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View of interior Court of remodeled block

THE RECLAMATION OF NEGLECTED CITY LOCATIONS

IT matters not how insistently trade encroaches on resident districts, nor how much the one-time quiet of an aristocratic seclusion is disturbed by business enterprises, there are certain New York families who, generation after generation, have lived in the same house, or have built and occupied houses that still stand on the land forming part of old estates undisturbed by all these changes. Probably those who by long residence and intimate association inherit the traditions of Manhattan Island, feel that there is logically no place for a home outside of the limits of the Island. But while trade may insidiously obtrude on the privacy of these old residents, and the sounds of traffic, which at one time could be heard as of something afar off, become magnified to a nerve-distracting degree; while city ordinances may crop up at the very doorsills of these houses of old New Yorkers and, on the pretext of encroachment, disfigure a familiar and cherished landmark; yet this strong hint to move, to seek other localities, has never been seriously taken. In many cases, stately houses that might claim the rank of palaces, stand where the tide of travel is the swiftest and the broadest. Fifth Avenue, in its length from Twenty-third to Fifty-ninth streets, presents many inconsistencies to an old New Yorker, to one who can recall the aspect of that thoroughfare half a century back. Where once the aristocratic dweller in the zone of fashion was wont to saunter with well-bred leisureliness, the frenzied shopper now darts hither and yon, to reach the advertised bargain sales. Here and there will be remarked a building now given over to the most exclusive lines of merchandising, where many a time the observer, as a boy, spent enjoyable social hours.

To New Yorkers these associations are so knit into the fabric of their lives, that it is difficult to regard with calmness a residence in any other

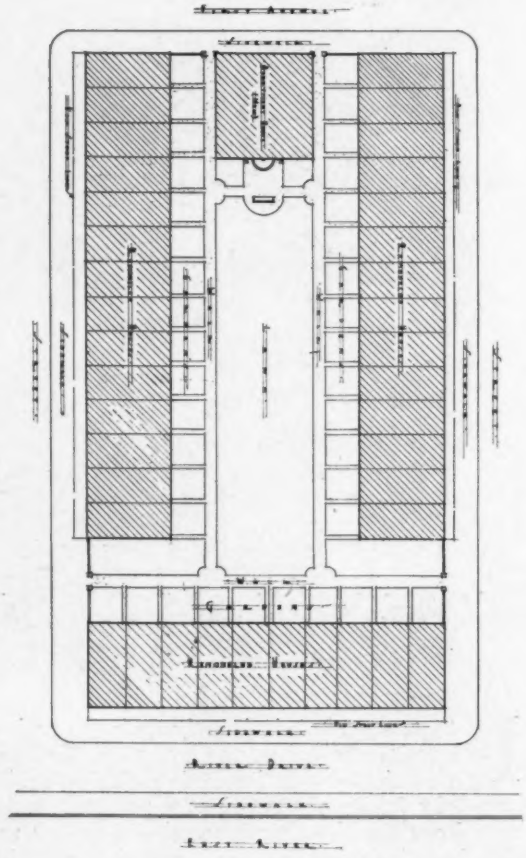
Suggested alteration of one of the old houses

location. But progress, if that is a correct name for what many will regard as decadence, may not be retarded. And for the reasons already set forth, and others more personal, many of New York's best families have set about a quest for residence that will yet be on Manhattan Island, but sufficiently removed from the menace of "progress" to guarantee that privacy and air of domestic refinement that are characteristic of the home life of the cultured and well-born.

Other dwellers, on other occasions, have started out on the same quest and fondly believed they had found it. Riverside Drive, regarded as the acme of respectability, is now the district of apartment houses of not even the best or most exclusive types. West Seventy-second Street homes, which at one time reflected the very height of respectability, have been mostly converted into the higher type of boarding houses, while exclusive Fifty-seventh Street has become a shopping annex to Fifth Avenue.

Down on Washington Square, whose Northern boundary has for years preserved its exclusiveness even though its other borders have become purlieus given over to trade, the hand of "progress" is evident. The stately houses that marked the best presentation of our prideful Greek Revival in New York are now crumbling under the wrecker's hammer and we are promised in their place, "modern apartments of two rooms and bath," properly, if facetiously, called "race suicide flats."

Where shall men and women go, whose ancestry was born on Manhattan Island, and who hope that they and their descendants may live and die there?



Plot plan of the proposed block

Years ago, when New York was much younger, during the period following the Civil War, the banks of the East River were embowered in trees. Through these shaded walks the young people found picturesque paths and the older, quiet spots for rest and recreation. Across the river on the Long Island shores were Astoria and Ravenswood. There, were often to be found the summer homes of well-to-do New Yorkers, and many a stately house bore on its gable ends the figures that denoted its origin as far back as our Revolutionary struggle and even earlier. As Manhattan Island

grew, its banks along the East River were marked by many a quiet unpretentious home. But as the years passed, these houses were crowded out to provide wharfage space for a fast increasing commerce. Then the shifting of trade centers, the widening and deepening of river channels, lured this commerce further South on the Island until the neighborhood from Kips Bay on the South, as far North as what is now One-hundredth Street, became the dwelling place of memory alone.

Now, however, if present pretentious plans are carried through, there will come a re-birth of a neighborhood, long neglected, and a reclamation of an area whose natural advantages and scenic beauties are as fine as any on Manhattan Island. Much of this land lies today practically unimproved because it is not considered worthy.

But the fine artistic perception of architect and landscape gardener has made it possible to learn just what may be done. And learning this, numbers who for generations have lived on aristocratic Fifth Avenue or other equally desirable streets, and who are now driven forth to seek a new home, —always on Manhattan Island,—are contemplating a reclamation which, if carried forward as projected, will mark the most beautiful spot on Manhattan Island.

The proposed improvement, while not the first of its kind to be built on the East side of Manhattan Island, will, by the nature of its planning, afford locations for perhaps a more exclusive tenantry than any others. It is located at First Avenue, and Fiftieth Street on the South, running North through approximately two city blocks.

The style of architecture, the general plan, or layout, may be judged by illustrations accompanying this article. There will be offered an opportunity for a wide choice as to the type of dwelling obtainable. The apartment of medium size, or the complete house, is included in this group. The reclamation includes a most attractive frontage on the East River and the general air of exclusiveness will be easily maintained.

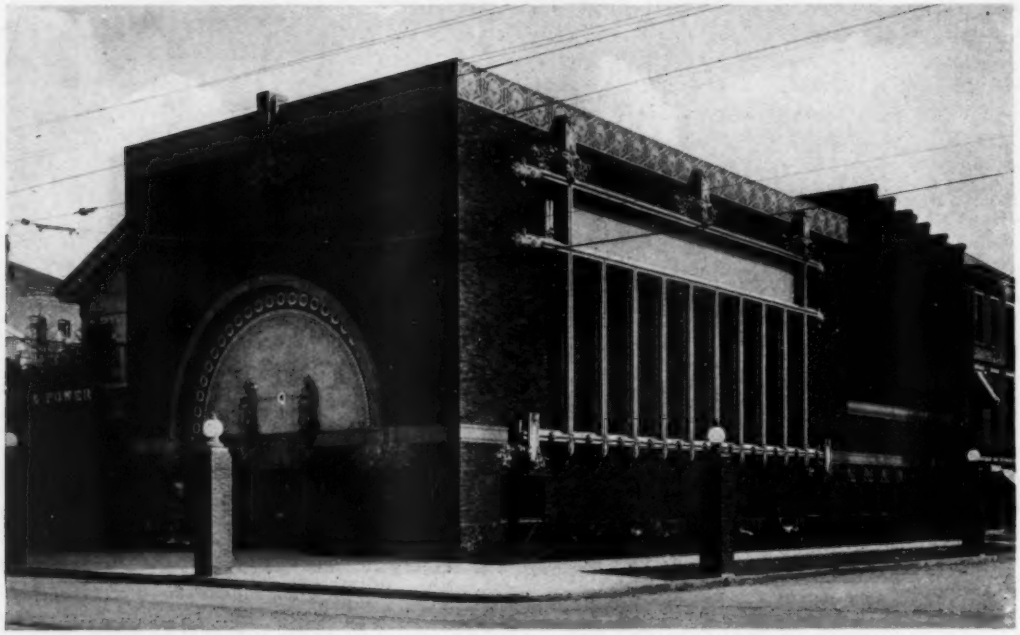
Turtle Bay and Sutton Place, the two earlier developments in this area, are now in successful operation.

Few comprehensive schemes of conversion embracing more than a portion of a block or a small group of houses have been carried out. Within the confines of a building there is, of course, scarcely any limit to what can be done in the way of alterations, although it should ever be borne in mind that beyond a certain point it is cheaper to tear down and rebuild than to remodel. An architect can tell just how far an owner may profitably proceed in a proposed alteration.

Obviously, comparisons are not possible between the cost of building a new house in an established residence section and remodeling a house in a proposed reclaimed block. But assuming that forty people of social standing would be willing to inaugurate such a movement and establish a new residence section in one of these districts, the saving in cost would be certainly 100 per cent—with the added increment of the enhanced value of their property.

Oswald C. Hering and Frank J. Forster are the architects for the proposed reclamation.

