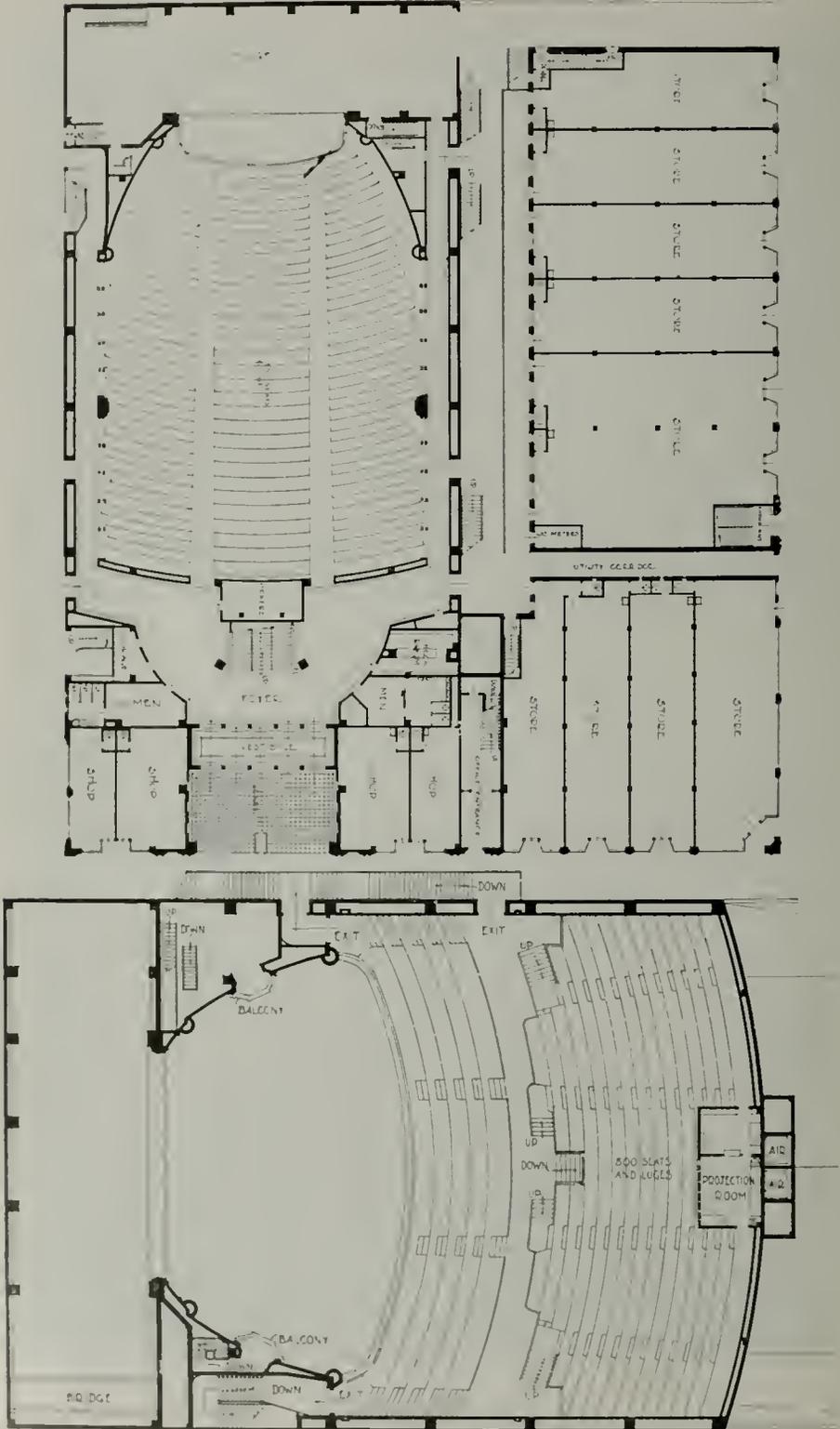
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STAIRS TO MEZZANINE, WEST COAST THEATER, LOS ANGELES  
Albert C. Martin, Architect



PLANS, WEST COAST THEATER, LOS ANGELES  
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MEZZANINE FOYER, WEST COAST THEATER, LOS ANGELES  
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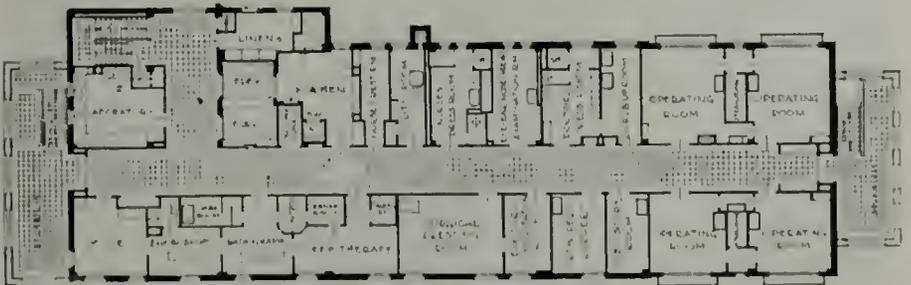
ENTRANCE, LOS ANGELES CITY HALL  
John Parkinson, John C. Austin and Albert C. Martin, Architects



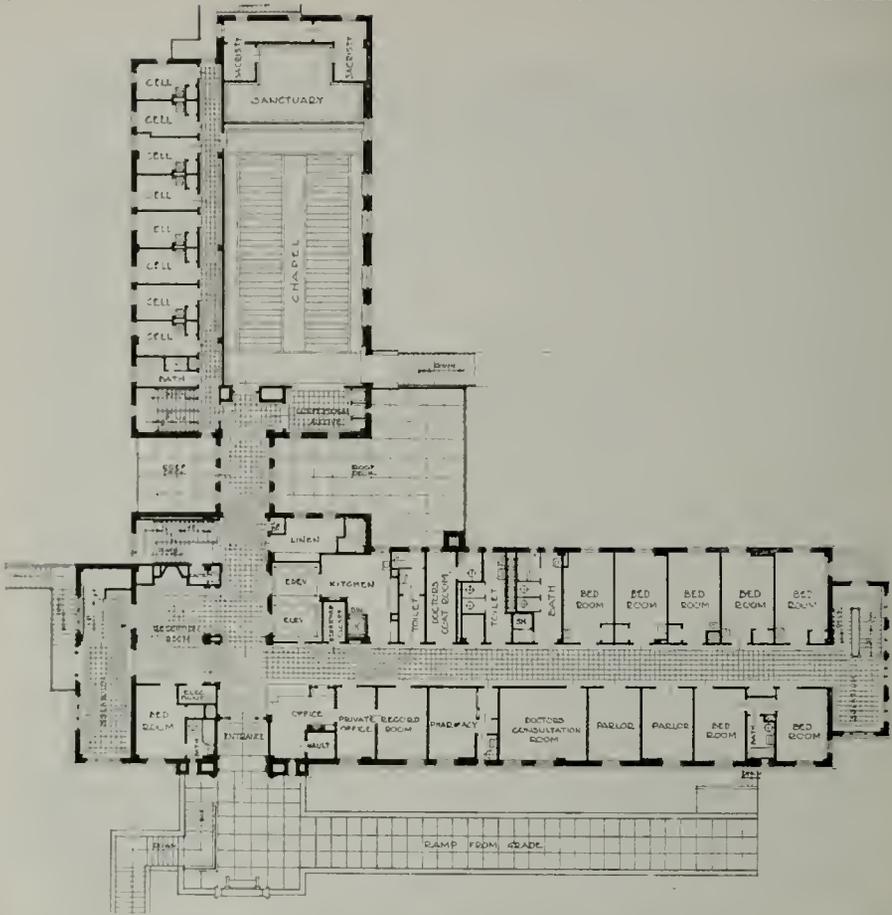
CITY HALL, LOS ANGELES, CALIFORNIA  
JOHN PARKINSON, JOHN C. AUSTIN, A.  
C. MARTIN, ASSOCIATED ARCHITECTS



QUEEN OF ANGELS HOSPITAL, LOS ANGELES  
Albert C. Martin, Architect



ELEVENTH FLOOR PLAN, QUEEN OF ANGELS HOSPITAL, LOS ANGELES  
Albert C. Martin, Architect



FIRST FLOOR PLAN, QUEEN OF ANGELS HOSPITAL, LOS ANGELES  
Albert C. Martin, Architect



PROPOSED HOSPITAL, LOS ANGELES  
Albert C. Martin, Architect



DESMOND BUILDING. LOS ANGELES  
ALBERT C. MARTIN. ARCHITECT



ENTRANCE, VENTURA COUNTY HOSPITAL  
ALBERT C. MARTIN, ARCHITECT



ENTRANCE, BANK OF AMERICA, LOS ANGELES  
ALBERT C. MARTIN, ARCHITECT



FOOTHILLS HOTEL, OJAI, CALIFORNIA  
ALBERT C. MARTIN, ARCHITECT



FOOTHILLS HOTEL, OJAI, CALIFORNIA  
ALBERT C. MARTIN, ARCHITECT



FOOTHILLS HOTEL, OJAI, CALIFORNIA  
ALBERT C. MARTIN, ARCHITECT



BUILDING FOR CALIFORNIA WALNUT GROWERS  
ALBERT C. MARTIN, ARCHITECT



HOUSE OF MR. D. J. CAHILL, LOS ANGELES  
Albert C. Martin, Architect



LIBRARY, HOUSE OF MR. D. J. CAHILL, LOS ANGELES  
Albert C. Martin, Architect

## Fee Problems Confronting the Architectural Profession

By ARTHUR C. HOLDEN in Institute Journal

**C**HOOSING the architect means buying professional service or buying advice. Even the plans themselves should not be construed as commodity. They are advice on how to build. They are put down on paper because the advice is too technical and detailed to be given orally.

The length of time a salesman spends waiting for a customer, as well as with the customer, has to be paid for and borne in the cost of the goods. The time the architect spends waiting for clients or hunting for clients has to be paid for as well as the time he spends in serving and advising them. It all has to be covered by his fee.

It is in the interest of clients to cut down all the expenses of the architect which are not a direct benefit to the client. So far as the client is concerned, the time the architect spends in hunting business is absolute waste, because it adds little of value to his professional experience.

Architects are chosen either:

### INFORMALLY

1. Because of Free Sketches.
2. Because of Cheap Price.
3. Because of Financial Connections.
4. Because of Real Estate Connections.
5. Because of Social Connections.
6. Because of Acquaintance.
7. Because of Friendship.
8. Because of Relationship.
9. Because of Reputation.
10. Because of Special Ability.

or

### FORMALLY, i. e., BY COMPETITION

1. Open.
2. Restricted.
3. Combination of the two.

To bring client and architect more closely together, it must be made easier for clients to find out about architects. All hokum and pretense must be abandoned. It is theoretically splendid for architects to maintain that selection should be made on the basis of professional qualifications, but they have got to realize that not one man in a thousand has the information on which to base such a judgment.

The holding of competitions is an extremely doubtful method of choice for other than monumental buildings, and it is not always satisfactory then. The principal advantage to the owner is the variety of ideas which are developed. It should be remembered, however, that these ideas are developed separately and at great cost to the individual architects, whereas the owner might derive greater benefit more cheaply from a group of architects acting in consultation.

Except on very large projects the owner shuns the expense of a professional consultant, because it is one which at best can bring him only an indirect result.

The owner, above everything, wants to know what the architect can do and what his ideas are going to be on the owner's particular

problem. If the owner speaks to one architect he doesn't want to be forbidden to discuss his building project with another. Has the architect modeled his code of ethics too closely upon the exclusive system of professional advice-giving used by physicians? Both doctors and architects live by selling the professional advice which their training qualifies them to give. Neither can afford to give very much free advice. The architect is put to a greater personal expense, however, in rendering his advice through the development of the detailed plans so that proportionately the time spent in preliminary conferences is relatively unimportant. The doctor has established a system of clinical service where the best advice is made equally available to those who cannot afford to pay.

There is little doubt remaining that the architectural profession has got to work out something resembling an architectural clinic where general advice can be given to the public at a very low figure.

There are many types of work, however, in which the services of an architect are essential, such as the small school, library, or church, or the small village community hall. A competition as recommended by the Institute is altogether too cumbersome a method for the selection of an architect for such work. In the first place it costs too much and takes too long, and both money and time must be saved if real results are to be obtained. In the second place the formal competition doesn't allow the owners to get personally in touch with the architects who are being considered and understand their personalities.

It ought to be possible to work out a "two or three conference" method of selection. Competing architects could be asked to confer with the client and discuss his needs with him. A memorandum of the points agreed upon could be sent to each competitor after each conference. At certain of the conferences all of the competing architects could be present in the spirit that, whoever got the work, they as a group were prepared to discuss and advise the best course to pursue. Through this method the owner would have a chance to learn something of the abilities of the respective architects: first, to draw him out and interpret his wishes, and second, to execute the design.

The architectural profession and the public would benefit were a definite system to be worked out which would allow clients to consult architects in a preliminary way, paying a small sum without relation to percentage, based either on time spent in preliminary conferences or the exchange value of the advice given. It is possible that variants might be established with definite stipulation as to the type of sketches or advice to be furnished and the remuneration therefor. An Institute circular of information upon this method would be of assistance.

The money paid to an architect forms part of the total cost of the finished building. In most cases, this total cost is such an important item that, if it runs too high, it may jeopardize the owner's ability to continue to own the building and perhaps force the foreclosure of the mortgages. It has been asserted, and more owners than architects appear to be aware of it, that practically all of the services which an architect gives can be secured indirectly by other means. In other words, the highly trained practicing architect has, besides his brother architects, two other classes of people as virtual competitors. First, anyone with sufficient intelligence to make a few diagrammatic lines upon a sheet of transparent paper can make drawings from which any building in the city of New York may legally be erected. Second, any firm

of steel fabricators, iron workers, stone cutters, plumbers, tin-smiths, cabinet-makers, and sometimes even carpenters have enough talent in their shop drafting force to supply the necessary detailed drawings when an architect is not employed. Furthermore, where architects are incapable of supplying specialized details, the drafting forces of such organizations are generally depended upon to supply—"for the architect's approval"—necessary shop drawings. The architect has no monopoly of the ability to draw.

When an owner is willing to have the steel designed by the shop drafting force of the fabricator that is to supply it, it is difficult for that owner to see why he is expected to pay his architect a commission of 6 per cent on the price of the steel. It costs the fabricator perhaps 2 per cent of the cost of his contract to redesign his steel, but he figures on doing it on most of the estimates he submits because thus he may be able to effect economies that may secure him the contract. This is usually done even when the steel is completely and carefully designed before proposals are requested. His price covers this extra cost; the owner pays it in the end, but it is a masked cost which seems merely to be part of the price of the steel.

The architect is one of the few survivors of the percentage form of compensation. The trend of the modern mind has been toward the business ideal of the fixed price. Prices are made inclusive of the overhead and profit which the seller gets. Can you imagine a customer going into a store and pricing a table and being pleased with a clerk who replies that the table costs \$100 plus our commission of 25 per cent? Any clerk knows better than that. Therefore he is likely to answer that "the price of the table is \$150, but we will allow you a discount of 16 2/3 per cent because this is our January sale." With the price so stated the customer thinks it is a wonderful bargain. All sorts of masked costs are hidden in such practices. They are not in the interest of the customer, but the psychological effect is pleasing to him and accordingly he gets taken in. An architect may be honest with his client, but the psychological effect on the client instinctively leads him to react against the added percentage even though he recognizes that he is getting value for what he pays.

One of the suggestions which recently came into the hands of the Committee on Uneconomic Practices of the New York Chapter was that part of the architect's fee should be paid by the contractor. The reason given was that the architect served both contractor and owner. The contractor, it was claimed, would then be able to ask for better service in the preparation of working drawings and specifications with the result that he would grow to depend more on the architect for his drawings and less on his own staff. On the other hand, the architect's role as an interpreter of the contract would be more apparent to the owner, and it was contended the architect would be more likely and more able to be fair to the contractor. The suggestion provoked more laughter than serious consideration. It should be mentioned here, however, so that the profession may realize what their business associates are thinking. Architects have it in their power to render widely differing types of service. Until recently they had had it within their power to charge on the same basis whatever the service rendered. The growth of other agencies capable of rendering the same service has confronted architects of all types with a serious situation.

The foregoing suggestion should be plumbed for its serious import.

It reflects a real grievance of the contractor. It suggests the removal of a psychological obstacle from the mind of the contractor and from the mind of the owner. One must not forget the pleasure of the purchaser of the table upon learning he was to get a discount while in reality he paid the seller a 25 per cent profit.

So far as the Institute is concerned, the elimination of waste in choosing the architect is a question of emphasis. Should the Institute, representing the organized profession, spend its energy in protecting the individual rights and privileges of the architect? Or should it throw its weight toward creating a relationship, whatever its form may be, which will encourage the owner to believe that architectural advice is worth having and that it is easy and not difficult to get all of the advice that he is willing to pay for? Whether he knows it or not, professional men, who call themselves architects, are not of value to the owner because they are architects, but because they can furnish the advice and service he needs better than any other agency. If architects forget this and spend too much of their time merely defending their present prerogatives they are likely to awaken some day to the fact that other agencies have taken over their capacities to serve.

The case in question may be restated tersely and plainly as follows:  
Architects give specialized services.

For some of these they get less than they deserve.

The client doesn't understand just what the architect does.

He knows he can get some of the services of the architect from his contractor, or others; he sometimes thinks he can get all of the services elsewhere.

Like the man who bought the table, he is pleased to think that he is thus getting a reduction or saving the architect's fee.

Too much emphasis must not be put on the defense of empty prerogatives to the exclusion of the study of how best the profession can serve, and of making these facts understandable to the public.

The architect is competing not only against other architects for their services, but against miscellaneous persons, and outside business factors as well.

The architect is not understood and on top of it has to overcome a psychological obstacle.

At the present time most architects are harrassed and worried by these very problems. There is no reason why the status of the profession should be at the mercy of the whims of circumstance. A straightforward attempt should be made to control our own destiny.

\* \* \* \*

## Hardwood Floors for Office Buildings

A hardwood floor is more apt to harmonize with the rest of an office interior, its furniture and equipment, than some other materials. If rugs are used, there is no better background than a properly finished maple or oak floor. It lends an atmosphere of warmth and comfort to the surroundings that is never present with a cement or terrazzo floor. Maple has been found to be a very practical wood for office building floors. It has a close hard grain and will stand wear better than any other hardwood floor.

A good maple floor, if properly cared for, should last as long as the building. Maple, because of its tough fibres, has the quality of taking on a polish under use, thus setting up its own resistance to wear. Oak also stands up very well, but it has a more open grain than maple, which gives it a tendency to collect dirt and dust.



AUDITORIUM, AL MALAIKAH TEMPLE, LOS ANGELES  
 John C. Austin, Architect  
 G. A. Lansburgh, Collaborating Architect

## The Al Malaikah Temple, Los Angeles

By JOHN C. AUSTIN, F. A. I. A.

**A**BOUT three years ago the writer entered into a contract with the Al Malaikah Auditorium Company to design and supervise the construction of a building, part of which could be used for Shrine ceremonials, and in addition to this, for theatrical and operatic performances. The Shrine required a large banquet hall in conjunction with its ceremonials, and the city of Los Angeles had long needed an auditorium for convention purposes, banquets and dances.

The auditorium portion of the building will seat 6480 people, exclusive of the boxes and the orchestra. The orchestra is large enough for 150 players. The proscenium arch is 100 feet wide, and the stage is 78 by 195 feet. This stage is one of the largest—if not the largest—in America. There is an organ in two sections—one on each side of the stage above the boxes.

The gallery seats 3350 persons. It is supported by a steel truss 186 feet clear span, and by cantilever trusses passing through and over the main truss. These cantilevers extend beyond the supporting truss 45 feet 6 inches. The weight of the main balcony truss is 250 tons.

The Moorish style of architecture was used so that it would correspond, in a measure, with the style of dress and ceremonials of the Shrine organization.

The acoustics of the building are remarkably good, it being possible to clearly distinguish a voice from the stage at the farthest seat in the



G. A. Lansburgh, Collaborating Architect

AL MALAIKAH TEMPLE. LOS ANGELES  
JOHN C. AUSTIN,  
ARCHITECT



G. A. Lansburgh, Collaborating Architect

AL MALAIKAH TEMPLE, LOS ANGELES  
JOHN C. AUSTIN, ARCHITECT



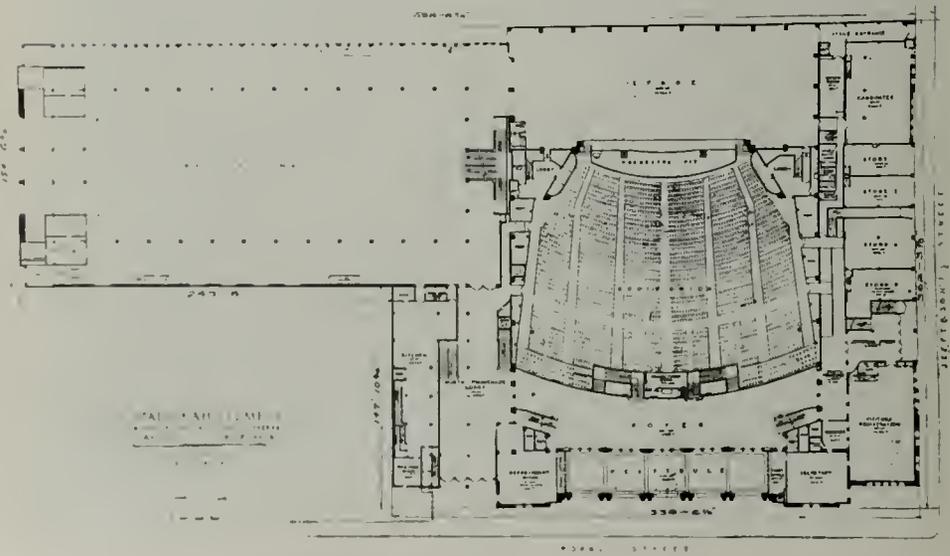
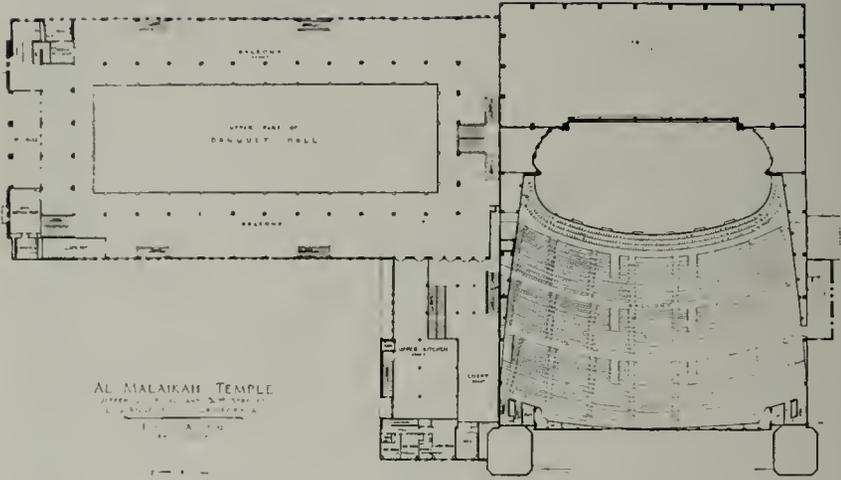
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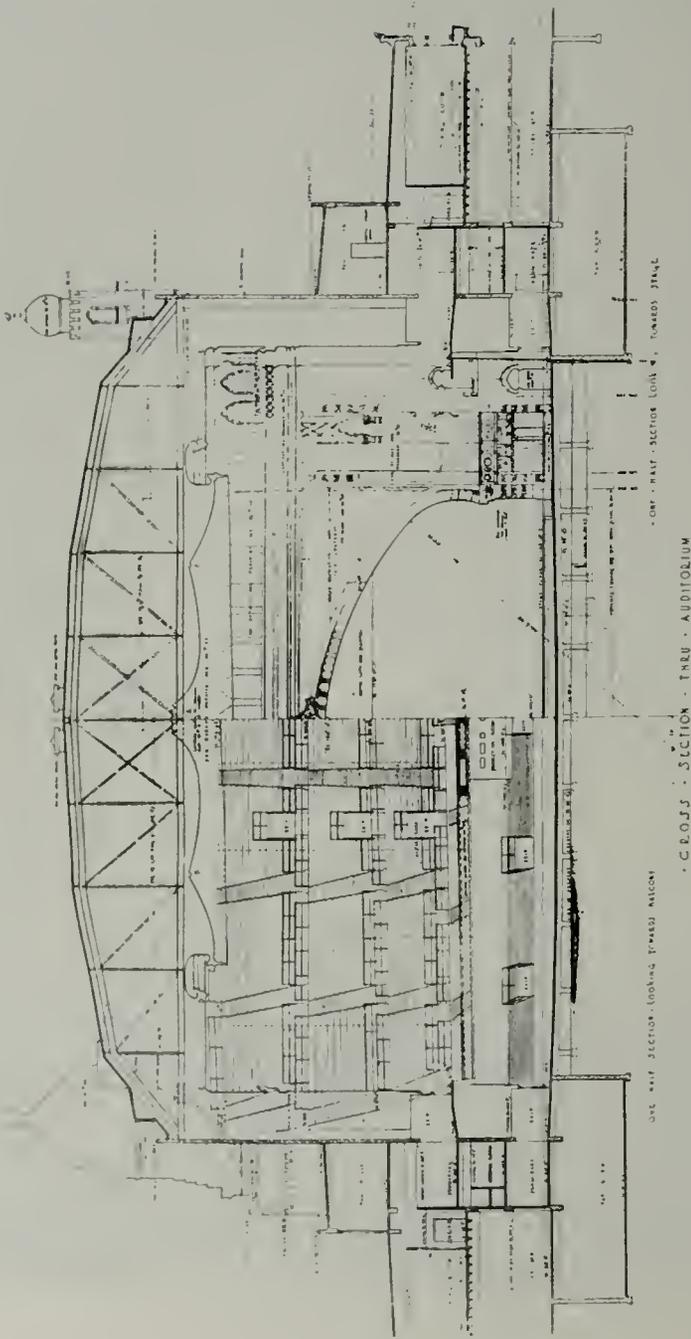


AL MALAIKAH TEMPLE, LOS ANGELES  
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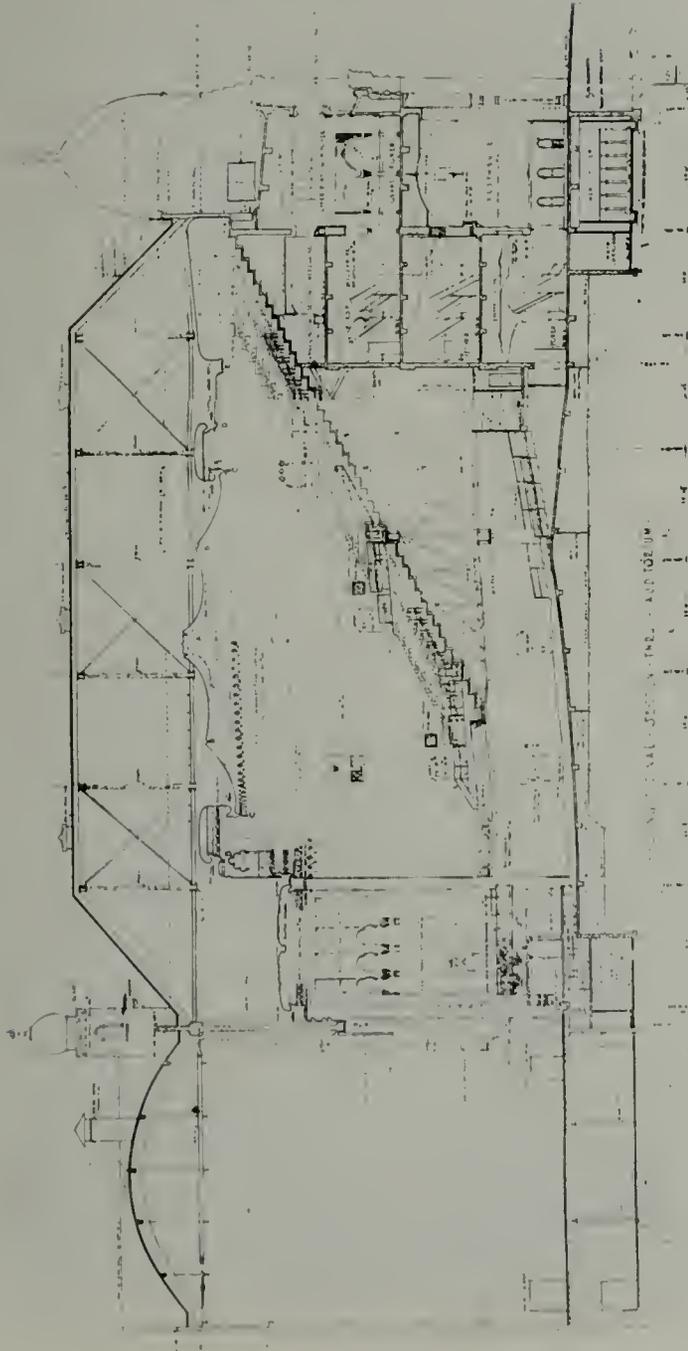
G. A. Lansburgh, Collaborating Architect

AUDITORIUM, AL MALAIKAH TEMPLE  
JOHN C. AUSTIN, ARCHITECT



AL MALAIKAH TEMPLE, LOS ANGELES  
JOHN C. AUSTIN, ARCHITECT

G. A. Lansburgh, Collaborating Architect



AL MALAIKAH TEMPLE, LOS ANGELES  
JOHN C. AUSTIN, ARCHITECT

G. A. Lansburgh, Collaborating Architect



ENTRANCE TO BANQUET HALL, AL MALAIKAH TEMPLE, LOS ANGELES  
JOHN C. AUSTIN, ARCHITECT; G. A. LANSBURGH, COLLABORATING ARCHITECT



LOUNGE, AL MALAIKAH TEMPLE.

LOS ANGELES, CALIFORNIA

JOHN C. AUSTIN, ARCHITECT; G. A. LANSBURGH, COLLABORATING ARCHITECT



BALL ROOM, AL MALAIKAH TEMPLE, LOS ANGELES  
 John C. Austin, Architect  
 G. A. Lansburgh, Collaborating Architect

gallery, 198 feet distant. The Public Address System has been installed, making it possible not only to hear everything that is said on the stage throughout the main auditorium, but throughout the banquet hall adjacent.

The pavilion (or banquet hall) is so arranged that it can be used in conjunction with the main auditorium. The same style of architecture has been employed in both portions of the building, both of which are of structural steel and reinforced concrete. All of the walls and ceilings of the banquet hall have been decorated directly on the concrete, as there is no plaster on this portion of the building. Neither is there any plaster on any of the lobbies or corridors of the auditorium portion of the structure, all of the decoration being done in the same manner as in the banquet hall.

At the commencement of the enterprise, Mr. G. A. Lansburgh, of San Francisco, was employed by the Al Malaikah Auditorium Company to collaborate with me, and he was of some assistance in the preparation of the sketches. However, all of the working drawings, designs and supervision were in my hands and were carried out by the writer.