View showing contemplated alteration of proposed block



Peoples Savings & Loan Association, Sidney, Ohio

Louis H. Sullivan, Architect

Nowhere is the daring genius of Louis Sullivan more strikingly shown than in his employment of brilliant polychrome coloring in the housing of a financial institution. The same decision with which mass and line have been handled characterizes the use of color. Orange and brown Terra Cotta in trim and parapet culminating in mottled gold glaze window frames and mottled green glaze ornament of entrance combine with the brick in an effect of great richness. An appropriate feeling of rugged massive structural strength dominates this positive use of color in a degree wholly consistent with the requirements of good architecture and the institution's purpose

COLOR IN ARCHITECTURE—PART II

BY F. S. LAURENCE

Executive Secretary, National Terra Cotta Society

Available Mediums

IN considering the various mediums which may be used to express color in the form of polychromatic design clay products are the most prolific in yielding resources for the most varied treatment. Under this heading we have many beautiful shades of brick carrying a number of interesting surface textures, ceramic tile in a multiplicity of glazes and decorative designs, several shades in glazed and unglazed roofing tile and faience and architectural terra cotta in a great variety of surface finishes, textures and colors, both glazed and unglazed. All may be used together and in conjunction with certain stones and highly colored marbles in effects of the most sumptuous richness. Excepting in terra cotta the use of any one medium alone for complete polychromatic effect carries a certain chance of monotony. There are also features in architectural design and ornament not possible to realize in brick nor in tile owing to the small and uniform character of their unit construction and consequent scheme of jointing. In tile the color range is very wide but its essential character as a veneer forbids its use to express organic construction in form. Terra cotta is not subject to this limitation as it may take the form of veneer or be produced in the special shapes, sizes and modelled relief essential for organic constructional expression. Diaper patterns, for instance, in uniform pieces of about twelve inches dimension may be employed for the field of wall surfaces giving a tile veneer effect and can be combined with architraves, pilaster, cornice, bracket, and sculptural ornamentation in the great variety of form in which these elements occur in various styles. Owing to this flexibility for formal expression the use of terra cotta for practically the entire finish of a façade becomes possible without carrying the feeling of a too wholesale use of one material or a use which does violence to its nature in certain parts of the design.

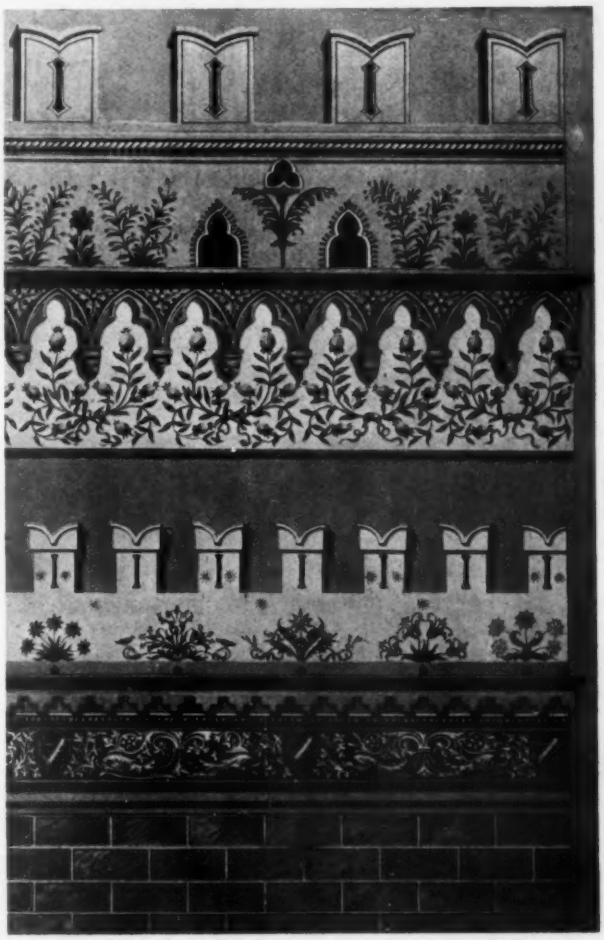
The Interest of Color Variation

IN considering the uses admitted by the very wide range of colors and textures obtainable in

terra cotta the natural tendency of all ceramic products to exhibit a certain variation of shade occurring in the process of firing should be recognized as one of the greatest sources of charm available for interesting chromatic effect. The history of brick manufacture illustrates the enormous progression in taste from the era of the uniform, smoothly finished, red pressed brick with its immaculately painted white stripe joint, so lavishly employed in the early seventies, to the pronounced variation of shade, texture and uneven form of the most deservedly popular varieties in use today. In roofing slate we have also gotten away from the smooth, uniform color and size once demanded in this product, and recognize the overpowering charm of the irregularly mottled weathering slate with broken edges in differing thicknesses and sizes which our quarries are now yielding to the great enhancement of our country house architecture.

Similarly in terra cotta and other lines of ceramic material it is to be hoped that the slight eccentricities of fire will be allowed to assert themselves more freely and that the present standard of taste in using terra cotta which reflects too much the attitude toward brick in the early seventies will yield to an appreciation of the finer possibilities obtained through exploiting the natural variations of color and slight inaccuracies of form incident to ceramic manufacture rather than wishing to suppress them. When architects at large will express their conceptions in terra cotta with the crisp freedom of a loosely handled water color in wash we may look for results of incalculable significance and beauty in the architecture of our time.

This applies not only to effects in polychrome design but to schemes in which the color interest is that of simple monochrome treatment. In the first chapter it was pointed out that the proper application of the term "color" covers the chromatic result of the entire building and not simply those details which are executed in polychrome. As no building erected fails to present an aspect of color it suggests a word upon the element of form in ornamentation as contributing to this color aspect in the characteristic of shadow which must necessarily modify the tonal effect.

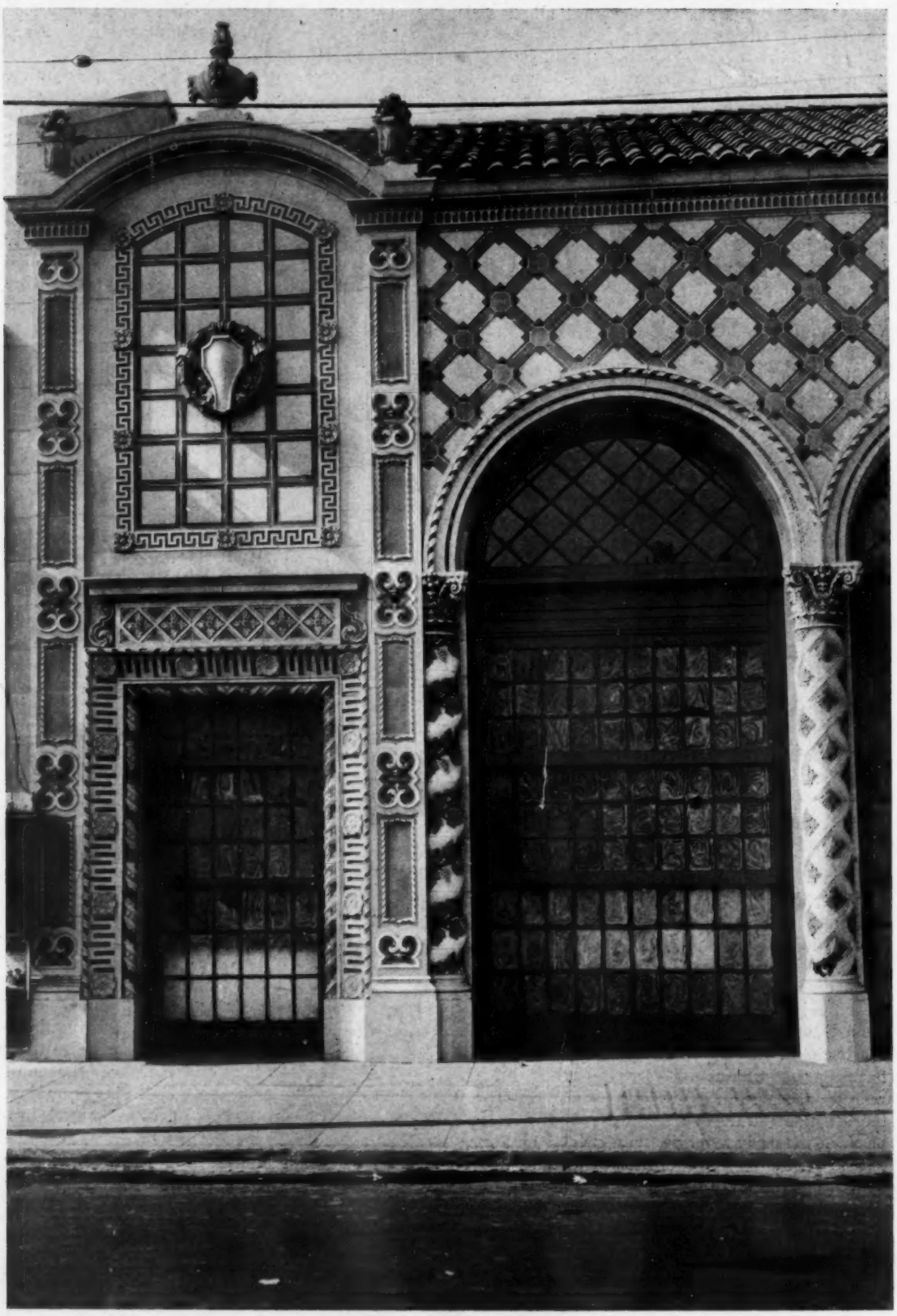


Above:—Upper part of an ancient villa near Varese, Italy
Below:—Similar portion from an ancient villa near Sarono, Italy. From restorations by Federigo Lose