\* \* \* \*

### Licenses for Contractors

North Carolina is the first state to license general contractors. The state legislature passed such a law in May, 1925. The law applies to individuals, firms, or corporations undertaking the construction of bridges, highways, buildings, or other structures of value in excess of \$10,000.

## Judicial Construction of What Constitutes Arbitrary Withholding of Architect's Certificate

By LESLIE CHILDS

**W**HERE a contract provides that payment shall be made only upon the certificate of an architect, the contractor is bound to produce such certificate before he is entitled to demand payment. A stipulation of this kind is valid, proper and necessary, in the conduct of building operations, and so long as such terms are enforced in good faith the courts will uphold them.

However, to the general rule as stated, there is one well defined exception which holds that a provision requiring the production of an architect's certificate before payment must be enforced in a reasonable manner. By the same token, the unreasonable, arbitrary, or capricious withholding of a certificate by the architect may render its production unnecessary, as a condition precedent to recovery by the contractor.

It is of course obvious that each case of this kind must necessarily be decided in the light of its particular facts and circumstances, and the subject cannot be covered by the statement of a hard and fast rule. What might amount to an arbitrary withholding of a certificate in one case might be declared reasonable in another. It follows, that the reasoning of the courts in cases of this kind may perhaps be best illustrated by the review of an actual case. With this in mind the California case of *Needham vs. Sisters of Mercy*, 210 Pac. 830, is worthy of examination, as an example of what has been held to constitute an unreasonable withholding of an architect's certificate.

In this case the plaintiff brought suit to recover as the assignee of one McHugh under a building contract. Payment had been refused by the defendant on the grounds, among other things, of the failure of the contractor to produce the architect's certificate, as required by the terms of the contract.

Upon the trial of the cause a judgment was rendered in favor of the plaintiff, and the defendant prosecuted an appeal to the higher court. Here the only point of law involved was the right of the plaintiff to recover, notwithstanding the failure of the architect to issue a certificate showing the amount due. In passing upon the question raised, and in determining whether or not the plaintiff had shown an arbitrary refusal of the architect to issue the certificate, so as to render its production unnecessary, the court in reviewing the record, in part, said:

"The written contract was executed on November 21, 1907. Work was commenced soon thereafter, and on February 1, 1908, March 7, 1908, and April 17, 1908, the architect issued to McHugh three certificates showing, respectively, that there was due him on account of the work done by him, \$2,500, \$3,500, and \$4,000. The defendant had paid McHugh in accordance with these certificates the total sum of \$10,000 up to April 21, 1908. All work under the contract was finished by August 12, 1908.

"Though it was apparent, as afterwards found by the trial court, that the sum of \$13,088.50 was due McHugh at the time of the completion of the work, nothing was paid to him on account thereof from August 12, 1908, until November 12th of the same year. During all this period repeated requests had been made by McHugh and his representatives upon the architect that he issue the certificate, and upon defendant for payment of the amount due.

"All these requests and demands upon the architect were rejected in an arbitrary and unreasonable manner. Unreasonable and unjustifiable demands were made by the architect upon McHugh, and the failure to comply therewith was used as an excuse for the nondelivery of the certificate. The defendant refused payment solely upon the ground that the architect had not issued his certificate."

Following the foregoing review of the record, the court in stating its conclusion thereon used the following language:

"In Wyman vs. Hooker, 2 Cal. App. 36, \* \* \* the court in a similar case said:

"It is not to be presumed that the parties intended that money rightfully belonging to the contractor should be forfeited upon the arbitrary will or caprice of the architect in withholding the final certificate. \* \* \* Nor was it necessary that any excuse for not obtaining this final certificate should be set out in the complaint. It was sufficient in that behalf to allege the performance of the contract on the part of the contractor, and thereafter to prove such performance!

"The rule is that an unreasonable, arbitrary, or capricious refusal of the architect to give the certificate required by the contract excuses the contractor from producing such a certificate as a condition precedent to the recovery of the payment due, and the allegation of due performance of all conditions on the part of the contractor is a sufficient allegation to put this matter in issue and to permit the contractor to offer evidence showing the reason the certificate had not been produced. \* \* \*"

The court then in conclusion affirmed the judgment in favor of the plaintiff rendered by the trial court. Holding, in accordance with the language heretofore quoted, that upon the evidence of record there had been an arbitrary and unreasonable withholding of the certificate on the part of the architect which excused its production.

\* \* \* \*

## Allied Architects' Association

**D**. EVERETT WAID, President of the American Institute of Architects, has addressed a letter to members concerning the increasing practice of business combinations among architects and says in part:

"A major problem before the architectural profession during the past five years has been that of practice by architects brought together in business combinations commonly called 'Allied Architects Associations.' Nearly a dozen such organizations have been formed or are in contemplation. Various causes have led to this trend in practice.

"It might be assumed at the outset that so long as such combinations are formed in a legal manner and conduct their business on ethical bases there could be no more objection to them than to the old-time firm or corporation of three to five architects. Obviously, however, the profession has sensed the fact that practice by large groups like commercial business by great corporations may threaten monopoly, and is bound to raise new problems. Urgent protests, and severe criticism by individual architects, and requests from Chapters for guidance in the matter, have brought the whole subject before the Board of Directors of the American Institute of Architects.

Certain disadvantages are pointed out by Mr. Waid, such as the danger of bringing the profession into politics, limiting individual opinion and generally submerging the individual in group associations. Other dangers are indicated in opportunity offered for error and fraud by the individuals which would reflect on the whole group, the power of combination which would lead to monopoly and acquisition of great power by a few in the organization which would raise the question of fair dealing to individuals and further the loss of individual expression in design.

Mr. Waid says in conclusion:

"It is desirable that each Chapter of the Institute shall discuss this subject as fully and frankly as it pleases and the Board of Directors urges the advisability of a cautious and conservative attitude. A new method, however laudable its motives and admirable its results, if it contains the seed of discord, deserves thorough consideration before being adopted.

"Each group contemplating the formation of an association is recommended when formulating its plan of organization to safeguard the following considerations which the Board of Directors regard as fundamentally important in the practice of architecture:

- (1) It is for the best interests of architectural design that the designer or designers of any architectural work should receive personal recognition and credit.
- (2) It is essential that personal responsibility for all professional services should be maintained as clearly as in individual practice.

"The first of these conclusions involves the integrity of our art. The second involves the proper protection of our client's interests.

"It has, therefore, by the Board of Directors, been

"Resolved, that while circumstances may arise which render it expedient to form an Allied Architects' Association in the public service and for specific work, nonetheless the Board believes that the formation of such associations for general practice is not in the best interests of the art of architecture and that therefore the definite establishment of an association bringing together a large percentage of the practitioners of a given section to practice architecture as such an association is to be discouraged."

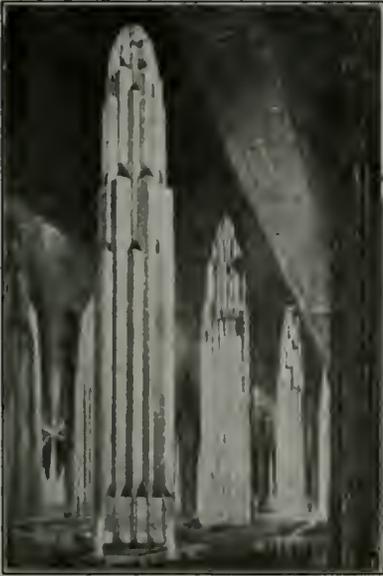


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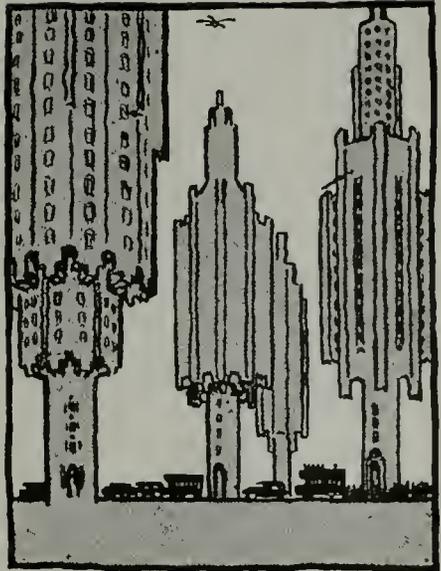
MONTEREY PENINSULA COUNTRY CLUB  
Clarence A. Tantau, Architect



MARION HOTEL, SAN FRANCISCO  
ALBERT H. LARSEN, ARCHITECT



"A FOREST OF TOWERS FIVE HUNDRED FEET APART"



"BUILDINGS OF THE FUTURE WILL LOOK LIKE TREES"

### Office Buildings of the Future

**B**UILDINGS that look like gigantic trees; towers that extend into the clouds to one-fourth mile or more in height and 150 feet square at base; elevators dispatched one after another in the same shaft as trains are now run on a single track; bridges 20,000 feet long and 200 or 300 feet wide, with high class apartments along the thoroughfare.

These are some of the unusual features of the big cities of the future as visioned by Raymond M. Hood, of Howells and Hood, architects of the Tribune Tower, Chicago, and the American Radiator Building, New York. This prophesy as to the future of New York City was published in the April 10 issue of "Liberty" under the title "New York's Skyline Will Climb Much Higher."

Much of the article suggests subjects for serious thought. Some of it, however, leads one to believe that Mr. Hood was indulging in a flight of fancy or spoofing his readers just a trifle.

In his introduction he says: "The strong stone gate that Nature gave our country is too narrow. The name of the gate is New York. In it upward of seven million human beings are struggling for foot-room. These millions live under the gate and through them you millions of the North, South and West must fight your way to the Atlantic beyond.

"Let the cities of the West, South and North grow in population beyond imagination. You in those communities may spread over plains, prairies and fields. You may enlarge your areas in two, three or four directions; but there is nowhere for New York to grow but up. Other cities in America have their plan problems. They yearn to grow in stature, in beauty, in utility, in efficiency. Compared with New York's problems, their troubles are but theoretical."

From that point he proceeds to tell of the degree of congestion that

exists today on Manhattan Island and to elaborate upon how this will affect the future development of the city.

"Privately I believe that within a reasonable number of years they who dwell upon Manhattan Island will be limited to the men and women who are occupied as caretakers of buildings that by day will be the homes of commerce."

Mr. Hood then proceeds to outline present trends, the movement of population away from the tenements of the lower East Side, and the development now taking place in the outlying districts. Then he gives as follows his ideas of the probable type of office building that will become common in the future and of the nature of the downtown development:

"I have before me a drawing of a building that has not been erected. It may never be erected—yet it suggests a possible solution. It would be a tower a quarter of a mile high, 150 feet square, its base on the ground.

"One hundred floors of tower as bold as the Washington Monument and as sheer. Its batteries of elevators would be in the center and would run like railway trains, one after another in each shaft, expresses stopping every tenth floor or so.

"This building is no mere dream. True, it hasn't been built. The working plans haven't been drawn. But the building is coming whether I am its author or someone else. Safe? As safe as your present building of 20 and 40 and more floors. To be sure, it will sway and bend in obedience to winds and temperature, and the summer's sun. It would be unsafe if it didn't.

"Too great a strain upon the foundation? Nonsense. Consider this: The modern office building twenty stories high places less strain upon the stony substructure of Manhattan Island than no building at all. Why? Because your building weighs less than the earth and rock excavated for its foundations.

"Very well. Suppose now that Manhattan Island were to be dotted with towers a thousand to fifteen hundred feet tall. A forest of towers, of spires of commerce, 500 feet apart. Between them broad spaces, parks where workers can find rest, recreation, shade, peace and where there will be wide avenues with light traffic. There will come with this the special motor vehicle of short wheel base that will be easy to maneuver and inconsequential when it comes to parking.

"On the first level below the surface would be our great stores. Bad weather would have no effect upon business. Blizzards that now paralyze the city would be scoffed at.

"One level lower and we would have our rapid transit—the subways or tubes. And on this level would be commodious sidewalks for pedestrians and splendid thoroughfares for high-speed motor cars. The ventilating problem would be so easily solved as to make it negligible."

Next he deals in the following flight of imagination in telling how Manhattan Island will be connected with Long Island and New Jersey:

"Each bridge connects Manhattan Island with a center of population, towns of houses and apartment buildings, far-flung because the land is wide and the going good. They speak now of a bridge—one bridge, forsooth!—10,000 feet long, connecting Manhattan with New Jersey. Why say 10,000 feet long? Why 200 feet wide or 300?

"Why not 20,000 feet long? Then say to your real estate operator:

"See here, sell the sides of these bridges as you would land along Fifth avenue, Park avenue, Madison avenue, Riverside drive. Sell it

for splendid residences. Erect your great apartment houses on the sides of these bridges. There is room for a street as wide as Fifth or Park avenue. And how much better is it to build over water vistas.

“‘And beyond these grand bridges will live the workers in comfortable towns, and a little farther out will lie the factories and farther out the farms.’

\* \* \*

“But today those zoning laws which were adopted in the interests of more sunlight are antiquated and close to obsolescence. Only those who work on the upper floors of the new buildings (built along the old ideas) are getting sunlight. And there is a constant demand for more office space.

“Every available square foot of Manhattan is surely being occupied, and there are but twenty-two square miles of it. The business of spreading out being impossible, the alternative is upward. The time is not far distant when business will take over the upper reaches of the island, and it follows because of its steady growth that in due time Manhattan will be too small for the business it will be called upon to transact.

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“I can see at least four possible criticisms of the plan which would create a city of towers. The first is that in order to create an equal amount of floor space it is more expensive to build a tower than a lower wider building. The second is that vertical transportation is difficult and expensive. Again my plan would necessitate the loss of some of the present enormous investment in buildings. The fourth criticism which occurs to me has to do with the obvious difficulty there will be in the transfer to the city by the private owners of that land not covered by the base of the towers.”

The author then discusses these objections more or less fully and concludes as follows:

“I do not expand details. Let your own imagination soar. Buildings of the future will look like trees, and will be a quarter to a half mile high. We shall, of course, be using air transportation as we now travel in motor cars. Great landing stages will be provided for the lighter-than-air conveyances and in the city of towers there will be ample room for landing-fields on the ground for airplanes.

“Inasmuch as there is no argument but that something will have to be done, this scheme of a city of towers would have the desired effect of giving us sunlight, fresh air, parks, recreation, parking space and four times (at least four times) the present space for traffic.

“The common type of office building is wasteful of space and injurious to health. Twenty-five feet from the windows, and artificial light is necessary. That is because of the type of building. Scientifically it is not necessary. The thing to do is change the type. I, of course, nominate the tower.”

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## The Washington Registration Law

The Architectural Registration Act of the State of Washington has been declared constitutional by the Supreme Court of that state. The court has ruled that no one except a registered architect can, at law, collect for architectural services.

## Suggestions on the Decorative Use of Concrete\*

By DAVID C. ALLISON, F. A. I. A., Los Angeles

**I**N the great new structural system represented by the steel and concrete frame, there has appeared a thing completely new under the sun in architecture. No structural innovation more radical has appeared before; none that at all compares in the rapidity of its growth or in the extent and development of its use from the first small steel building of some thirty years ago, to the huge and varied structures that now soar into the clouds and cover acres of ground.

The social and economic changes attendant upon our rapid growth have been admirably met structurally by architects and engineers, and the public has been given fine solutions of their problems from the standpoint of efficiency and equipment. Much discussion has gone on constantly regarding the aesthetic treatment of this architecture, and while no final solution has yet been arrived at in clothing the steel or concrete forms, yet the urge and necessity to go ahead and build them by the hundreds and thousands has been constantly with us.

It is perhaps a natural thing that the impulse of the men first confronted with architecturally treating the steel frame of many stories should have been to try to adapt traditional architectural forms and motifs, especially as, to the last generation or two, a new availability to these forms has been vouchsafed through the media of publications, of photographs, and travel, as never before; but while thirty or forty years of this kind of attempt has developed many beautiful individual buildings, yet there has been an increasing consciousness that, in applying to these great blocks the Greek and Roman colonnaded bases, the huge overhanging corbeled cornices, and manifesting throughout the structure a willingness to make it look like something that it isn't, we have fallen only into a maze of structural contradiction with small artistic compensation. Yet, something like the first glimmer of hope for a better expression seems at last to be appearing on the horizon.

The new zoning and setback ordinances, now prevailing in New York, Chicago, and elsewhere, have placed in the discard this old store box office building and forced us to begin our design instead with a towering mass, growing up out of the ground to a limited height, receding and building on up in varying planes, a three dimensional silhouette of such possibilities as are sure to encourage a freer use of the imaginative faculties in the ornamentation, and liberate us soon from much of the banality of the past.

When one considers the dominant characteristics of the noblest architecture of the world, he immediately appreciates the importance of this mass, silhouette and skyline. In these elements alone, irrespective of the architectural vernacular of their adornment, reside the essential appeal of a building. These new zoning laws force upon us at the outset a tremendous advantage in this matter, and are jolting us for the first time into a more intelligent study of the problem.

I have been asked to discuss more particularly the aesthetic possibilities of reinforced concrete as a building material.

This material has been steadily increasing in the volume and variety of its uses for the past twenty-five or thirty years, and its possibilities for use in building aspiring to a more developed or finished character are only beginning to be appreciated. Architects have pretty largely assumed that if a building is to aspire to any architectural im-

\*A paper read before the Concrete Institute.

portance whatever, if anything aside from most material considerations, such as mere strength and durability, are to enter at all, the building must at least have a skin of a more aristocratic nature.

The fortunate older sisters of reinforced concrete, such as stone, marble, granite and terra cotta, have pretty generally been called into the front parlor to meet the guest, and the more humble maiden has been assigned to the duties of the scullery and asked to do only the most common and hard manual labor. She has never been thought of as being at all in a class with her sisters decoratively, or as possessing the essentials warranting her to hope even for any aesthetic equality or respect in the household of materials. We all are ready to admit that she has a vigor, a strength, a dependability and a constancy that are excelled by none of the others. The thing we have not realized is that she responds just as readily, almost humanly, to a little attention, a little kindness, and a little loving, as do her sisters.

We have, as a matter of course, for centuries past spent unlimited energy in working, carving, beautifying these other materials. We have considered them a vehicle for our finest artistic expression and have greatly respected them as such. Concrete, however, we have hesitated to handle more gently or more intimately than could be done by means of a wheelbarrow, a shovel and a mixer. The one thing most needed is for more architects of designing ability to realize that this material is capable of unlimited development; it can be moulded into any form that the imagination can conceive, knit into the very fibre of a structure—an integral, homogeneous part of it, and may frankly be brought clear through to the surface and admit its identity, honestly, convincingly, beautifully. If we are willing to spend but a fraction of the cost of carving and working granite, stone and marble, upon the building of plaster moulds or in ornamenting surfaces with scraffito, or stucco in its many forms, absolutely any degree of architectural richness desired may be attained, and that at a cost very much less than in any other material of like permanency.

My attention was first drawn to the fact that good-looking architecture can be built of monolithic concrete, columns, curtain walls, et al, something like eight or ten years ago, when a building, known as the Bible-Institute, a thirteen-story structure consisting of an auditorium seating well on to five thousand people, and with several hundred sleeping rooms, was built in Los Angeles. This building was treated quite richly and freely in the matter of ornamentation, balconies, parapets and the like, by the extensive use of plaster moulds as forms. It was well designed and a most interesting building architecturally. When the forms were stripped, the texture and color and whole appearance of the building were so lovely that it was obviously a great pity to plaster it at all, it being a particularly good job of concrete. The general excellence of its appearance came as quite a surprise to me for, in common with others, I had never thought of the material as being suitable for other than warehouse and factory construction. The owners of this building, however, wound up by covering it with a surface of perfectly smooth plaster and painting it pure white, emasculating it of much of the fine vigor and natural texture it had originally possessed. This was done over the protest of the designer of the building, Mr. John T. Vawter, who as an expert engineer as well as architect, has since gone far in the thoughtful and artistic use of this material of concrete. I am indebted to him for many of the suggestions in this paper.

The success of this building, together with the fact of its great economy, and the difficulty of getting steel at the time, led us to adopt a similar construction in the University Club, a seven-story building of about a million and a half cubic feet, built some six years ago. This structure is practically devoid of ornamentation except at the entrance and first story street front, where we used a facing of wet mix cast stone, a method producing not only the best looking but also the toughest cast stone I have seen, the air pockets giving a pleasing texture similar to the tufas of Italy. Much discussion was had with the building committee over the degree of texture that should be retained in the walls of the superstructure, but as the whole design of the building was free and picturesque, they were finally convinced that a treatment that would retain the integrity of the concrete itself, even showing the form marks, was appropriate. The argument was advanced by some that such crudity was better adapted to a roundhouse than to a university club and some felt that it should be smoothed up like a stiff shirt front. However, we eventually used one light dash coat of cement stucco, thrown on to the concrete with a brush and so thin as to allow practically all the form marks and irregularities of the wall to show through. The result was pleasing and quite satisfactory after it was on.

In this building also we first attempted the use of stains on cement floors, lining the surface of the floors of the larger rooms off in squares of about fourteen inches and then staining them to accord with the color scheme and rugs used. The beauty and variety of color possible were quite amazing. The process consisted of two or three brush applications of a thin mineral hardener, which carried the color into the surface from a sixteenth to an eighth of an inch, and any color in the gamut of browns, reds, greens and buffs was possible to obtain; each square being treated individually, gave absolute control of the variation in color. These floors are waxed and polished from time to time and after five or six years of wear have taken on a patine, depth and richness of color that are indeed surprising. The treatment cost, at the time, 10 cents a square foot, and the transformation from an ordinary gray cement floor to one similar to rich old tiling, suitable to the use of Oriental rugs, is most gratifying when the appropriation is low.

In this building also, where we had a number of large rooms and none too much money with which to develop them, considerable study was given to the design of ceilings in concrete, dispensing with the furring and allowing the supporting slab construction of girders and beams to count architecturally from the room. These beams and girders were sized and painted in thin stains, much as the old wooden ceilings of France and Italy were painted. While they have much the appearance of wooden ceilings, owing to the impress of grain and saw marks from the form lumber, yet no attempt was made to imitate wood. No difficulty has arisen from alkalis or other cement action, and the rather elaborate painted enrichment grows softer and better with age; it certainly gains much in quality from the freehand textured nature of the material.

A similar use of concrete has since been made in the buildings of the Friday Morning Club and Women's Athletic Club of Los Angeles, where in both instances the effort was first made to secure a good concrete job by the use of shiplap lumber in forms, holding all the panels horizontal, securing rather true, sharp corners, with careful placing of material to avoid undue gravel pockets, and the concrete runs being

carried up in uniform stages, a similar light dash coat of cement stucco only being applied to the surface.

On the latter of these two buildings, a rather extensive use of scraffito was made at the street front. This material was easily and rapidly put on the surface of the concrete, at a cost of about six dollars a square yard. It was soon demonstrable that absolutely anything in the way of color was possible, and in design pattern the richest and most intricate conventionalized foliage forms could be used. We employed four different colors of plaster in the working out of ornamental panels, friezes and pilasters, in tones of buffs, browns, blues and greens, harmonizing with the general stucco tone of the concrete enclosing them. The use of wet mix cast stone was made also in the first story street fronts.

In the Wilshire Boulevard Congregational Church recently completed, reinforced concrete was used throughout, with no cast stone except for the enrichment of the entrance doors and occasional colonnettes. This building has a tower one hundred forty feet high, which carries considerable surface enrichment, made easily possible by the use of plaster moulds and by the simple nailing on of blocks in various patterns on the inside of the forms before concrete was poured.

There is an undoubted virtue and sense of security, in a country where earthquakes pay us occasional visits, to have such structures as towers free from the usual doweled-on finials, wired cornices and the like, the possible scaling off of which cause an architect restless nights at times.

It was found easy to go as far as desired in the way of enriching the gable copings and other decorated features of the building, taking of course the usual precautions for excellence of workmanship. The building was given only one brush coat of stucco and retains all of the ruggedness, strength and native integrity of the material.

We have under construction also a Christian Science church, seating twelve hundred, and another denominational church costing upwards of a million dollars, in which we are practically eliminating the use of cast stone, confining the enrichment to monolithically cast concrete so far as possible, aiming at a legitimate, straightforward use of the material.

A brush coat of cement stucco is to be used on each of these jobs, for the purpose principally of better controlling the final color, although we have here in the West cements of such lightness in tone and such general pleasing quality in color, that with some thought in the selection of sand and conglomerates, this stucco coat could also be eliminated. It has a virtue, however, in giving an added seal to the surface of the wall, softening the occasional gravel pockets and other abrasions incident to construction.

A most interesting building now nearing completion is the Los Angeles Public Library, the last important work from the hand of Bertram Goodhue. It is a monolithic concrete structure throughout, with stucco exterior, and with the principal rooms developed with stained decorative ceilings directly on the concrete.

The decorative treatment of concrete may, for convenience of description, be separated into the following divisions: The treatment of flat surfaces in color; the treatment of comparatively flat surfaces by means of varied textures or textures and color combined; the treatment of surfaces in greater or lesser degrees of relief or full modeling.

Cement plaster on concrete has become so common and, when properly applied, it is so much a part of its structural base that, for present purposes, the two materials may be considered as identical. Rough casting of concrete has its peculiar charm of surface and the manipulation of cement plaster runs a grand scale in variety of texture, but to haggle over the relative merits of plastered and unplastered surfaces is as reasonable as to divorce the glazes from the pottery of which they are a part.

The mere painting of flat concrete surfaces, regardless of the elaboration of the process, carries with it nothing distinctive of the material itself, and while beautiful color effects have been obtained in this way, there seems to be an ever-present danger of allowing the process to degenerate into imitation. The temptation to imitate wood is, of course, a natural one where rough lumber has been used as forms, since the grain of the wood is generally imprinted upon the concrete. A flat surface decoration in stains, rather than in opaque pigment, need be no less pleasing or brilliant and yet may be used in a manner to heighten rather than to disguise the characteristics of concrete. A great variety of such stained treatments is possible and might be described under two headings: First, those resulting from what is often colorless chemicals or chemical combinations; and second, those resulting from the use of finely divided pigments. Materials of the first class may be used either in the liquid concrete as it is cast or may be carried into the material after it is dry by means of some penetrating liquid or by means of the liquid chemical itself. Materials of the second class may be incorporated with the wet concrete or may be carried in by means of any of the so called hardeners or other penetrating liquid. In the application of any of these methods a knowledge of chemistry is essential in order to guard against the introduction of agents which might act destructively on the concrete.

Flat surfaces decorated by means of varied textures are common in the plastered walls of Northern Italy and the designs run from the most simple geometric divisions of the surface to graceful representation of natural plant forms.

The impulse to scratch a newly plastered wall before it has entirely hardened is, it would seem, shared by every member of the human race from the cradle to the grave. There is something irresistibly inviting about it. If the results of such scratching off of white plaster were to reveal the warm brown tones of a soft brick wall beneath it, the art of scraffito in two colors has been discovered, and if such a brick wall had previously been covered with a coat of smoke blackened plaster before the white had been applied, the range of color would have been enlarged.

Hard scraffito is the result of applying successive layers or coats of different color plaster to a wall and, after it has taken its set, the design is scratched through in different parts to the color best suited to its representation. It will be noticed that the hard process, therefore, employs as its means a combination of relief, texture and color, and the skillful artist takes advantage of all such means by arranging the sequences of color coats to assist the effect of deep cutting.

The process as outlined has been followed for centuries and when scraffito is used today it is still followed. No particular advantages have as yet been taken of the use of modern machinery or the qualities of modern materials in an attempt to improve the results or conserve the time and energy of the artist. Such efforts were not necessary in the

days when the designer and artisan were one, but today we must handle the problem of conveying to the mind of the artisan the desire of the designer, and must recognize the economic changes in the labor situation if we are to get on at all. The centuries through which scraffito has had its development have never witnessed the variety, brilliancy, durability, or workability of colored plasters such as is offered for the purpose today, nor have the ages ever before offered a machine capable of spreading smooth surfaces of uniform thickness of such materials. In conjunction with such mechanical means of preparing the working surface, we are now also in possession of a magnificent means of chipping, scratching and cutting the surface. The means referred to is the cement gun, which handles not only cement but gypsum also with equally good results. The surface once prepared, we now have recourse to the modern pneumatic hammer or tool for cutting and surfacing any hard granular material. By means of those two present-day devices and modern colored plastic materials the staging is up and nothing is lacking but the "Designing Mind" to add a new chapter to the history of hard scraffito.

Soft scraffito is accomplished by a more direct method than the hard, for the drawing and painting are done simultaneously and both during the process of laying the background surface. It is a method of placing plaster on a wall in certain definite areas which constitute the design to be executed. It would be seen that in manipulation and method soft scraffito and fresco are identical; the difference lies only in the degree of realism attempted by the designer, in the degree of skill manifest, and in the amount of pictorial modeling employed. Wet plasters, when laid side by side, offer the same opportunity of blending or being drawn together as do oil paints on a canvas, nor is there any less possibility of the use of intermediate or joining tones or hues. By this quality of the materials it is at once seen how the skilfull scraffito artist may be drawn into the realm of the true pictorial delineator and the results of his efforts culminate in fresco.

Backed by only a limited number of experiments, it seems safe to predict that, in the execution of soft scraffito, no fewer advantages may be secured from modern machinery and materials than have been pointed out in the description of the hard method. Stencils cut from light roofing materials or sheet metal withstand the sand blast of the cement gun for a considerable length of time and by means of a series of such stencils, carefully studied for overlapping, successive layers of different colored plasters may be built up into a design. Hand plastering over or through such stencils is equally effective, and when the artisan is not a designer, the expedient affords a mechanical means of executing the will of the artist to a high degree. Aside from the fact that two colors are never overlapped to form a third, the process and ingenuity of designing the stencils is identical to that of block printing.

Related to both methods of scraffito and its monochrome ancestor, is the incised ornament exemplified by the floor of the Cathedral of Siena. It is believed that these white marble slabs were covered with wax, into the soft surface of which the lines were drawn with a metal tool, the real incision having been made by the use of acid held in place by sand or sawdust. The whole process was probably identical to that of etching a copper plate, except that problems of size had to be dealt with. In modern times, concrete floors, by reason of their chemical composition, would lend themselves to the process as readily as slabs

of marble. Problems enough would remain to make the work attractive, but there is no doubt that a great field of intensely interesting experiments remain to be performed along this line.

Another method of incised ornamentation consists in bringing the designer in contact with a freshly laid and finished concrete floor or wall and, after having provided him with suitable scaffolding, induce him to etch the surface after the method of dry point etching; that is, merely scratching his design into the yielding surface with a suitable metal tool. The counterpart of the dry point burr is present in this process and, as in the etching, must be partly or wholly removed after the surface is hard set. Fillers composed of earthy pigment and wax or cement may be rubbed into the lines if the work is intended to carry to any distance or if, for sake of cleanliness, a smooth surface is desired.

Another division of the subject deals with the methods of treating concrete surfaces in low relief, either pattern or matrix; raised or sunken. Since we are most interested here in those methods which are possible yet uncommon, we shall not stop to consider further the use of glue and plaster moulds. These methods are established and rapidly developing into a highly technical art, both in the production of all sorts of surface embellishment in poured concrete and of cast stone in pieces to be assembled later. The tendency at present toward cast stone rather than toward plaster forms for monolithic casting is regrettable, but it seems safe to predict that when once we have regained our equilibrium from the art stone tilt which we are now experiencing, we shall settle down to a more legitimate use of that worthy material as inserts for monolithic casting.