Interesting examples of the use of painted polychrome decoration of the year 1487 A. D. Colors used were pale buff and warm putty gray for backgrounds, with ornament in strong reds, greens, blues, yellows and brown. Openings are nooks for birds to nest in. These houses had lapsed into an advanced stage of decay and debased use about 1867 when restorations were made and decorations are no longer recognizable

(From The Terra Cotta Architecture of Northern Italy. London, John Murray)

The choice of material determines in large measure the value and influence of shadow color in the chromatic ensemble. The varieties of soft stone commonly used in Spain for many of the most interesting and rich examples of Spanish renaissance were of a color that, under the brilliant sunlight of the Spanish climate, glowed with an appealing warmth casting shadows of a deep golden sienna that are in themselves positive color notes of the most charming quality. Naturally such profuse opulent richness of ornament in such a medium provides an interest both of form and color which does not need the further enrichment of applied polychrome coloring to realize a quite sumptuous chromatic quality. That this latter, however, occurs largely through the warmth of actual coloring of the stone itself is apparent in the fact that

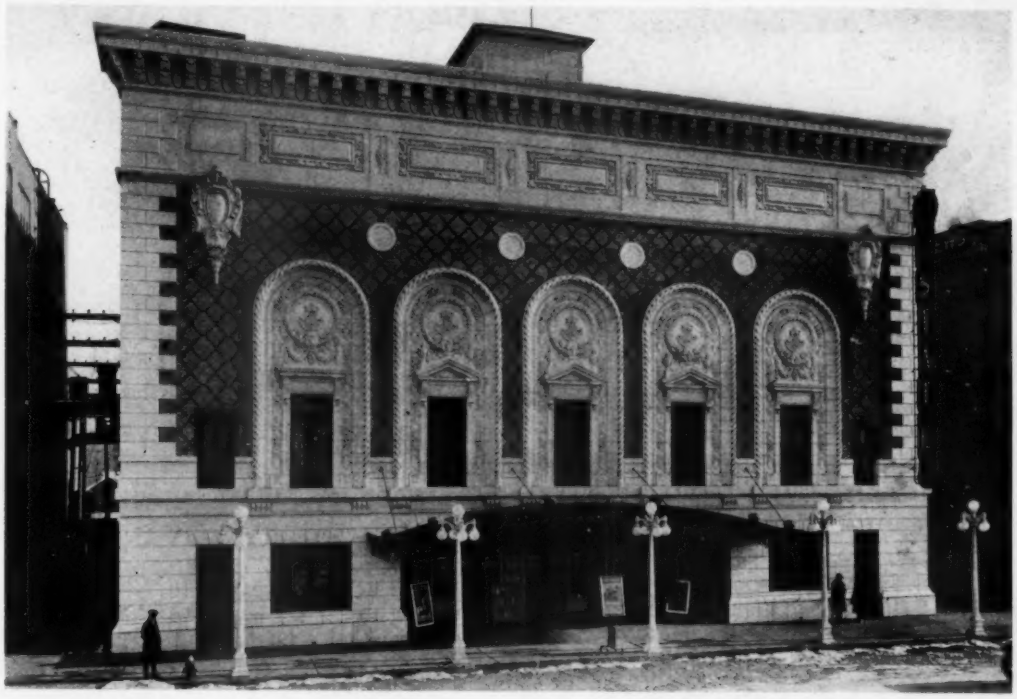


Detail of market building illustrated on Page 269

Design is thoroughly ceramic in character, color distribution being as follows: Prevailing body color, pale ivory; large square units in diaper pattern, deep ivory; lattice, light green with old rose spots at intersections; oblong panel surfaces of pilasters, light blue alternating with old rose inserts; columns, capitals, doorway architrave, paneling above and cornice recalling this coloring in minor detail

the golden quality of shadow is occasioned largely by reflected warm light from the parts illuminated by sunshine. A corresponding elaboration of carved treatment in a cold, gray variety of material would occasion a shadow lacking in this positive effect of glowing color, being apt to take on a cooler cast of gray emphasizing the absence rather than the presence of color. Thus the nature of material must to some degree govern the result in counting upon the effect of shadow as an element of chromatic interest.

It is apart from the purpose of this treatise to discuss the weathering of material as an element of color interest. Its charms in the varieties of products susceptible to it are altogether too well known to need description and they are moreover something which are not within the power of the architect to manipulate. They can be counted upon with fair certainty but must await the touch of the subsequent collaborator, Time. They cannot, therefore, be brought under the principles governing the preparation of design in polychrome as commonly understood. But it would be misleading to infer that the possibilities of color interest rest entirely in the use of polychrome composition. While true that there is no material which does not present the aspect of color of some description it is unfortunately the case that in this country under the conditions of local atmosphere in the greater part of it, the materials which are commonly available for monochrome effects do not carry the qualities which produce the luminous shadow that can count as a distinct color note. Here again the great variety of warm tints obtainable in our clay products yields a possibility analogous to that carried by the soft mellow stones and marbles of Italy and Spain, many of the ivory and light buff shades in terra cotta and brick holding a wealth of shadow quality of the most sumptuous richness.



Loew's State Theatre, Yakima, Wash.

Marcus B. Priteca, Architect

This building illustrates the possibility of obtaining effects of great richness with marked simplicity of treatment in the use of broad masses of plain color. Materials used, Terra Cotta and brick. This design also visualizes well in marble or limestone with brick and in any scheme from white to ivory or pale pink combined with gray, dark buff or old rose coloring for the brick pattern

Intimate Applications

THE foregoing chapters have dealt entirely with the subject of exterior color in architecture. The chromatic treatment of interior design is a subject in itself which does not fall under the use of color as contemplated in this treatise. Nevertheless, materials which are used for exterior finish are so often applied to the permanent architectural features of interior spaces that a few words may well be added upon certain aspects of design in this field.

The merits of our various native stones and American and European marbles, particularly the

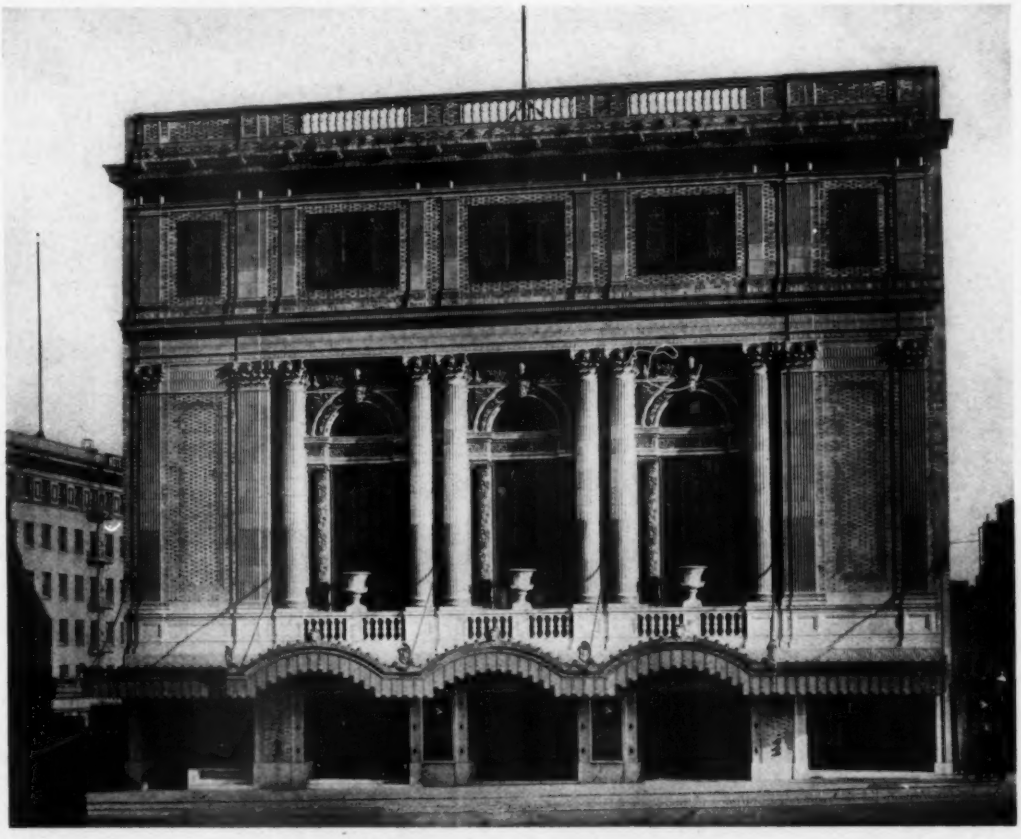
Portion of Facade, Academy of Music, Brooklyn, N. Y.

Henry B. Herts and Hugh Tallant, Architects

Color of brick, warm buff gray carried through Terra Cotta relief against backgrounds of deep yellow, blue and green. Distribution being much broken up and associated with very full relief, the polychrome coloring serves mainly to enhance textural interest. Buildings so treated may soon lose the interest of chromatic variety owing to the obscuring action of dust deposit

richer colored varieties of these, are altogether too well known to require more than passing mention as familiar resources for chromatic effects in such applications. To some degree this is true also of the better lines of cement and other composition finishes widely employed in various appropriate ways. Knowledge of technique in all these familiar mediums requires but little, if any, amplification. But in the employment of ceramics as a medium for color expression there is a field of fresher interest which may be profitably explored in certain essentials not always realized in the use of this class of materials.