Cast stone, however, is not the only material which lends itself to a legitimate use as inserts—tile and wrought and cast metal of all kinds are at the disposal of the inventive designer.

Wood form work readily lends itself to the construction of rectangular and geometric matrix panels for monolithic castings, but little has been done toward the further embellishment of such panels with anything resembling the free flowing or curved lines of natural forms which, by long inheritance, we have come to regard as essential to architectural adornment.

Present needs are for a plastic material with which one may freely model his ornament on the inner face of wood panel forms. The material must be easily worked like clay, but unlike clay it must possess the quality of not drying, cracking, shrinking and loosening itself from the wood form in the process of hardening. Preferably it should be a material of considerable strength, yet capable of being dissolved or softened in order to remove it from deep grooves or undercuttings. Experiments have been made with mixtures of clay, sand and glycerine; with sawdust and glue; with sand, water and flour; in fact all of the materials known to foundry practice may be looked upon as promising possibilities. The fact that the whole process of modeling is negative or the reverse of what is to be obtained in the finished work is apparently no great handicap. One soon becomes accustomed to think in terms of the matrix, and only a little practice is needed to overcome what at first appears to be an insurmountable difficulty. Anyone who has mastered the difficulty of reversing his drawing in the making of an etching, has accomplished a feat equal in every way to that of matrix modeling.

The possibilities for the enrichment of broad surfaces of mono-

lithic concrete by the methods suggested above are infinite and yet we are waiting for the proper inventive designer to develop and make it available to the architect.

There are also opportunities for direct first-hand modeling in concrete itself. By carefully selecting the materials and proportions of the mixture, a concrete may be made which lends itself to tooling without suffering any great loss in either strength or durability. With such a material and the modern pneumatic tools at our disposal, the work of a sculptor could be reduced to a minimum by an ingenuous form builder capable of blocking out or of bounding a statue by the flat planes which are already his stock in trade.

High relief, built in place, is also possible by means of the cement gun. Steel armatures are readily and economically covered by this means and the degree of finish to which the work is to be carried is limited only by the skill of the director of the nozzle. While a tooled finish of such work is possible and while a toolable mixture may be deposited by means of the cement gun, yet it is doubtful whether the modeler who has gained a degree of familiarity with the nozzle will ever consent to any such subsequent finish of his work. There is a joy in the building of masses and of shaving them into planes while quite plastic which increases as familiarity with the tool progresses, and it is highly possible that through this feeling, a freedom of expression may arise sufficient to develop a new style of architectural sculpture, bearing a similar relation to our present formal modeling that a rough watercolor sketch bears to a finished painting of fifty years ago.

While our friends of the 6H pencil have made possible, through the use of this delightfully flexible material, concrete, the support and construction of any building shapes that can be devised, it is now up to the addicts of the charcoal and 4B to realize that this is a material of the greatest architectural possibilities and one in the use of which, as they study its intelligent application, they can again build structures that will stand on their own feet architecturally, devoid of the sham and inconsistencies of much of our recently past work.



HOME IN CLAREMONT, BERKELEY  
W. H. Rateliff, Architect



FOOT BRIDGE ACROSS THE FALLS OF SCHUYLKILL, ABOVE PHILADELPHIA, MADE OF WIRE CABLES AND BUILT IN 1816. REPLACED THIS YEAR BY THE LONGEST SUSPENSION BRIDGE IN THE WORLD. IT IS 9,500 FEET IN LENGTH, 135 FEET WIDE AND 385 FEET HIGH. THE BRIDGE WILL BE OPENED TO TRAFFIC JULY 4TH, AS AN INCIDENTAL FEATURE OF THE SESQUI-CENTENNIAL CELEBRATION IN PHILADELPHIA.



THE NEW STEEL SUSPENSION BRIDGE, SCHUYLKILL, ABOVE PHILADELPHIA

## World's Greatest Wire-Cable Suspension Bridge

By RUSSELL BYRON WILLIAMS

**B**ACK in 1816, two engineers by the names of White and Hazzard, erected the first wire-cable suspension bridge in the world. The dusty records covering this engineering project say: "this was a foot bridge across the falls of Schuylkill, above Philadelphia, whose cables were of 6 wires,  $\frac{3}{8}$  inches in diameter, and so a new epoch of development was instituted. The span of the structure was 408 feet; its cost was \$125; a toll of one cent was charged for passage, and only eight passengers were allowed upon it at a time." Thus did Philadelphia start something—then finish it, 110 years later, by erecting the world's greatest wire-cable suspension bridge which now spans the Delaware River and connects Philadelphia with Camden, Pennsylvania with New Jersey. This new structure will be officially opened to the public, July 4, 1926,—150 years after the signing of the Declaration of Independence.

One cannot think of crossing the Delaware River without having his mind revert to the troublesome days of 1776. Thomas Paine it was, who said in a letter written to George Washington, during the early part of that year: "These are times that try men's souls." Paine's words took on added meaning with each month that followed, reaching their climax perhaps on that famous Christmas night when Washington, then a captain, took 2,400 illy-clad and half-frozen men, horses, guns and paraphernalia, across the swift and treacherous Delaware River that was filled with cakes of floating ice—surprised the drunken Hessians and took 950 prisoners besides killing 17 and wounding more than 80 of the enemy. This he did at a cost of only two men and four wounded and in spite of a driving storm of snow and sleet which rendered useless much of his ammunition. Then, as a fitting climax to his successful daring, he re-crossed the dangerous and icy Delaware that evening with all his prisoners and captured guns.

A great steel wire suspension bridge would have meant much to Washington and the cause of independence in 1776. With a total population in the 13 colonies of 2,810,000 (about as many as are now in the city of Philadelphia alone) it was obviously impossible to have such a bridge even if the necessary funds (\$32,738,000) had been available—which they were not. Indeed, 150 years ago, there was no such thing as steel or galvanized wire, and cables 30 inches in diameter were not only unnecessary, but, by reason of that fact, undreamed of.

But the progress of the intervening century and a half, made possible by the republican form of government instituted at such pains and privations and the subsequent development of mechanical methods and then unknown products, has brought about the serious need for the bridging of the Washington-famed waters—which need is now being met with the erection of the longest suspension bridge in the world. This bridge is 9,500 feet in length—135 feet wide—385 feet high—and with a suspension span of 1,750 feet. It is, in itself, an outstanding example of the progress of the American people in 150 years; an example of the vastly differing conditions and circumstances between 1776 and 1926. And on July 4, next, during the sesquicentennial celebration of the signing of the Declaration of Independence at Philadelphia—an electric button will be pressed which will open to vehicular, trolley, rapid transit and pedestrian traffic between the two cities, this largest of all suspension bridges,—the mother of which stood across the Falls of Schuylkill, 110 years ago.

From the engineering standpoint the new Delaware bridge is a twentieth century marvel. It excels in every way all previous records in bridge building. Heretofore the Brooklyn, Williamsburg and Manhattan bridges held first place in suspension bridge construction. All of these, however, have been eclipsed in almost every dimension, by the new Delaware River bridge. Instead of being hung by two cables formed of six strands of  $\frac{3}{8}$ -inch wire the new bridge is suspended by two, finely woven, steel wire cables, 30 inches in diameter (18,666 strands of No. 6 wire each.) Rather than being limited to 8 foot-passengers at a time the new bridge will accommodate 6,000 automobiles an hour, in company with four lines of rail traffic and two 10-foot streams of pedestrians. The live load is calculated at a maximum of 12,000 pounds per lineal foot of bridge, while the structure itself, being more than a mile and a half in length, will add enormously to the weight that must be suspended by the two cables. Indeed, the tensile strength of each cable is 223,000 pounds per square inch, or something over 100,000,000 pounds per cable.

All of the wire used in the weaving of these enormous cables, if stretched out in a single piece, would total 25,100 miles—sufficient to encircle the earth at the equator and have enough left over to reach from Pittsburgh to New York. This wire was merely wound into large reels at the factory, the weaving into cables being done right on the job. When it is remembered that each cable has 18,666 wires, that each is 3,540 feet long and weighs 6,750,000 pounds, this task of weaving the cables in place takes on enormity. More so, perhaps, when it is realized that the laying of the strands and the weaving of the cable must be done in such a manner that not a single wire must be allowed to shirk its strain, thus throwing added burden on another wire. That this was done, and done perfectly however, was assured by Chief Engineer Modjeski when he said: "In such work there is always the danger of a wire or two slipping and the accident not being discovered until we come to the squeezing process with the 'traveling spider.' Not one wire, however, has failed to fall into its intended place and the contractor is to be congratulated on the performance of the work of his wiremen. All wires pull together."

The suspender ropes supplied by the American Cable Company and extending from the two main cables to the floor of the bridge, number 596. These alone have a total weight of 7,400 tons. The floor which they support is made of steel and reinforced concrete, there being on it, two 10-foot sidewalks, a 57-foot motor drive, two trolley tracks and two rapid transit tracks.

Suspension bridges date back to the obscurity of Chinese history. The first mention of suspension bridges was made by Kircher in his "China Illustrata" published in 1667 wherein he describes a suspension bridge consisting of 20 chains, which, according to him, had already seen more than a century of service. Among the earlier suspension bridges is the one over the Danube at Budapest which has a span of 666 feet, and the Clifton Bridge at Bristol, England, having a span of 702 feet. Both of these bridges, however, are of chain. It remained for Philadelphia, in 1816, to erect the first wire-cable suspension bridge across the falls of Schuylkill—thus ushering in a far-reaching development in bridge construction—then complete what she had started with the erection of the Delaware bridge, which will take its place immediately as the principal factor in the future growth and development of the two cities and surrounding territory.

## Efflorescence

By R. P. BROWN,  
In the American Architect

**E**FFLORESCENCE is one of the annoying minor troubles in construction. It may occur on any kind of masonry, and while not serious, it does detract from the good appearance of a building. The cause of efflorescence, or as it is sometimes called, "fuzz" or "bloom" is often misunderstood. Sometimes the blame is placed on lime for dry lime and the crystals of efflorescence look somewhat alike, both being white and powdery. However, the similarity stops there, for the two materials are entirely different.

Chemical analysis of samples of efflorescence shows that this white "bloom" is composed of salt crystals. The salts which cause the trouble are all soluble in water, and are usually chlorides or sulphates. Sodium, magnesium or calcium sulphates, commonly known as Epsom salts or Glauders salts, are the chief offenders. The chlorides that usually give trouble are sodium chloride (table salt) and calcium chloride, both frequently used in cold weather to lower the freezing point of water.

These trouble-making salts may come from various sources. Dirty sand may carry them, or a mineral water may have been used for mixing the mortar or wetting down the masonry materials. However, if washed sand and pure water are used with lime and Portland cement for the mortar, the danger is usually eliminated. Even if the salts are present in the materials, there is little danger of efflorescence if the wall is protected during construction.

Efflorescence is an indication of excess water within the wall. This free water must come to an exposed surface to evaporate and there it will deposit any material which it has in solution. Thus if it has dissolved these soluble salts it will deposit them as efflorescence on the surface. If the wall is porous it may soak up considerable moisture during wet weather, or a leak due to defective flashing or faulty plumbing may let water into the wall. In either case the excess water will dissolve the salts out of the masonry, and leave them on the surface as the water evaporates.

When first deposited efflorescence can be washed off with water, either by a hose or brush. When efflorescence is heavy or when it has dried, it may be necessary to add a little commercial muriatic acid to the water, making about a 10% solution. When acid is used, the wall should be thoroughly washed down with fresh water afterwards.

Simple tests will disclose the presence of chlorides or sulphates which have caused the efflorescence. For chlorides, dissolve some of the "bloom" in distilled water. Add to this solution a drop or two of ordinary silver nitrate solution. If chlorides are present the solution will immediately become cloudy, and any great quantity will produce a considerable soft whitish precipitate which will be deposited in the bottom of the test tube or beaker. When exposed to the light this precipitate will turn dark.

For sulphates, dissolve a sample of the fuzz in boiling distilled water to which a few drops of hydrochloric (muriatic) acid have been added. This solution should be strong enough to turn blue litmus paper red. While the solution is still boiling add some 10 per cent barium chloride solution. If sulphates are present in appreciable quantities a heavy cloud will at once appear and drop to the bottom. The amount

of sulphate present is roughly indicated by how rapidly the cloud forms and how much precipitate is deposited. The litmus paper and barium chloride solution may be purchased at any drug store.

It is a simple matter to test the sand and water to be used and if desired, the other materials also. There may be a very small amount of calcium sulphate present in the lime (due to sulphur in the coal used), and the test will locate even a trace. The amount actually present in good commercial limes, as determined by many careful chemical analyses, is small and will not cause efflorescence.

If the nature of a structure requires that its walls should be free of this deposit of salt, entire safety may be secured by testing the materials beforehand by soaking them in water and then testing the water after a time to see if any sulphates or chlorides are present. But it should be noted that efflorescence occurs only when a wall is kept very wet for some time after construction, and that there is little danger of its appearance in dry weather.

\* \* \* \*

## An Architect's Day

By RALPH C. HARRIS,

In Bulletin of the Illinois Society of Architects

(Inspired by Harvey Wiley Corbett's article in *The Saturday Evening Post*.)

- 7:00 A.M. Rises.
- 7:30 A.M. Leaves in auto to visit two of his jobs.
- 8:00 A.M. Arrives at first job. Meets owner, who tells him that he thinks the workmanship is terrible and wonders if building will be done by the time the subway is opened.
- 8:05 to 8:30 A.M. Inspects job for himself. Thinks workmanship is pretty fair but wonders why in hell he ever designed a mantel like that. Resolves that he'll never tell anyone what he thinks of that mantel. Meets contractors. Each one tells him that the superintendent is rotten and that unless every other contractor gets out of his way he'll have to take his men off the job. Finally pacifies contractors, gives superintendent instructions and gets away.
- 8:30 to 9:00 A.M. Drives to second job. Has flat tire on the way and arrives dirty and mad.
- 9:00 to 9:30 A.M. Inspects second job and hears same stories as on first job, only a few more.
- 10:00 A.M. Arrives at office. Friend waiting to see him remarks on "banker's hours." Gets rid of friend by loaning him the money he wants. Notices eleven dollars left in personal account.
- 10:00 to 10:00 A.M. Reads mail. Mostly ads, bills and professional magazines. Gets one letter asking him to submit sketches in a competition for a six-flat building.
- 10:16 A.M. Answers phone. No plumbers on the Rank Hotel job. Tells owner he'll get right after it.
- 10:17 A.M. Looks in draughting room. Head draughtsman reports two draughtsmen ill with the flu and one late. Therefore, Job No. 732 wouldn't be out Saturday as promised unless they worked overtime. Architect looks over Job 732 and thinks scheme is fine.
- 10:25 A.M. Answers phone. Personal friend says he wants his brother-in-law Charlie to get heating on a certain job, and a few dollars difference in the bids shouldn't make any difference where friendship occurs.
- 10:30 A.M. Appointment with prospective client and wife. Thinking of building a twenty thousand dollar residence. Wife must have eight rooms, four baths, living room not less than twenty-eight feet long, three closets to each bedroom, five base plugs in each room, a big attic, green woodwork to match her furniture, and she just loves Spanish with a covered porch on two sides. Client thinks an architectural fee of six per cent too much. Has a contractor friend who will, etc., etc.
- 11:00 A.M. Prospective clients leave. Three material men get mad when architect tells them he has an appointment at the bank and can't see them.
- 11:05 A.M. Arrives at bank and helps close a building loan. Thinks the bank com-