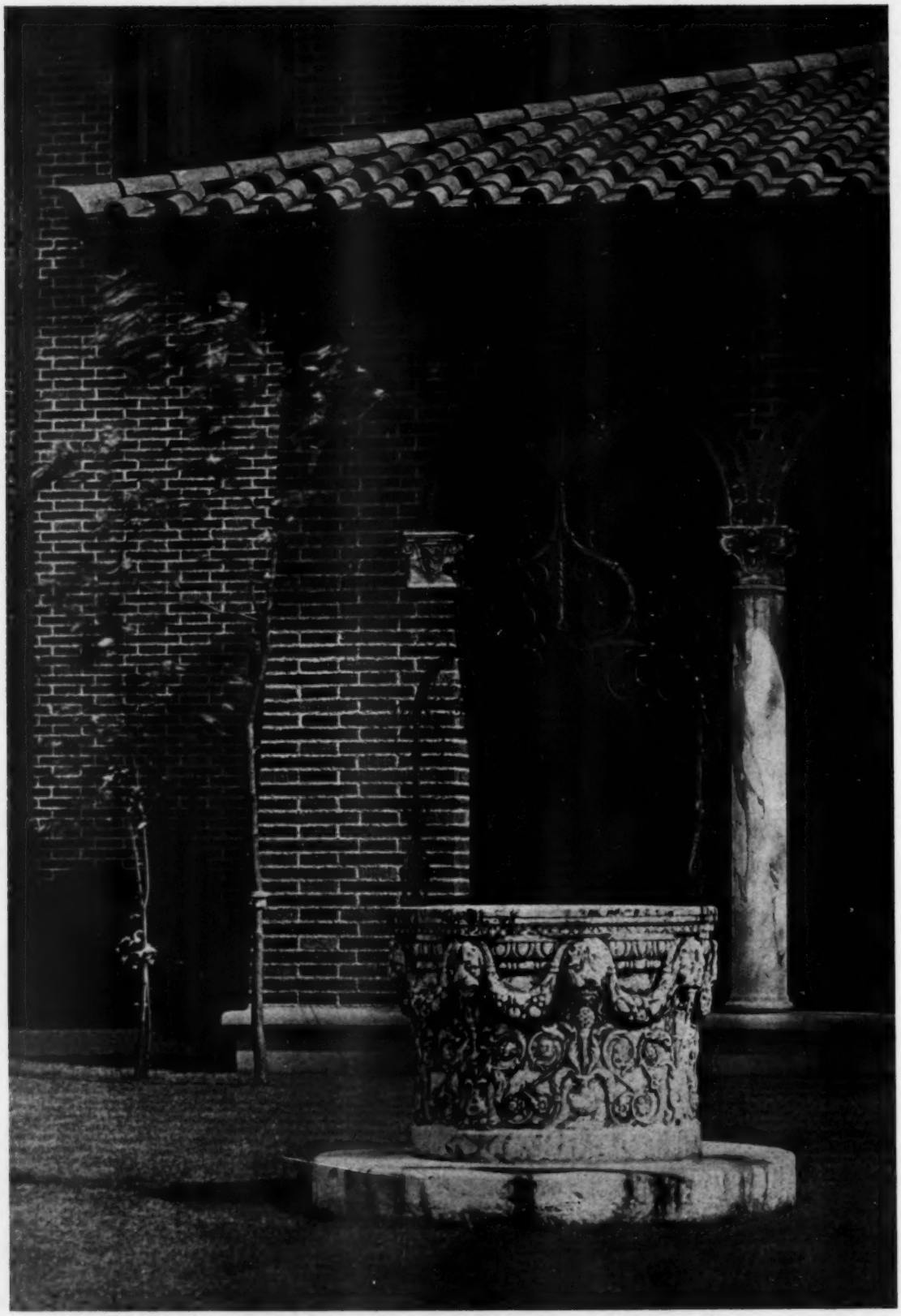
In common with the attitude which has largely characterized the employment of terra cotta for exterior use, the demand is too often to express the interest of marble or stone effects in form, color and surface texture, rather than striking directly for the equally high quality which a ceramic medium is capable of giving in its own way. The broad principles enunciated for the use of material in exterior design apply equally to interior work, some of them assuming very acute importance under the intimacy of application and proximity to the eye. This fact is generally well appreciated and it is perhaps due to the influence of more familiar habit in employing color for interior uses in other mediums that the handling of it in ceramics for interior applications has been attended with a little more freedom and confident decision. In fact, certain freer uses of tile work have inclined too much toward the wholesale employment of ceramic finish for entire interiors, floors, walls and ceilings, to the exclusion of the richer interest that might have been obtained by a judicious association of ceramic finish with the contrasting and supplemental qualities of other mediums. The beauty of ceramic modeling in its softness of contour and the free flowing plasticity of design which should accompany it nowhere receive a more effective foil than when intelligently related to the chaste purity of line, edge and sur-



Columbia Theatre, San Francisco, Cal.

Bliss & Faville, Architects

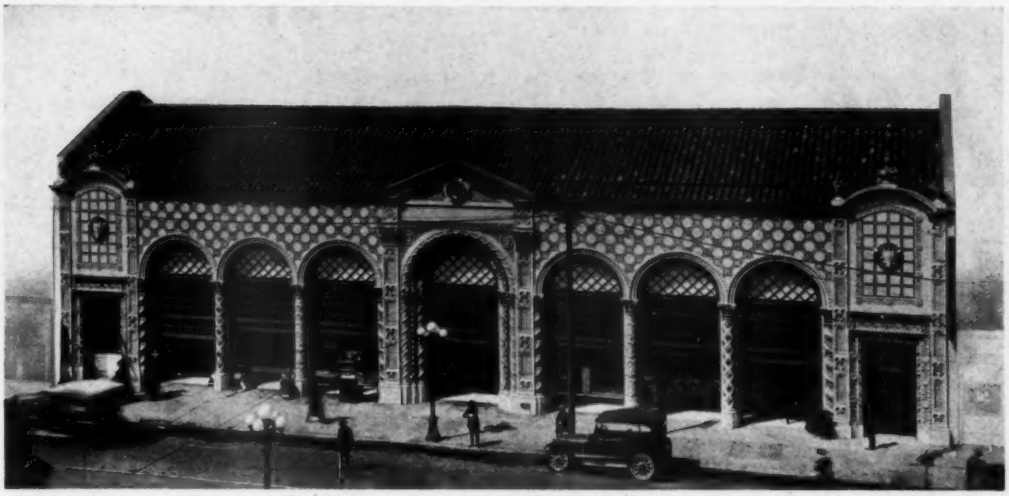
Strength of conviction in the use of color and appropriate conception are well exemplified in this building. The facade is in Terra Cotta of a rich cream white, the ornamental features of the first story windows being lavishly treated in deep olive greens and blues with tracery relief in shades of old gold. The upper stories are appropriately treated in lighter shades of old rose, green, blue, light browns, old gold and buff. Color ensemble is well tied together and assisted by the spotted distribution of color in brick pattern



Corner of Porte Cochere of a private residence on Long Island

H. Van Buren Magonigle, Architect

Brick, Terra Cotta, marble and roofing tile combined with notable color success. To uphold a desired intensity in the mass coloring of brick against the graying effect of mortar joint 8" stretchers were combined to give the effect of 16" units in Flemish bond. Colors ranged from buff to rose, deep red and purple. Terra Cotta arch with design in prevailing mass shade of brick against yellow background to tie with yellow marble columns. Soffits of arch blue. Bed molding of cornice, Terra Cotta with blue panels. Roofing tile takes up brick coloring with addition of green. Well is Verona marble of rose and yellow coloring

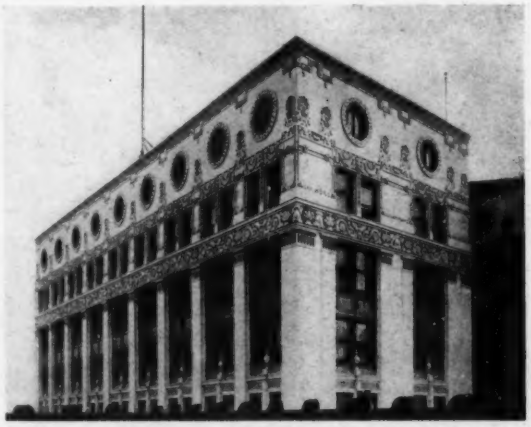


Torrance Market Building, Los Angeles, Cal.
Dodd & Richards, Architects

One direction in which the use of polychrome coloring would confer a lasting obligation on a long suffering public. Contrast this dignified and attractive result in Terra Cotta and roofing tile with the usual unsightly structures for this purpose with which American cities are generally afflicted. For colors used see detail illustration on Page 264