- mission is awfully high, but is afraid to kick for fear of ruining the whole deal. Anyway, the owner seems satisfied and the building will be built.
- 11:30 A.M. Back at office. Awards heating contract but not to friend's brother-in-law—whose firm rates no good.
- 11:40 A.M. Phones about a job he's been trying to get. Finds job has been given to Holabird & Roche.
- 11:45 A.M. Phone call. Talks to owner who wants to know if he can relocate boiler room in Rank Hotel, as a contractor has told him that place would make a fine billiard room. Architect explains reasons why for present scheme and after fifteen minutes owner seems satisfied. Architect inwardly curses contractor.
- 12:00 M. Owner of Job No. 732 which is promised for Saturday arrives with wife. Looks over plan in detail, adds a lot to building which is going to run cost over appropriation, and add a lot of draughting time.
- 1:00 P.M. Architect arrives at professional committee luncheon and discusses with members what can be done to curb the practicing of unlicensed men styling themselves architects. Swallows some lunch during discussion and gets back to office at 2:00 P.M.
- 2:00 to 2:30 P.M. Checks over specifications on Job No. 732, answers phone calls and sees two material men who want him to specify their lines.
- 2:32 P.M. Wife phones. She must have the apartment redecorated and needs a new spring coat.
- 2:35 P.M. Has appointment with hardware contractor. Selects hardware for building. Can't close contract because he knows owner's wife will want to see selection and probably won't like it.
- 2:55 P.M. Owner's wife arrives and doesn't like it.
- 3:00 P.M. Realizes that he must collect some money this week. Calls up three clients. First one wants him to wait until building loan is opened. Second didn't know he was to get any more until building was completed. Third would try and give him a check Saturday morning. Architect thinks: "If he doesn't I'm sunk."
- 3:20 P.M. Head draughtsman sees him about bath room layouts, position of radiators, what kind of doors are to be used, is interior trim to be painted or stained, etc., etc.
- 3:40 P.M. Phone call. "When can we expect a check on that blue print bill?"
- 3:45 P.M. Dictates. Steno mad because it's late in the day and she's got a date at five.
- 4:20 P.M. Finishes dictating. Steno madder than ever.
- 4:25 P.M. Sees Landis Award representative. Architect tries to figure out if he can build Job No. 732 with Landis Award contractors.
- 4:40 P.M. Superintendent reports in and goes over in detail progress of jobs during day. Reports Rank Hotel delayed because he had to reject certain materials that did not correspond to specifications. Owner objecting to delay and wants to use materials delivered because the contractor had assured him that they were "just as good" and had really "cost more money." Superintendent wants architect on Job No. 724 at eight the next morning to settle dispute between owner and carpenter.
- 5:00 P.M. Signs mail and remembers at least a dozen things he should have done during day. Makes note to do them the next day.
- 5:30 P.M. Goes home and dresses for architectural society meeting.
- 6:30 P.M. Society dinner and meeting lasting until 9:30. Hears a lot about architecture being a "wonderful profession." Decides it is.
- 10:00 P.M. Arrives home. Finds bridge party in progress and plays bridge until midnight. Loses six dollars.
- 12:00 M. Bed. Too tired to sleep and wondering about his Saturday payroll.

\* \* \* \*

## Architects Not Entitled to Lien

Architects are not entitled to a lien upon a building for services rendered in preparing plans and specifications and superintending thereunder, according to a decision handed down by the Oregon supreme court. A request for a rehearing has been made.

## THE Architect and Engineer

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PROBABLY the most spectacular growth in the history of the electrical industry has been that of radio. Six years ago radio as a commercial factor was unknown. The estimated sales of radio apparatus and supplies for the year 1926 are in excess of \$400,000,000. Nevertheless it is believed that the household electrical refrigerator has a future in store for it almost if not quite as great as that of radio. It has been estimated that there are approximately 142,000 household-type electric refrigerator units used in the United States. Little by little the electrical idea is infiltrating into the home life of the people. As the adaptability of the electrical servant to the solution of domestic problems becomes more fully known the domestic load increases by leaps and bounds.

THE CONCRETE building industry is now reaching to the home, American public, educational, industrial, and business building, when design and construction have been honestly taken care of, has been synonymous with permanence and firesafeness, while the American home has generally been sadly deficient in these respects, except in the homes of the wealthy. The architect and the builder have been watching the development of concrete construction, and have now applied their knowledge to the building of homes. True, details are not the same, nor are surface treatments of a similar nature. Essential principles are, however, sufficiently alike to give the same advantages and to render possible a low unit cost, a low repair cost, slow depreciation, greater resale value, adequate heat-saving, firesafeness, and more all-around satisfaction.

### MORE ANENT STATE BOARD

Mr. Clarence R. Ward who is doing some splendid work as President of the Northern Division of the California State Board of Architecture, takes kindly exception to our editorial comment last month with reference to the more or less drastic examinations of the Board and which are believed to have a tendency to frighten away candidates who otherwise would appear for examination. The point that was intended to convey is that an applicant for a license to practice who has planned and built successfully one or more structures is entitled to greater consideration than the candidate without practical experience. That is, he should be required to pass a less critical examination if his work presented is satisfactory. It is the possibility of failure in answering text book questions that keeps in the background many a worthy practitioner. But Mr. Ward says the

written examination is not difficult, for the candidate is given an outline of what he is expected to know, the use of hand books being permissible. Therefore candidates should be less reticent in coming forward. "It is not the idea of the board to keep good men out of the profession," Mr. Ward says, "on the contrary we are only too anxious to get them in. We find that candidates, who are artistic and well developed in matters of design, are somewhat weak on the subject of engineering and quite often we are forced to require them to take the written examination, which usually results in their putting in some study on this very important part of an architect's training. It is easy enough to say that we can hire an engineer to do the work, but if you do not know that his work is correct, you are not making good with your client; at least, that is the stand the Board takes. It is a well known fact that there are a great many engineers who are really practicing architecture with no idea whatever of the necessity of adding some charm to their structural lines."

With further reference to the expired terms of the members it seems likely that the Governor will retain those now serving except in the case of Mr. Glass, who has resigned and in whose place a new man will be named. As previously announced Mr. Evers has been appointed to fill Mr. Schnattacher's place on the Northern Board and Mr. Todd has been re-appointed to the Southern Board.

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#### THE LABOR SITUATION

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Serious reaction threatens the entire construction industry of the United States if the building trades insist on new increases in wage rates. Close students of industrial conditions in Illinois predict an alarming set back to build-

ing activity there should the Plasterers' Union succeed in its demands for a \$2.00 per day advance in wages. Naturally such a concession would be followed at once by demands for increases in the other trades. The subsequent increase in cost of building construction would be sure to put an end to present prosperity and curb a building boom that otherwise would go on indefinitely.

In San Francisco and the Bay Region it is not a question of wages. The Unions are fighting for recognition. They would put an end to the American Plan or open shop which has proved so successful for the past two or three years. That public opinion is in favor of a continuation of the American Plan methods seems unquestioned and if we are not mistaken the public generally wins out in the end.

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#### MANAGEMENT WEEK

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We have all heard about "Fire Prevention Week," "Thrift Week," "Good Roads Week," and so on but this year the engineering profession is fostering a new one. "Management Week" they are going to call it, and it is for the purpose of summing up the extent of progress that has been made in the last five years in waste elimination. That there has been a wonderful saving there can be no doubt and the records are expected to astound those less familiar with what has been accomplished. The last week of October has been named to "put over" a series of meetings in one hundred leading commercial and industrial centers.

Mr. Ray M. Hudson, chief of the Division of Simplified Practice, U. S. Department of Commerce, has been made secretary of a national committee comprising the American Society of Mechanical Engineers, American Institute of Accountants, American Management Association, Society of Engi-

## Architects Move—And They Are All Readers of The Architect and Engineer

Arthur T. Ehrenpfort has moved from the Russ building to 24 California street, Room 303, San Francisco.

Alben Froberg has moved from 369 Pine street, San Francisco, to 505-17th street, Oakland.

O. G. Traphagen has moved from 244 California street, San Francisco, to 2037 Alameda avenue, Alameda.

Frank L. Benchley has moved from 306½ North Sprada street, Fullerton, to 1023 Wm. Garland building, Los Angeles.

Philip Dean has moved to 368 North Bronson avenue, Los Angeles.

De Vere V. Devel, has moved from 705 Commercial Exchange building to Room 918, same building, Los Angeles.

Edward P. Finegan has moved from 5603 Lexington avenue to 743 Chamber of Commerce building, Los Angeles.

James H. Hoose has moved from 4110 Harvard boulevard to 4063 South Normandie avenue, Los Angeles.

J. Aleck Murrey has moved from 4707 Hollywood boulevard to 619 Hollywood Security building, Los Angeles.

Allen K. Ruoff has moved from the Cahn, McCabe building to 523 South Spring street, Los Angeles.

Theodore Starrett has moved from 426 Western Mutual Life building to Room 214, 412 West Sixth street, Los Angeles.

H. Percy Sharpe has moved from 1408 South Hill street to 5446 Hollywood boulevard, Los Angeles.

H. F. Starbuck has moved from 2550 Merced street, Fresno, to 1207 East 90th street, Los Angeles.

W. L. Hawk has moved from 238 East First street to the Laughlin building, Long Beach.

Fay R. Spangler has moved from 22 Smith building to 403 East 20th street, Santa Ana.

Roy F. Bancroft has moved from 2114 Shattuck avenue, Berkeley, to 111 West Laurel, Glendale.

Charles E. Hodges has moved from St. Petersburg, Florida, back to 202 Riverside drive, New York City.

Charles C. Ruppenthal has moved from 3807 West Washington street to 1065 North Vine street, Los Angeles.

Messrs. Ashley and Evers have moved from the Holbrook to the Underwood building, San Francisco.

### Bank Alterations

The H. H. Winner Co. of San Francisco is preparing plans for alterations and additions to the Monterey County Bank at Salinas.

### Treasurer of Institute

Architect Edwin Bergstrom has been elected treasurer of the American Institute of Architects which held its annual convention in Washington, D. C., the first week in May. Reginald D. Johnson and David C. Allison, Los Angeles architects, have been elected Fellows of the Institute.

### Branch Bank Building

Plans have been completed by Architect Edward T. Foulkes, of San Francisco and Oakland, for a one-story reinforced concrete branch bank building on Grand avenue, Oakland, for the American National Bank.

### Los Angeles Boy Honored

Roland Crawford, a Los Angeles boy, now attending University of Pennsylvania, was announced as winner of the Davis Scholarship competition. Fourteen sets of drawings were submitted in the competition.

### San Francisco Warehouse

The Matson Navigation Company will spend \$75,000 in the construction of a three-story reinforced concrete warehouse at Bryant and Main streets, San Francisco. Plans are being prepared by Engineer A. A. Brown.

### High School Group

Plans by Architects Dean & Dean of Sacramento have been approved for a group of high school buildings at Redding, Shasta County, for the Shasta Union High School District. Bids will be advertised immediately.

### Apartment Houses

Architect O. R. Thayer has completed plans for two apartment houses to be built in San Francisco, one on O'Farrell street, west of Hyde, and the other on Sacramento street, near Franklin. Both will represent a total outlay in excess of \$200,000.

### Addition to Old People's Home

Architect A. T. Ehrenpfort, 24 California street, San Francisco, has prepared plans for a \$50,000 addition to The Altenheim, German Old People's Home, in East Oakland.

### Berkeley Apartments

Leonard H. Ford, 1435 Harrison street, Oakland has completed plans for a three-story apartment house for W. F. Price of Berkeley. It will cost \$35,000.

**How the Building Dollar Is Spent**

The Copper and Brass Research Association has analyzed the cost of nine houses of frame construction varying in price from \$9,000 to \$23,000 and averaging \$15,000. The analysis shows the following relationship between the various elements:

Of every dollar expended:

	Cents is Spent	
Excav. and Grading	1.8	\$ 270
Masonry	9.4	1,410
Stucco, Plaster & Tile	10.6	1,590
Carpentry	27.2	4,080
Roofing	5.4	810
Flashing, Dwnspts., etc	0.7	105
Plumbing	9.3	1,395
Heating	7.0	1,050
Electric Wiring, etc.	2.7	405
Hardware	2.0	300
Painting and Glazing	4.5	675
Screens	0.9	135
<b>Total for Construction</b>	<b>81.5</b>	<b>12,225</b>
Landscaping	3.0	450
Builder's Profit	9.4	1,410
Architect's Fee	4.5	675
Financing	1.6	240
	<b>100.0</b>	<b>\$15,000</b>

**Architects and Engineers Needed**

The United States Civil Service Commission states that the bill providing for a \$165,000,000 public buildings program has passed the House and the Senate with certain differences which are now being discussed in conference. There is every reason to believe that the bill will become a law before the present session of Congress ends and that an appropriation will be made to cover the first year's expenditures of the five-year program.

The bill provides for new construction work amounting to \$100,000,000 outside the District of Columbia and \$50,000,000 in the District of Columbia. It includes \$15,000,000 to complete the unfinished portion of a building program ordered in 1913.

The Civil Service Commission has extended until June 30 the date for the close of the receipt of applications for positions of architects, associate architects, assistant architects, and associate and assistant architectural, mechanical, and structural engineers in connection with this work.

The age limit for all these positions has been raised from 45 to 50 years.

Full information and application blanks may be obtained from the United States Civil Service Commission, Washington, D. C., or from the Secretary of the United States Civil Service Board at the post office or customhouse in any city.

**Sausalito School**

Architect Norman R. Coulter, San Francisco, has completed plans for a one-story reinforced concrete grammar school at Sausalito, to cost \$60,000.

**P E R S O N A L**

John J. Backus, superintendent of building of Los Angeles and manager of the Department of Building and Safety Commissioners, has resigned membership in the Pacific Building Officials' Conference, so that he may devote his time to perfecting a uniform building code for the entire Pacific Coast.

H. E. Plummer, Portland, Ore., building inspector, was elected president of the Building Officials of America, at the twelfth annual meeting of that body in Columbus, Ohio.

Gustav F. Weber, architect, formerly of Philadelphia, has located permanently in Eureka.

John G. Little and Bernhard Silverberg, consulting engineers, have been added to the forces of the Bureau of Building Inspection of the San Francisco Department of Public Works.

W. J. Dodd of Los Angeles has been reappointed to the State Board of Architecture, Southern District, by Governor Friend W. Richardson.

Architect Julius W. Krause, of Los Angeles, recently paid San Francisco a visit and attended the annual session of the Grand Parlor, Native Sons of the Golden West at Santa Rosa.

Mr. George H. Brown, president of the Strable Hardwood Company, Oakland, has returned from a three weeks Eastern trip, which included a visit to Chicago, New York, Washington and the Sesqui-Centennial at Philadelphia.

**COMPETITIONS**

**Common Brick Houses**

An architectural competition is announced by the Common Brick Manufacturers Association of America. It is open to any architect, architectural firm or designer. It requires no sketch plans. It calls only for photographs and plans of houses or bungalows already constructed—or completed, before the contest closes November 16, 1926. The first prize is \$1,000; second, \$500; third, \$300 and fourth \$100.

**Small House Competition**

A small house competition with prizes to architects aggregating \$3,000 is being conducted by the Own Your Home Magazine, 1926 Broadway, New York City. The competition is open to practicing architects, draughtsmen and students, and closes at midnight July 31. R. C. Hunter, Architectural Advisor.

## A Line on the Architectural Alumni of the University of California

THE annual meeting and picnic of the Architectural Alumni Association of the University of California was held Saturday and Sunday, May 15th and 16th at Redwood Lodge in the Santa Cruz mountains. There were sixty-five in attendance.

A program was arranged by "Jake" Fratis during which a raffle was held, the proceeds going to the scholarships fund which is being sponsored by the Association. Dancing continued for the remaining part of the evening.

The annual meeting was called to order Sunday afternoon by Andrew T. Hass, chairman, and the regular business of the Association was carried on, during which time the scholarship fund, year book and annual exhibit were discussed.