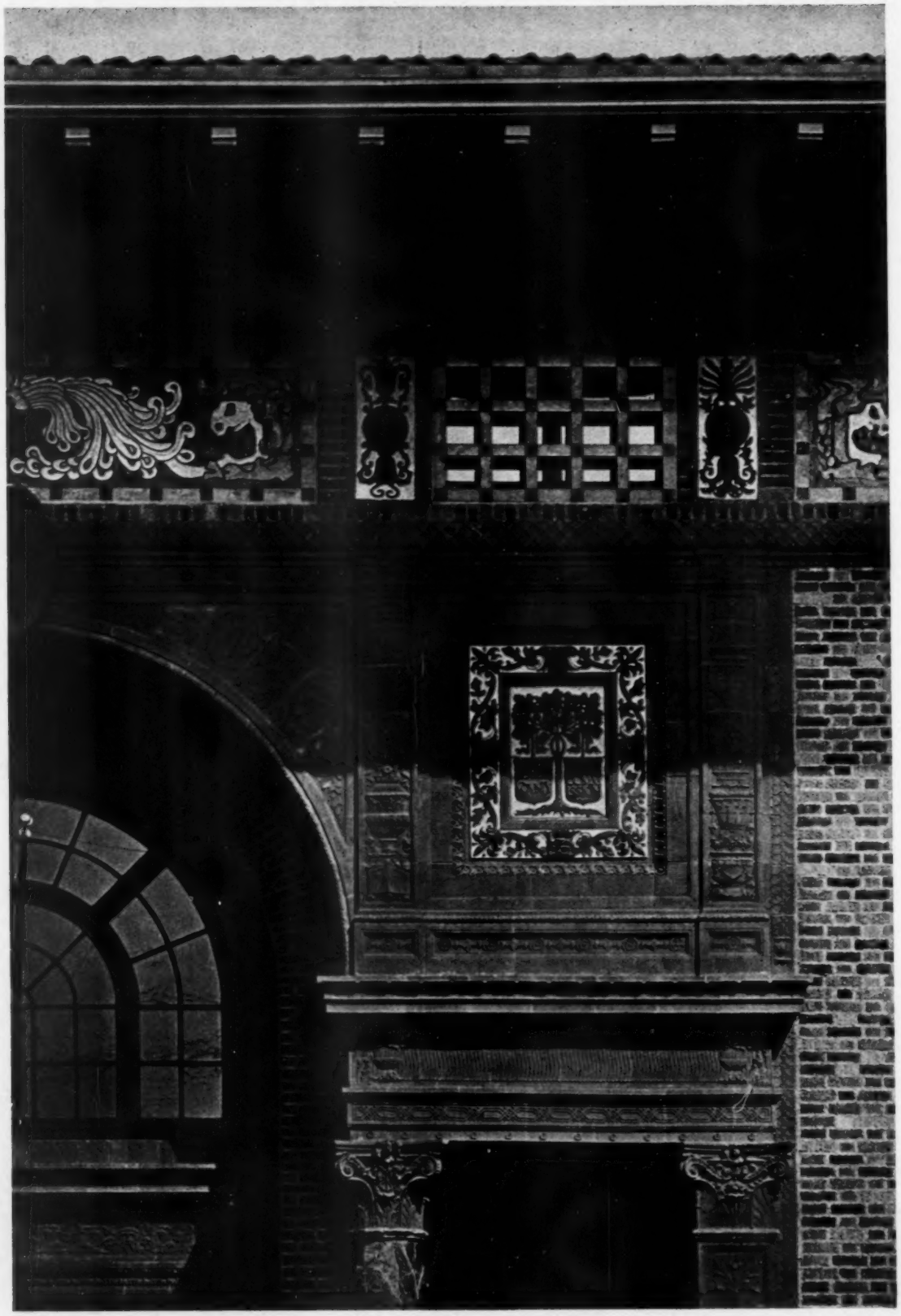
face finish which is the consistent attribute of marble. The latter used as a bordering feature often enriches the opposite charm of free plasticity in the ornamentation of a tile field. Again the relation may be equally fine when reversed, the ceramic material being used as a border in highly rich ornamental relief and the enclosed space kept severely plain. Decorative sense in the designer must determine the extent or even fact in this relationship rather than any fixed rule or theory. A scheme of design may well call for the textural interest of ceramic surface and jointing as an element to be carried throughout the entire wall or floor space in an all ceramic treatment but in general it will be found that the eye seeks relief at some point through the differing qualities of a different medium and it is in this respect that the early European uses of material are so highly satisfying. The significant thing to be noted is that in instances where ceramics were employed they appear to have enjoyed the highest measure of appreciation as a fitting vehicle for the most elegant effects in palatial treatment and that we do not find the gaucherie of view which regards only the most costly mediums as appropriate for such results. It is quite clear that della Robbia worked in glazed clay from preference and that many of the applications of his brilliant genius were desired in his favorite medium of ordinary clay—common inexpensive earth coated with colored enamels. The fact is significant when viewing the resources of his time in the liberal patronage of princely houses amply able to pay for use of the most expensive mediums for sculptural and decorative effect.

That this attitude did not apply merely to individual works of art in which the concept of the sculptor or painter was everything and the medium used of minor consequence is evident from the many applications of della Robbian faience to purely architectural uses in the finish of ceilings like that of the Chapel of the Madonna in the Impruneta and various tabernacles, ornamental friezes, etc. While these instances were usually of minor extent this was due clearly to the fact



Upper stories of No. 80 Maiden Lane, New York City
D. H. Burnham & Company, Architects
(View taken from roof of an opposite building)

Polychrome coloring in large commercial structures has inclined chiefly to detail enrichment of the upper stories of the facade. The conditions under which effect must register in our usually narrow streets suggest broader masses of differing ground color further enriched by polychrome treatment. Ground color in this instance, white throughout, Terra Cotta detail, white and green



Detail, Administration Building, Essex County Park Commission, Newark, N. J.

H. Van Buren Magonigle, Architect

Seal brown Terra Cotta with variegated rug texture brick, buff to purple. Frieze, painted canvas decoration by Edith Magonigle in deep blue, black and gold. Ceramic treatment is preferable for such features where not protected, as in this instance, by widely projecting eaves

that the knowledge of how to apply colored enamels to architectural forms rested wholly with a family group of individual craftsmen not enjoying the facilities for extensive production in this direction. Otherwise we may be sure that the wonderful resources of their art would have been used to beautify extensively both the interiors and exteriors of many of the noblest structures of the time. This is borne out by the fact that contemporary Italian architecture of the period exhibited a widespread use of terra cotta lavishly colored with impermanent pigments which naturally would not have been employed if permanent glazes had been commonly available.

(*To be continued*)

Introspective of an Architectural Education

By Edgar F. Bissantz

So many articles have appeared in print within the last few months by students of architecture who have finished their studies only to find themselves unable to grapple with the exigency of practical architecture that many a student is becoming doubtful of the wisdom of having chosen such an uncertain profession. On every side we find articles labeled "Why I Quit Architecture" and the like. It is natural for the authors of these words of criticism and warning to endeavor to fix the cause of their failure upon someone else; and what could be easier than to place the blame directly on the educational system?

The writer, though a student with little more than a year of work in the architectural school, takes sophomoric issue with Mr. Denison's retrospection as presented in a recent issue of The American Architect and especially with his combining all schools, good or otherwise, into one group and labeling it the "system," the purpose of which, he says, is the teaching of impractical romanticism and trick rendering—paper architecture!

Perhaps there are schools in this country where "a great deal of time and energy is wasted in developing a strange and exotic style of draftsmanship which really furthers no ends but its own" (and the writer feels sure that there are such when he looks at a traveling exhibition of prize doorways pictorially rendered at inch scale and framed with scrolls and mouldings which have taken weeks of patient drawing) but, if the accidental sedimentation of a wash ever carried much weight in the worth of a drawing at the schools attended by Mr. Denison, the writer fears that Mr. Denison's choice was most unfortunate and that he should have taken the first opportunity to transfer to a more worthy institution. Cass Gilbert has advised that no one take up the architectural profession unless he feels in himself the irresistible impulse to build, to create; and such a nature would not easily give way to "the natural demands his ambition make upon him to be a successful competitor in the game he is playing." If he cannot look beyond the mark toward graduation, if he cannot realize that the building's the thing, and go his way content with having done his best; then his faculty for independent reasoning is weak and he does not know what he wants. The habit of projeting is, then, not so much a result of the educational system as it is the outcome of certain inherent qualities in the student which cause him to play with conventional designs incapable of translation into structural terms—and brand him as a misfit!

Admitting that the architectural school provides a better æsthetic training and gives a broader general education than any other, Mr. Denison quibbles over the absence of economic facts and restrictions in the teaching. If architecture is to be the expression of the culture and personality of the architect, the aim of the school should be the development of a broad and sympathetic culture in the architect that his thoughts in brick and stone may be graceful and well disposed. Would the restriction of the student's fancy during this period of development have other than a harmful effect upon his artistic growth? Or can design with certain restrictions in mind be done better by habit than by a knowledge of the requirements combined with good taste and common sense? The schools do not exist for the purpose of turning out contractors. They develop an artistic eye and a logical head. With these the architect can, within his scope, solve any problem gracefully and in keeping with its practical requirements.

No man with sincere desire to do good architecture will be false to himself, even on a projet, and the man who uses the "blobby tree" or other means to fool himself or others need not be feared in active practice. There are misfits in every profession and, even in the architectural profession, there are those who "get away with it," but the sincere student will not be moved by the seeming success of such men, nor will he stoop to their tactics.

The fact is, that the schools, combined with the offices, do turn out good men and that the right men can and do develop into architects under the present system. It is not a perfect system, and never will be so long as individuals remain temperamentally different, but the better schools have proved their efficacy to help the student—now the student must help himself!