Following the discussion and reports of the various committees the nominating committee submitted the nominations for the officers for 1926-27 and the secretary was instructed to cast a unanimous ballot as follows: Chairman, C. Jensen; Secretary-Treasurer, G. J. Fitzgerald; Executive, A. T. Hass, M. Gunzendorfer, L. H. Pries, N. K. Blanchard, and N. W. Shaw.

The Committee on Publications and Associates distributed the following interesting information regarding the present activities of Alumni:

The office of John Reid, Jr. '06 still ranks first in having the greatest number of Ark Alumni. The office force includes, Clement Ambrose '10, Mervyn Gunzendorfer, Ray Jeans '13, Norman Shaw '08, Hazel Slocum '20, Gerald Fitzgerald '21, Theodore Bernardi '24 and A. V. Jory '12.

Others who have been in the office during the past year includes Anton Buylo '21 who is at present in Europe; Ernest Born '23 who returned to the Ark to continue his studies under Mr. Howard and V. V. Oglou '22 who is now associated with Russell De Lappe in Oakland.

Walter Huber is still at his old stand in the First National Bank building, San Francisco.

Charles H. Cheney '06 is a consultant in City Planning with headquarters at Redondo Beach, California. His eldest son, Warren D. Cheney, has the distinction of not only being the first "repeater" but of having, with the aid of his father, produced and written one of the finest skits thus far presented at an Ark Association Initiation.

Henry H. Gutterson '07 is practicing architecture at 526 Powell street, San Francisco. Associated with Mr. Gutterson are Elizabeth Austin '10, J. K. Ball-

entine '16, James L. Johnson '23, Charles Phillips '24 and Sturgis Carne ex '25. Dorothy Wormser resigned her position with the firm during the past year to enter into the holy bonds of matrimony.

S. P. Koch is doing his best to hinder the work of East Bay architects as Building Inspector of the City of Berkeley.

Walter C. Falch '08 and W. A. Newman '08 each have offices in the Hearst building, San Francisco.

Irving F. Morrow '09 is now fifty per cent of the firm of Morrow and Morrow the remaining part of the firm being Mrs. Gertrude Comfort Morrow.

William C. Garren has offices in the De Young building, San Francisco. He is now living in his new home completed during the past year in Piedmont.

W. C. Perry is practicing architecture at 260 California street in addition to his work at the Ark. He is assisted in his office work by Winfield Scott Wellington '22.

G. F. Ashley '09 and Albert Evers '12 are practicing architecture in the Underwood building, San Francisco. Mr. Evers, besides being the Secretary of the San Francisco Chapter of the A. I. A., has recently been appointed to fill a vacancy on the State Board of Architecture. Elward Hussey '22 is still in this office.

E. H. Cline '08 is practicing architecture in Los Angeles.

Douglas Stone '24 is now a member of the firm of Appleton, Hyman and Stone, holding forth at 68 Post street, San Francisco. Clinton Loyd '25 is associated with them as is Lee Felt '23. Their recent work includes several large apartment buildings and commercial structures.

W. G. Corlett '10 is associated with Walter D. Reed in Oakland.

Clarence Cullimore is practicing architecture in Bakersfield and is also head of the department of Drawing in the Bakersfield High School. He has been granted his license during the past year.

A. H. Kimball '11 is professor of Architecture at Iowa State College, Ames, Iowa.

Lillian J. Rice '11 is practicing architecture in San Diego, California.

E. L. Snyder '11 is practicing architecture in Sacramento.

J. H. Mitchell is continuing the practice of the firm of Willis Polk and Co. Angelo De Sousa '24 is in the office.

Stafford Jory has recently been advanced to the position of Assistant Professor of Architecture. He is still practicing architecture in Berkeley.

W. A. Edwards '12 is practicing architecture in Santa Barbara.

E. J. Symmes has recently moved his offices to the Shreve building, San Francisco. Clarence Caulkins '24 is with him.

Walter T. Steilburg '10 is back from a trip to Honolulu.

C. R. Johnson '10 is head of the Department of Architecture at U. S. C. He is also associated with the Allied Architects Association of Los Angeles.

Geo. J. Adams '11 has recently opened an office in Hollywood.

F. T. Georgeson '11 is holding forth at Eureka.

W. J. Graham '13 is now with John J. Donovan in Oakland.

Frank Mayo '14 and Howard Bissell '14 are practicing architecture in Stockton.

Roland Stringham '14 is kept busy with residential work and is still sharing offices with Warren Perry.

Leo Sharps '24, Edward Nichol '20 and J. Dewey Harnist '24 are with Clarence Tantau in San Francisco.

E. W. Maybury '14 is a member of the firm of Marston, Van Pelt and Maybury in Pasadena. Lloyd Stefgem '25 is associated with them.

E. G. Bangs has recently opened an office in Oakland.

R. R. Irvine is practicing architecture in the Call building, San Francisco.

F. H. Reimers '15 is practicing architecture in Oakland and is assisted by Arthur Herberger, '25 and Herbert Goodpastor '24.

W. R. Yelland '15 is practicing the profession in Oakland. His recent store building for Tupper and Reed in Berkeley has brought forth much favorable criticism.

P. T. Poage, '19 is in charge of the State Architects office in Sacramento. The office force includes Robert Younger '24, Earl Hampton '23, Paul Daum '22 and Harold Woodhams '22.

W. W. Wurster has opened up an office in Stockton. Among his recent work is the Congregational Church of Stockton.

Russel G. De Lappe '20 has offices in Oakland.

K. B. Johnson is practicing architecture in Seattle. He visited in Berkeley last week, with his family, on their way to San Diego.

Lionel Pries had an office in Santa Barbara for a few months following the earthquake. After completing several commercial structures he moved his offices back to San Francisco and is now in the Atlas building. Norman Blanchard '22 is associated with him.

Luta Riggs is still with George Washington Smith in Santa Barbara. Both

she and Irene McFaul journeyed up for the Ark Orgie. With Mr. Smith also, are Rolf Eskil '24, Douglas Honnold '24 and Chas. Goldthwaite '24.

Esther Baum is back at the Ark after her trip abroad.

Harry Schary '21 is practicing Architecture in Oakland.

James Bertenshaw '24 is with Ralph Barton in Oakland.

James McCreery '23 is practicing architecture in Berkeley. Aside from his architectural work he is doing quite a bit of very interesting wood carving.

Alec Wilson '24 and Irving Brown '24 are planning a trip to New York. Their stay in the east will be for an indefinite period. Irving is at present with Walter Ratcliff in Berkeley as are Scott Haymond '22, Clarence Clar '24 and Arthur Dudman '25. Alec Wilson is with Albert Lansburgh in San Francisco, although he spent most of the past year in Los Angeles with the firm of Morgan, Walls and Clement.

Carl Lawrence '24 is with the firm of Blaine and Olson in Oakland.

Willa Claire Cloys is practicing in Berkeley but is planning a trip abroad this summer.

Lance E. Gowen is a member of the Architectural Faculty, University of Washington. He visited Berkeley last month.

Henry Howard is in the office of his father in San Francisco.

Jack Cloudsley '16 has offices in the Elks building, Stockton.

Edward Brett is practicing architecture in Los Angeles.

John Craig '23 is in business as a decorator in the Cordes building, San Francisco.

Mildred Meyers is still in her father's office in San Francisco. Rumor has it however that she will spend the summer touring Europe.

M. Sterling Carter '23 is in the Architectural Book Business on Post street, San Francisco having taken over the business of the late Mr. Hetherington.

Andy Hass has spent the past year in the office of Henry H. Meyers. Hass is now associated with Thomas Kent with offices in the Underwood building.

Geraldine Colby '23 is still the largest part of the office of Henry Smith, San Francisco.

Wilbur Peugh, '23 is doing business in San Francisco with Mr. O'Brien under the name of O'Brien and Peugh.

Edward Nickel '20 has offices on California street, San Francisco, but spends some time in the office of Clarence Tantau, San Francisco.

# With the Engineers

## Why Engineers Should Favor License Law

By D. B. STEINMAN,

National President American Association of Engineers

ONE great obstacle impeding public recognition of engineering as a profession has been the lack of legal control of the practice of engineering. Doctors and lawyers have to show evidence of proper training and qualifications before they are admitted to practice their respective professions; but, until a few years ago, there were no laws preventing any man, however unlettered or untrained, from hanging out a shingle and practicing as an engineer.

To remedy this condition, legislation has been enacted in many of the states during the past few years restricting the practice of engineering to those who possess the necessary professional training and experience. Approximately one-half of the states now have such licensing laws for professional engineers, and the profession is exerting its efforts to improve the effectiveness of those laws and to extend their enactment to the remaining states. It is through such laws and their vigilant enforcement that the public welfare and the good name of the profession can be protected from the practice of quacks and incompetents.

Licensing laws provide the necessary foundation for other legislation in the interests of the public and the profession. An example is the recently drafted structural safety bill, to be introduced in New York state, requiring public buildings to be designed and their construction supervised by licensed engineers. Such measures for safeguarding the public by insuring competent professional supervision could not be introduced without the previous enactment of a law establishing the licensing of engineers.

Licensing laws provide the necessary machinery for eliminating those who prove themselves unworthy or incompetent. A lawyer found guilty of unethical conduct is 'disbarred'; this would be impossible without the prerequisite legal requirement of 'admission to the bar.' Similarly, under proper provisions in engineers' licensing laws, the profession can take steps, through the state license board, to secure the revocation of the license of any engineer found guilty of dishonorable conduct or otherwise harming public interest or the good name of the profession. Without licensing laws,

there is no way of ousting violators of professional honor from the practice of engineering.

Licensing laws protect the use of a professional title. The unhindered and indiscriminate use of the designation 'engineer' in multiplied hyphenated forms by those who know nothing of engineering science weakens the respect for our professional title and retards the proper recognition of engineering as a learned profession. It is only through licensing laws that any thing can be done to curtail and ultimately to curb the misappropriation of our professional designation.

That engineers recognize direct personal benefits from licensing is evidenced by the large number of registrants in states having laws providing voluntary registration.

With licensing laws already enacted in so many states, the engineers in a non-license state should lose no time in securing licensing legislation in order to remove their temporary disadvantage; for until they enact their own licensing law they have difficulty in handling professional work in other states.

Reciprocity arrangements for engineers practicing outside of their own states have been developed and will be perfected as licensing legislation is extended, improved and unified.

Engineers' licensing legislation is comparatively new. It will take time to perfect it and to realize the full potential benefits.

The engineering profession is now in very much the situation of the medical profession about fifty years ago. In those days surgical work was done by the barbers, quacks flourished and the true physicians starved. Professional organization and licensing legislation were the correctives. Gradually the laws were strengthened, graduation from a medical college became a prerequisite, and the colleges stiffened their courses and raised their entrance requirements. Now we find the medical profession 'on top of the world.' A man cannot practice medicine nowadays without a thorough course of cultural and professional training as a prerequisite for a license. The unauthorized display of an

'M. D.' or appropriation of the title 'Doctor' arouses prompt investigation and action by the county medical society. Quack and quack-schools are put out of business. With their licensing law as a foundation, the medical profession has built a high place for itself in public confidence and esteem. The results speak for themselves. Witness the position of respect and leadership now generally enjoyed by the physicians in every community.

Licensing legislation will accomplish similar results for the engineering profession. The full benefits will not be realized immediately.

Some of the older engineers are oppos-

ing licensing legislation. They have already secured their success and they have nothing personally to gain from license laws. They object to the slight inconvenience imposed. I say that such men are dastardly selfish in opposing a movement for the betterment of the profession merely because they have already attained their individual success.

It is the young engineer of today and the engineers of the future who will reap the full benefits of the licensing legislation; and they will bless us for our present far-sighted initiative and effort toward placing engineers license laws on the statutes of every state in the Union.

## Engineers and Architects Association, Los Angeles Chapter, American Association of Engineers

The monthly dinner of the Engineers and Architects Association of Los Angeles, was held on Thursday, May 27th, in the Windsor Tea Rooms, 527 West Seventh street, and proved of exceptional interest. Mr. Wilbur D. Cook, Jr., landscape architect, gave an illustrated address on the proposed Civic Center. Mr. Brooks, chairman of the entertainment committee, provided an enjoyable musical program.

\* \* \*

The Joint Technical Societies of Los Angeles meet every Thursday for Luncheon in the French Room of the Garden Cafe on the eighth floor of the Broadway Department Store. Each member society in turn provides a program, and all engineers are invited to attend these luncheon meetings from 12:15 to 1:30 o'clock.

On Thursday, May 27th, the annual meeting was held at the regular hour. At this time, Frank H. Olmsted was installed as chairman of the Joint Technical Societies for the next twelve months. Mr. W. C. Hogoboom will be the secretary for the coming year.

\* \* \*

Los Angeles Chapter has received from time to time requests from various technical publications for news items pertaining to chapter activities: Western Construction News is one; The Architect and Engineer, also of San Francisco, another; the Oil Bulletin, Los Angeles, and others. Mr. Hogoboom has in the past been handling this important part of the work in a very capable manner. Members are requested to forward to the secretary copy for use of the publicity committee.

\* \* \*

The report of the committee on San Gabriel River Dam Sites is now off the press and the committee has furnished

the secretary with the text of letters to be sent to the various civic bodies, which will accompany the distribution of some five thousand copies. Individual letters are to be written to each member of the City Council and Board of Supervisors.

It is proposed to present, during the year, reports on other matters of public interest.

\* \* \*

It has been suggested that a committee be formed in view of the probable benefit to be derived from simplified practice and standardization, and in view of co-operation already promised by certain local interests in establishing definite concrete specifications for this district. It was ordered by the board of directors that the local chapter of the A. A. E. call a conference of representatives from all technical organizations, city and county construction or engineering officials, and other interested parties, at as early a date as the president may deem desirable.

The personnel of the committee will be made up from city and county engineers of Southern California, representatives from the State Highway Commission, Portland Cement Association, Rock Products Association, Associated General Contractors, equipment dealers, Municipal Engineers Association, and others. This matter will be discussed at the next meeting.

### Unique Plan To Help Home Builders

Not long ago Liberty ran an article entitled, "And So We Built a House." It was written by Caroline S. Krum, who detailed her experiences in putting up a small cottage near Chicago.

Liberty did not know what it was letting itself in for, because the office mail suddenly took a decided jump—it seemed as though almost everybody in the coun-

try either wanted to tell the Krums where they had made a mistake in this, that or the other particular; or else the letters were from people who wanted to find out from the Krums how they did this, that or the other thing.

About the time the last letter was received, the thought occurred to the editor of Liberty that probably a more ambitious home building and furnishing program might carry on and capitalize this evident interest.

Word was sent out to Liberty correspondents in every part of the country, "Find a family that is starting now to build a house." Hundreds of reports were sent in, and from among these, four houses were chosen:

1. The home of Mr. and Mrs. Henry G. Jefferson at Bronxville, New York, designed to cost \$20,000.

2. A cottage, being planned by Mr. and Mrs. Charles L. Ward in Kansas City, to cost approximately \$7,000.

3. A seven-room brick and shingle house planned by Mr. and Mrs. Richard S. Davis of Milwaukee, to cost about \$12,500.

4. A seven-room brick house for Mr. and Mrs. George M. Visk, Spokane. This house is to cost about \$10,000.

To insure the fullest co-operation on the part of the home owner, Liberty will pay each of them \$1,000. In return each agrees to exhibit his home, to permit the taking of all needed photographs, to answer any questions that may be asked by visitors, and to refer to Liberty all letters that may be received as a result of the series of articles running in the magazine.

Each Liberty correspondent is paid \$1,000 for his work in reporting all the details of the progress of the house.

Each of the Liberty homes has a garage for the family car—and it is significant that every home considered had included a garage. The publishers of Liberty conclude that ownership of an automobile is not only an indication of financial success, but is very often the first step towards getting out and hunting a location for a home away from the congestion of the city, out in the suburbs, even beyond the reach of rail transportation.

#### How Saturday Half Holidays Originated

The impending wrecking or removal of the famous Vanderbilt mansion on Fifth avenue, New York, has given rise to many quaint stories dealing with its construction. One of these related by John Donnelly, the architectural sculptor, attributes the week-end half holiday to the popularity of the boat races conducted by an East River Club. Desiring

to attend the races, Mr. Donnelly did not care to do so because all of his stone carvers were accustomed to working the full six-day week. Finally, however, the race fever became dominate and he put the question of a Saturday half holiday to a vote. It was rejected by the carvers by a poll of 10 to 1, but as Mr. Donnelly wanted to attend the races he arbitrarily declared the vote carried. There was objection, of course, but, he explains, the carvers soon found many attractions in the holiday and at the end of the year voted unanimously to make it permanent. Today, Mr. Donnelly said, carvers would as soon change religion as to abandon their Saturday afternoons off.—Stone.

#### Rivet Handbook

The Union Iron Works, Los Angeles, has recently published the Rivet Handbook of 1926, which is the first publication to appear with complete tables for figuring loads in accordance with the new 18,000 pound per inch allowable stress for steel construction.

The Rivet Handbook contains tables of safe loads for beams, channels and girders; safe loads uniformly distributed for equal-legged angles; unequal legged angles and standard tees; values of angles; shearing and bearing values of rivets, maximum bending moments and web resistance of beams and channels, as well as details of archtype trusses and other features of value to the engineer and contractor.

Requests of additional copies of the 64-page Handbook have come from all sections of the nation, it was stated, and requests are being filled for a number of technical schools, including the engineering departments of the University of California at Berkeley, Stanford University, California Institute of Technology and the University of Southern California.

#### Oil-O-Matic of California

The Williams Oil-O-Matic Heating Corporation, Bloomington, Illinois, producers of automatic oil burners, announces the opening of Oil-O-Matic of California at 135 New Montgomery street, San Francisco, with an Oakland branch at 576 Grand avenue.

An elaborate booklet entitled "Oil Heating—What it Means to the Architect" is ready for distribution to every architect in San Francisco and the bay district. The booklet, which discusses in detail the convenient, easy and economical heating of homes and commercial structures, analyzes how oil heating affects plans and construction costs, and dwells at length on the principles of oil burning and its relation to the architect.

## BOOK REVIEWS

*Edited by*  
**CHARLES PETER WEEKS**

**ARCHITECTURE OF THE OLD SOUTH.** By Ernest Ray Denmark, with a foreword by Lewis E. Cook, Jr. Published by The Southern Architect and Building News, Atlanta, Ga.

This book is a well selected series of photographs of typical Colonial architecture of Maryland and Virginia, old buildings of Charleston and the lesser known examples of the classic revival which are scattered through Georgia, Alabama and Mississippi.

The period covered is between 1640 and 1850.

Although some of the plates have appeared in other publications, there are very many charming examples of the architecture of the old South that have not appeared before. The dignified charm of this period of our architectural history is re-created in one's imagination by this book. Let one who would leave the over-charged Spanish atmosphere of today to re-create that of a dignified home of the past, inhale the sunshine, the scent of jasmine, the aristocratic air illustrated within its pages.

**ENGLISH ROOMS AND THEIR DECORATION AT A GLANCE.** By Charles H. Hayward. Price \$2.00. Published by G. P. Putnam & Sons, 2 West 45th street, New York.

The Norman Gothic Period.

The Tudor Period.

The Elizabethian Period.

The Early Jacobean Period.

The Late Jacobean Period.

The Inigo Jones Period.

The Wren Period.

Early Georgian Period.

Late Georgian Period.

are all covered by text and illustrations.

The story of this architectural development is charmingly told and the pen and ink drawings amply illustrate the text.

Sketches of rooms are given, followed by details. The work is exceedingly well handled and furnishes a concise text book for the student of English domestic architecture.

**PERSPECTIVE, AN ELEMENTARY TEXT BOOK.** By Benj. J. Lubschez, F. A. I. A. Price \$2.00. Published by D. Van Nostrand Company, 8 Warren street, New York. This is the fourth edition of the book, completely revised.

The former editions of this book have been widely used. When it first appeared it was welcomed by all those struggling to picture for the architectural clients what the working drawings would look like when built, as a life saver, or at least as a great time and disposition saver. This last edition is well worth having, even though you may own a copy of a former edition.

**GOOD PRACTICE IN CONSTRUCTION.** By Philip G. Knobloch (Part II), 52 Plates. Published by Pencil Points Press, Inc., 19 E. 24th street, New York City. Price \$1.00

Another valuable addition to Pencil Points library. A book to meet the definite needs of the great majority of men in the architectural field. Part two is in the nature of an extension to Part I by the same author. Details of a more or less special character are given in addition to details of a generally useful nature.

### An Innovation in Formwork

Lindgren & Swinerton, Inc., general contractors representing the owners of the 24-story Hunter-Dulin building, Sutter and Montgomery streets, San Francisco, have sub-let the complete formwork for the reinforced concrete part of the building to the Steelform Contracting Company. This company will complete the entire formwork above the basement floor by the use of metal forms.

The columns, girders, beams and floor slabs will be built up in adjustable metal forms. Not over 5 per cent of the lumber now necessary to perform this work will be used in this building, thus eliminating an enormous waste that exists under present methods.

While heretofore metal has been used to a certain limited extent as a substitute for wood in forming for reinforced concrete, it has never been attempted anywhere on so large a scale as is contemplated in this San Francisco office building. For this reason the work will be watched with extreme interest by architects, engineers and contractors throughout the country. If the work is successful and the metal forms prove practical, the form item of fireproof buildings, which in itself amounts to considerable in every building of reinforced concrete construction, will be materially effected, and a considerable saving will be made in the cost of buildings.

The Steelform Contracting Company in attempting this work has secured the full co-operation of the owners, architect, structural engineer and general contractor. The work will be carried on under the personal direction of Mr. C. B. Hopkins, president of the Steelform Contracting Company, who is a pioneer in the adaption of metal for use in formwork, having patented and developed metal forms for certain types of concrete construction several years ago, and around which he has built up a substantial business on the Pacific Coast.

### In New Location

Badt-Falk & Co., Los Angeles branch, are now located in their new offices and warehouse at 1423 S. Alameda street.

## One-Eighth Inch Scale, Tracing Paper and Incomplete Plans\*

**M**R. CHAIRMAN, members of the American Institute of Architects and members of the Associated General Contractors, it is not my intention to enter into any lengthy discussion on the subject of one-eighth inch scale, tracing paper and incomplete plans, but rather to call to your attention some of the unfortunate conditions imposed upon the members of the contracting profession.

But please do not interpret my talk as a counter attack upon the architects, inspired by your worthy President's address before the National Associated General Contractor's Convention at Portland, for I seek only to do my small part to bring about better conditions for the contracting profession, and let me say that I feel no hesitancy in referring to contracting as a profession, for long before the architectural profession existed, we had builders. In fact, I am informed by no less authority than W. T. Butler that the first building erected was the magnificent home of Adam and Eve, which was built without plans and without competitive bids.

As time went on and buildings became more numerous, we find the planmaker, who later became known as the architect. These planmakers, although their plans were very crude, sought earnestly to produce a plan that would be of real help to the builder, instead of, as is so often the case at the present time, when an architect turns out a set of plans and specifications the apparent intent of which is to obscure from the contractor the true magnitude of the job and the vast amount of detail work. This brings us to some of the present-day evils under existing conditions. An architect produces a meager set of plans with practically no details and a very copious set of specifications, consisting of eighty-six pages, about one-third of which deal with the ornamental plastering and several other items which were never intended to be a part of this building, but were in some building designed by this same architect several years previous. Then there are the paragraphs which explicitly state that anything which the owner, the architect or any of their friends may desire or think would enhance the beauty or utility of the structure must be incorporated in the building by the contractor at his own expense, whether or not they were shown on the plans mentioned in the specifications.

These plans are then given out to a group of eight contractors, who are generously allowed four days, including Saturday afternoon and Sunday, when they should be out playing golf and cultivating the friendship of prospective builders and wealthy material dealers, in which to carefully take off all quantities, secure the necessary sub-bids and study the plans to interpret the architect's intended design. The plans are then returned and are let out to a second group, and so on until all of the architect's twenty-four "selected" bidders have been given a chance to figure.

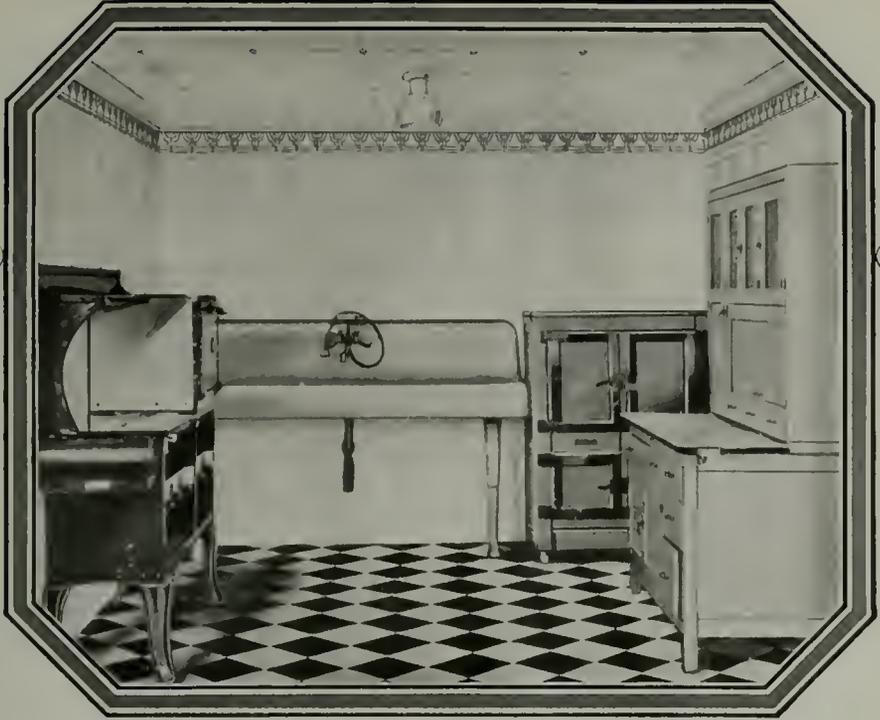
The bids are then received, opened and recorded, with their many alternates. If it is thought that by making a few minor changes and having the four or five low bidders refigure the price could be further reduced and the few dollars profit which might have been in the job, would be cut out, these low bidders are called in one at a time and given the impression that they are not quite low, but by reducing their bid, have a good chance of getting the job.

If, on the other hand, the low bidder is so low that they realize that he could not possibly reduce his price, he is hastily called in, congratulated, and allowed to sign a contract that will be the means of depriving his children of a college education.

We believe that after a contractor has spent his time and money to prepare a bid, he is entitled to know as soon as possible whether or not he is low bidder, and if he is the low bidder he should not be subjected to further competition in order to secure the job. To secure this information and also to prevent the unjust further competition, the Associated General Contractors have adopted a system of opening duplicate bids on the day following the opening of bids by the architect or owner.

Many architects are of the opinion that an owner never gets a square deal from a contractor on extras. They sometimes think this because a contractor does not allow as much for a deduction as he charges for a similar addition. The reason for this is because changes cost money; they upset the routine of the work. It very often costs a contractor money to make a change which involves tearing out a considerable quantity of material. For this reason it is injustice to ask the contractor to submit unit prices which may be used either in the case of an addition or a deduction.

\*Extracts of a talk by A. M. Strandberg, contractor, at a joint meeting of Architects and Contractors in Seattle, Washington.



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Then we have the case of the contractor who tells a friend architect about a prospective job. The architect gets the job, and instead of trying to get the owner to give the job to this contractor, induces him to allow him to take bids from his twenty-four selected bidders, which precludes all possibility of this same contractor getting the job at a figure at which it is possible to make a profit. Is it any wonder, then, that the next time this contractor hears of a job he is tempted to hire some young architect or draughtsman to draw up a front and floor plan, and then give the owner a price for the building including the plans, and tell him that he is saving him the cost of an architect's fee? This leads to the so-called builder, who is neither architect nor contractor, and who helps to bring about and support the small fee or one per cent architect.

In closing, let me say that I hope this meeting will help to bring about a better understanding of our mutual problems and that we may do something towards elevating the construction industry to the level on which it belongs.

## What Does the Architect Owe His Draughtsman?

"What does the architect owe his draughtsman?"

(1) The architect owes the draughtsman

a good sound healthy body, a well poised mind and an appreciation of the manners, customs, and the ordinary courtesies of life.

(2) A broadminded view of religion that eliminates all prejudices but not so broad that his views of the subject are spread into mere empty forms.

(3) A good appreciation of the artistic—not so modern that it tends toward the cubist but conservative enough to be both modern, and at the same time practical.

(4) He owes him an eight hour day with every Sunday and legal holiday off, also Saturday afternoons off and at least two weeks holiday with full pay every summer. Also no overtime work without adequate compensation. Time is money and it is as wrong to take a man's time without pay as it is to steal money.

(5) These general statements of course apply to both employer and employee.

"What does the draughtsman owe to the architect?"

(6) He should have a good knowledge of English so that the firm is not ashamed of the letter he writes. This applies alike to architect and draughtsman.

(7) The draughtsman should be respectful towards his employer. Courteous but not too familiar nor like Uriah Heep.



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(8) He should make it a point to be punctual unless unavoidably delayed by accident, sickness or inclement weather. He should not be too fussy about being kept five, ten or fifteen minutes overtime in the evening but should be willing to make up the time he came late in the morning, but he should not work over time as a regular thing unless he receives adequate compensation, as time is worth money and he should value his time more than money as he will only pass this way but once and cannot get the time back again however much money he might accumulate to leave behind him for somebody else to spend.

(9) He should be thoroughly acquainted with his work and if he is not familiar with certain phases of it should study to acquaint himself with the particulars in his own time under some competent teacher in some evening school or in the extension department of some recognized college.

(10) He should be industrious, patient, frugal, thrifty and truthful, economical and sympathetic, neat and tidy in his dress, up to date but not showy.

RUDDOLPH P. SMITH in Pencil Points.

#### Oakland School Program

The Oakland board of education announces that bids will be called before the end of this year on seven school structures, while bids on three structures will be asked next month, making a total of ten buildings that will be ready for bids in the near future at a total cost of \$982,000.

Bids will be called shortly on the \$125,000 one-story, 11-classroom, brick annex to the McChesney school, according to plans by Williams and Wastell, architects, American Bank building; the steel and concrete Home Economics building for the Prescott school, costing \$65,000, Howard Schroder, architect, 357 12th street, and steel and concrete, \$138,000 shop and gymnasium for the University high school according to plans prepared by the architectural department of the board.

Plans for the following school buildings will be submitted for figures before the first of next year:

One story gymnasium for the Technical high school, cost \$77,000, architect not selected.

One-story, six-room addition to the Stonehurst school, cost \$57,000, architect not selected.

One-story, six-room addition to the McChesney school, cost \$50,000, architect not selected.

One-story, eight-room addition to Fruitvale school, cost \$75,000, architect not selected.

One-story, steel and concrete audi-

torium to Franklin school, cost \$35,000, plans by architectural department of school board.

One-story, 20-room, steel and concrete addition to Elmhurst school, cost \$220,000, J. J. Donovan, architect, Tapscott building.

One-story, 14-room, fireproof school at Sequoia school site, cost \$140,000, E. T. Foulkes, architect, 357 12th street.

#### University of Nevada Library

Plans have been completed by Architect Robert D. Farquhar, of Los Angeles, for a brick and stone library at Reno, Nevada, for the University of Nevada. Contract for the general construction has been awarded to Chas. Stockholm & Son, of San Francisco, for approximately \$160,000.

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