At Left:—

Detail, Cloisters San Giovanni Evangelisto,
Parma, Italy

At Right:—

Villa Dalla Rosa, Val San Zibio
Battaglia, Italy

Reproduced from Photographs by Robert M. Blackall,
35th Holder, Rotch Travelling Scholarship

·EDITORIAL·COMMENT·

FORM IN CIVILIZATION, a series of collected papers by W. R. Lethaby, published by the Oxford University Press of London, is a small book, of more than two hundred pages, that will comfortably rest in one's pocket and become a much treasured companion on railroad trips and week-end outings. Mr. Lethaby will need no introduction to architects in this country. It would take many printed pages to review this series of twenty-two articles. Each one so thoroughly discusses its topic that a review would necessarily become a reprint.

The leading essay, Architecture as Form in Civilization, is perhaps the very best of the lot. To show how thoroughly Mr. Lethaby understands his topic, and to whet the appreciation of architects for a close acquaintance with this book, we shall quote very largely from this article.

"Towns and Civilization," writes Mr. Lethaby, "are two words for nearly one thing; the City is the manifestation of the spirit of its population and the larger body it builds for its soul. To build cities and live in them properly is the great business of large associations of men. The outward and the made must always be exact pictures of the mind of the makers. * * * Man builds towns so that the towns shall build his sons. As the old Greek said, 'The city teaches the man.'"

In setting down the above, Mr. Lethaby has undoubtedly in mind the cities of Europe and particularly those of England. In cities in the United States, and more generally those on the Eastern seaboard, it would be disheartening as to the future if, in view of the enormously large alien population which knows nothing of our ideals and but little of our language, we should believe that they build for their souls, when everywhere there is evidence that they build only with a view to their pockets.

"Before the recognition of the universal and the national," continues Mr. Lethaby, "we require a much deepened sense of the civic." Quite true, but what will happen meanwhile we are trying to mould to some even small sense of civic pride preponderative elements of population that know nothing of civic rectitude?

"A civilized life cannot be lived in undisciplined towns. We must control and tax advertisements to some order, bring pressure on the railway companies to sweep the microbes out of their stations, and we must whitewash our own backyards."

All of that and very much more. It will take many years to accomplish the things Mr. Lethaby suggests, and they will be worth working for. It will not be in the low places we shall most efficiently work, but in so-called "high places." The big deterrent to the consummation of the highest civic ideals is, in this country, the political elements. Politicians for years fought shy of any measures tending to control emigration, and it was only when population in some of our larger cities became foreign to a point almost of saturation that we could get a measure passed that would prevent Europe sending to us the worst elements of her population. Things seen from the seclusion of a student's library and those seen by the trained observer who walks the city's streets are vastly different. When political parties cease to dodge the responsibilities of proper government and we become cured, or at least on the way to a cure, of our "indigestion of emigration," we may hope to reach some of the civic ideals Mr. Lethaby so strongly favors and with which every thoughtful man will be as strongly in accord.

It is when Mr. Lethaby writes directly of architecture, its true meaning and intent, that he gets his argument on to an unassailable foundation.

"More and more we become the victims of our words and live frightened by names. Such a name is Architecture. * * * Wordy claims are often made for Architecture that it is a Fine Art, and chief of all the arts. Any mastership in architecture depends on its universality and its service."

"Architecture, however, 'properly understood,' not only concerns the man in the street, it comes home to all householders and households. While our eyes have been strained on the vacuity of correct style, the weightier matters of construction and efficiency have necessarily been neglected. We need grates which will warm, floors which may readily be cleaned, and ceilings which do not crack. These and such as these are the terms of the modern architectural problem, and in satisfying them we should find the proper 'style' for today. Architecture is a current speech, it is not an art of classical quotation. As it is, it is as much burdened by its tags of rhetoric as Chinese literature. It has become a dead language. The house of the future will be designed as a ship is designed, as an organism which has to function properly in all its parts."

All of which is exactly in line with this journal's often expressed contention that architecture, while always an art, is nevertheless a very highly developed business.

"Design," continues Mr. Lethaby, "is not a question of captivating paper patterns, it is a question of buildings which will work. Architecture is a pragmatical art. To design in the Classic, Gothic, or Renaissance styles is as absurd as to

sculpture in the manner of Praxiteles, paint 'like' Holbein, or write sham Shakespeare. We do not really need a waxwork art by Wardour Street professionals. We require an active art of building which will take its 'style' for granted, as does naval architecture. Modern building must shake itself free from its own withered and cast-off skins."

In concluding this admirable essay, the author states:—"A mistake of modern education has been to train for appreciation of the past rather than for present production. Such merely critical learning comes at last to be actually sterilizing. As production fails, so even appreciation decays. Full understanding depends on the power to do. Therefore, leaving the things of the past, press forward to produce, to be, to live. Remember Lot's wife. There is much talk of patriotism, but patriotism requires a ground on which to subsist; it must be based on love of home, love of city, and love of country. Let nothing deceive us, civilization produces form, and where noble form is attained there is civilization. Life is a process, a flow of being, and where there is this vital activity music, drama, and the arts are necessarily thrown off. Living art comes on a tide of creative intelligence."

And it is the living art that we must foster and advance. Not the dead art of the past, not the monotonous and, shall we say, sacrilegious copying of an art that has been dead for centuries. We in this country, as we have been told many times of late by our English critics, are evolving great things in architecture. The reason for this advancement is that we are receiving into the profession of architecture a younger element who with the cocksure attitude that is so delightful in youth, are brave enough boldly to express the artistic emotions that dominate them.

Mr. Lethaby is exactly right. Every architect and student of the arts should read his book.

* * *

THE ZONING OF CITIES is an example of wise use of the police power which may be exercised by all municipalities when, and not until, an enabling act gives the specific power to do that which zoning implies. Ignorance, or disregard, of this elemental principle has led to the setting aside by the courts of some zoning ordinances. No amendment to the state constitution, as a rule, is necessary. An act of the Legislature alone is necessary in nearly all of the states of the union.

Such is the opinion of The Advisory Committee on Zoning appointed several months ago by Secretary Hoover and the result of a study of the matter by competent authorities is embodied in the recently issued Standard State Zoning Enabling Act. Before actively interesting themselves in obtaining local zoning ordinances all citizens should obtain a copy of this proposed Act and carefully study its provisions. The Department of Commerce is now giving careful study and attention to a group of typical zoning ordinances, so that the experience of the best qualified men will be at the service of those who may care to avail of it.

This is a long step forward in the campaign for the elimination of waste. The evils of the changing character of occupancy were touched upon editorially in the last issue of THE AMERICAN ARCHITECT, and the waste following in the train of unrestricted growth of cities was the greatest of the evils mentioned; waste in money, in effort, in health and in lives.

The proposed standard Enabling Act is short and fully annotated, the annotations giving the reasons for the wording employed in each section. Definitions have been avoided because the terms used are in general use and therefore commonly understood. "Definitions," say the authors, "are generally a source of danger. They give to words a restricted meaning." Blessed be the inspiration that led to the putting of such a statement into a public document. Nearly all the difficulties in which the architectural profession flounders are caused by attempts to define the meanings of the words Architect and Architecture. To get away from definitions and word an act so that the common man will have no doubt as to what it is all about is evidence of genius. With something good as a basis the zoning movement should advance rapidly.

ENTRANCE HALL IN A NEW YORK CITY HOUSE

WELLES BOSWORTH, ARCHITECT

DINING ROOM IN A NEW YORK CITY HOUSE

WELLES BOSWORTH, ARCHITECT

DETAIL IN DINING ROOM OF A NEW YORK CITY HOUSE

WELLES BOSWORTH, ARCHITECT

The Portrait is by Sargent

HENRY FORD HOSPITAL, DETROIT, MICH.

ALBERT WOOD, ARCHITECT

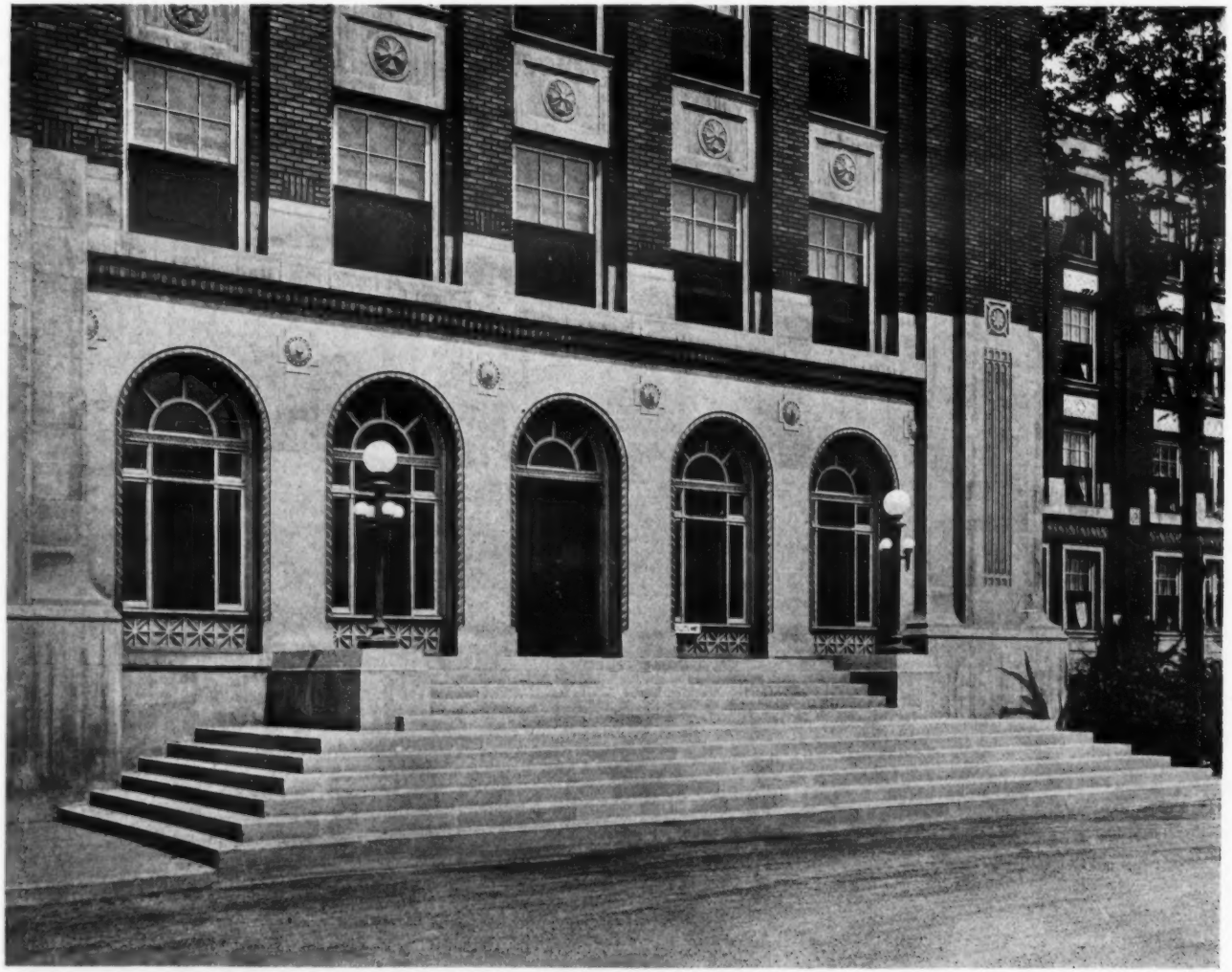
(For floor plans of this hospital see Pages 294 and 295)

HENRY FORD HOSPITAL, DETROIT, MICH.

ALBERT WOOD, ARCHITECT

HENRY FORD HOSPITAL, DETROIT, MICH.

ALBERT WOOD, ARCHITECT



HENRY FORD HOSPITAL, DETROIT, MICH.

ALBERT WOOD, ARCHITECT

HENRY FORD HOSPITAL, DETROIT, MICH.

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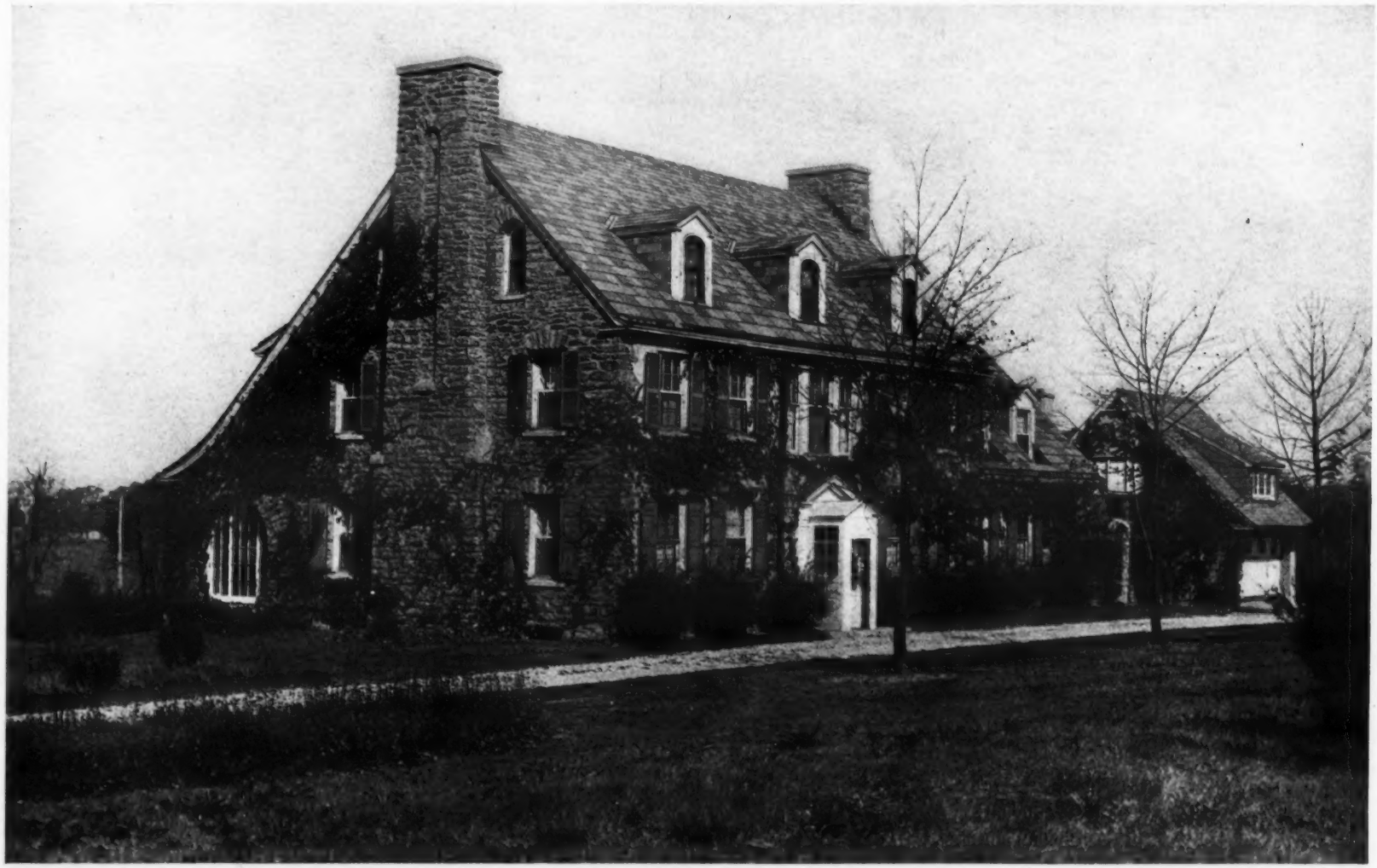
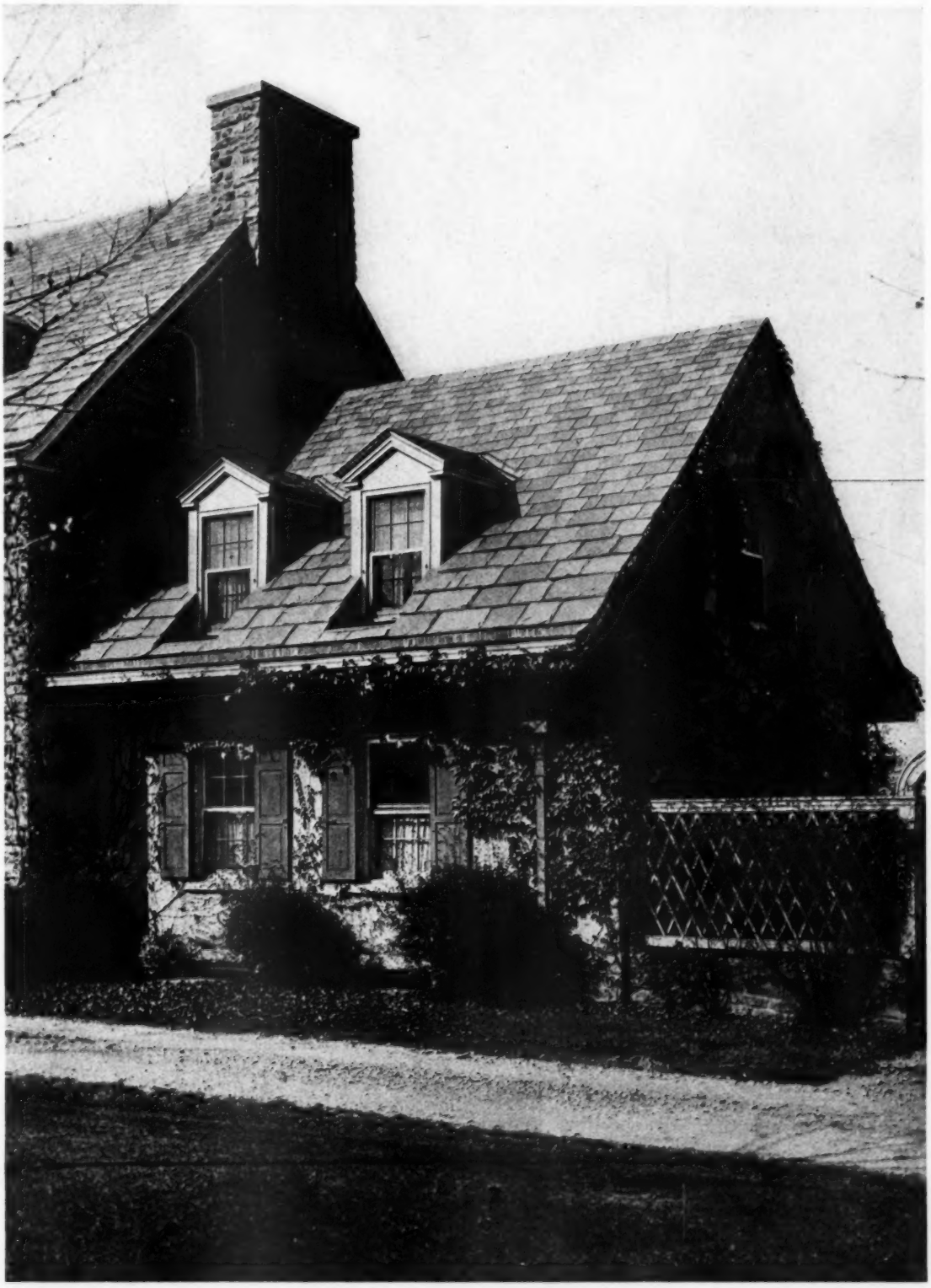


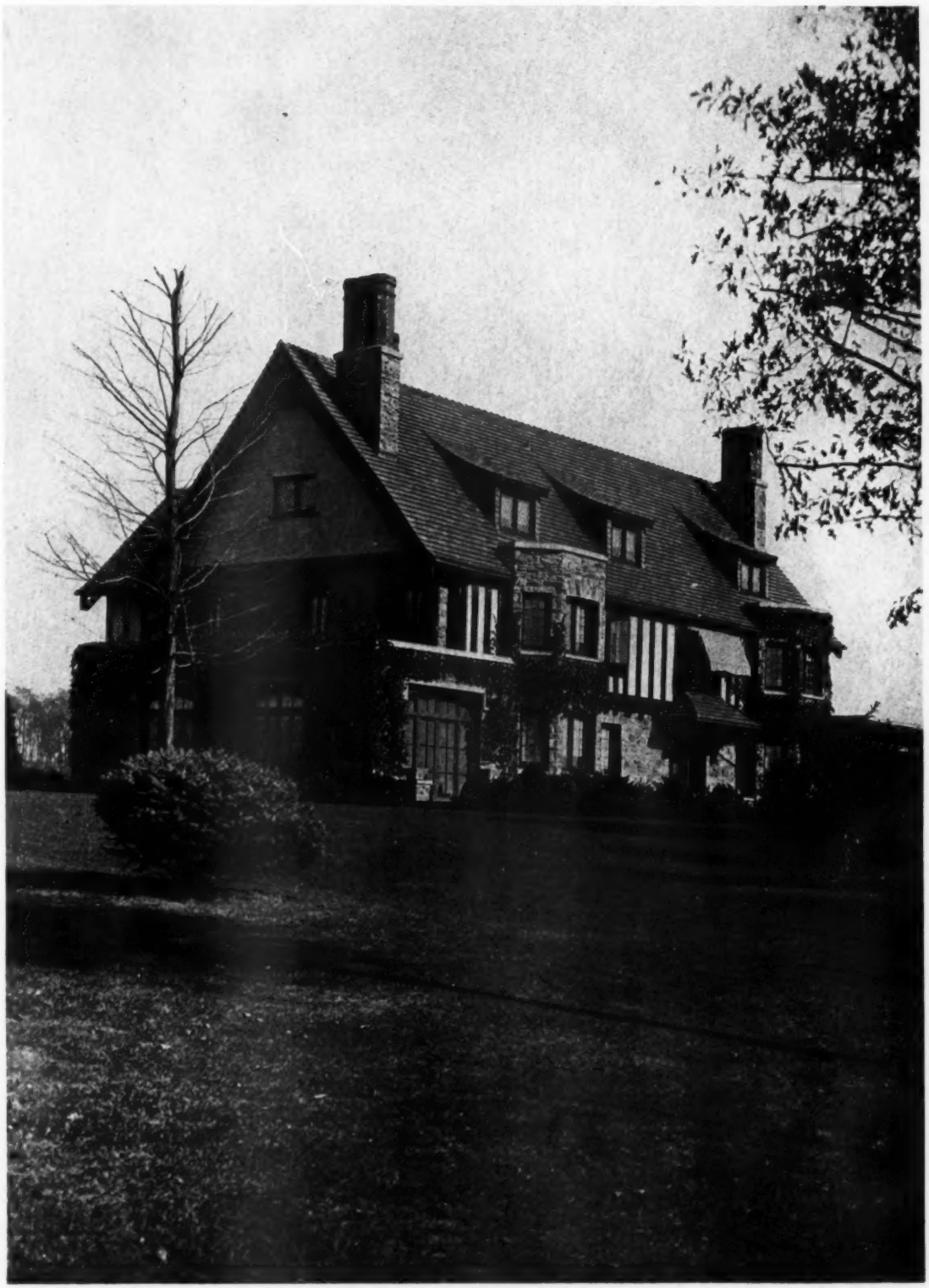
HOUSE IN ABINGTON, PA.

OSWALD C. HERING AND DOUGLASS FITCH, ARCHITECTS



DETAIL OF A HOUSE IN ABINGTON, PA.

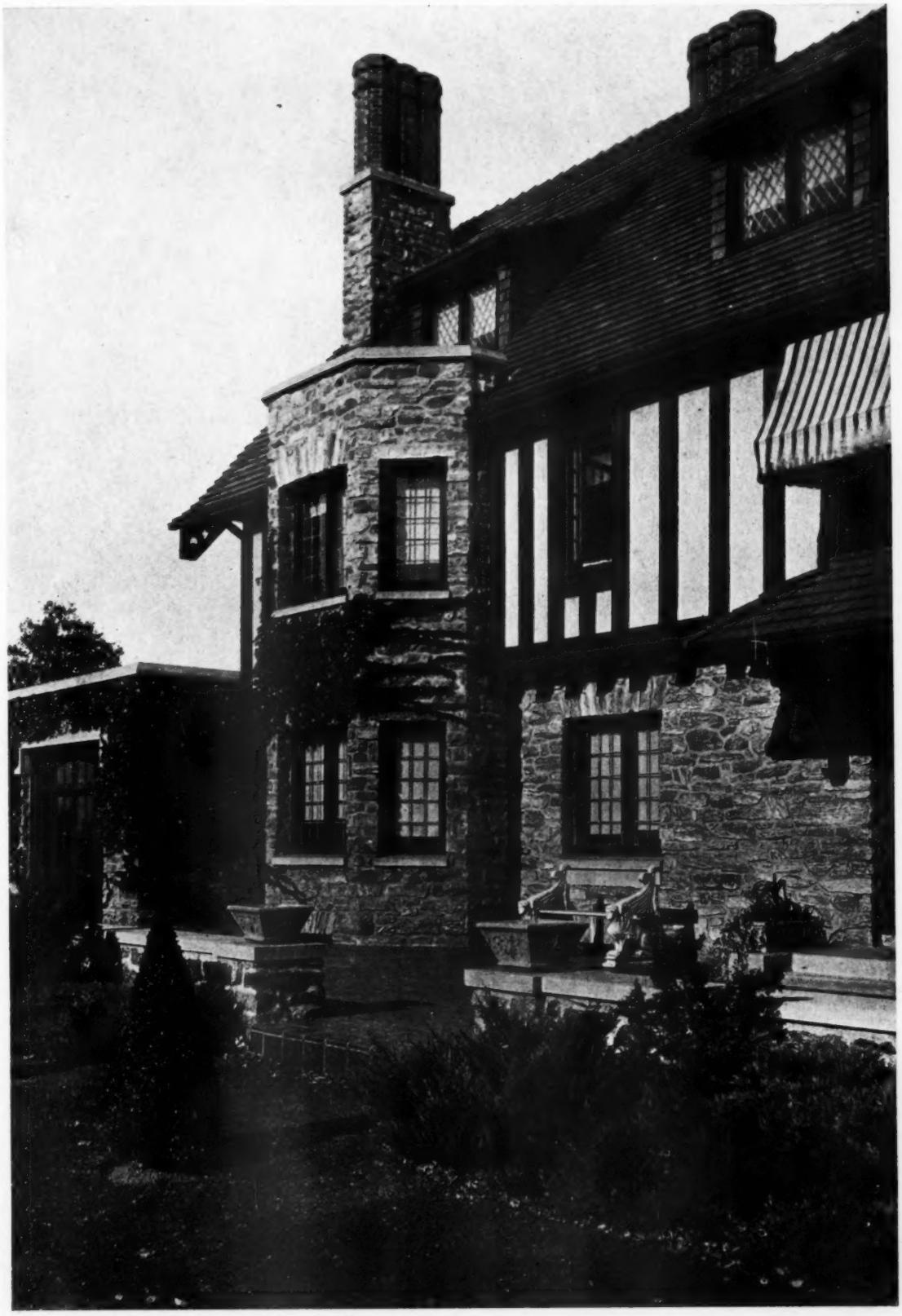
OSWALD C. HERING AND DOUGLASS FITCH, ARCHITECTS



HOUSE IN ABINGTON, PA.

OSWALD C. HERING AND DOUGLASS FITCH, ARCHITECTS

(For floor plans of this house see Page 296)



DETAIL OF HOUSE IN ABINGTON, PA.

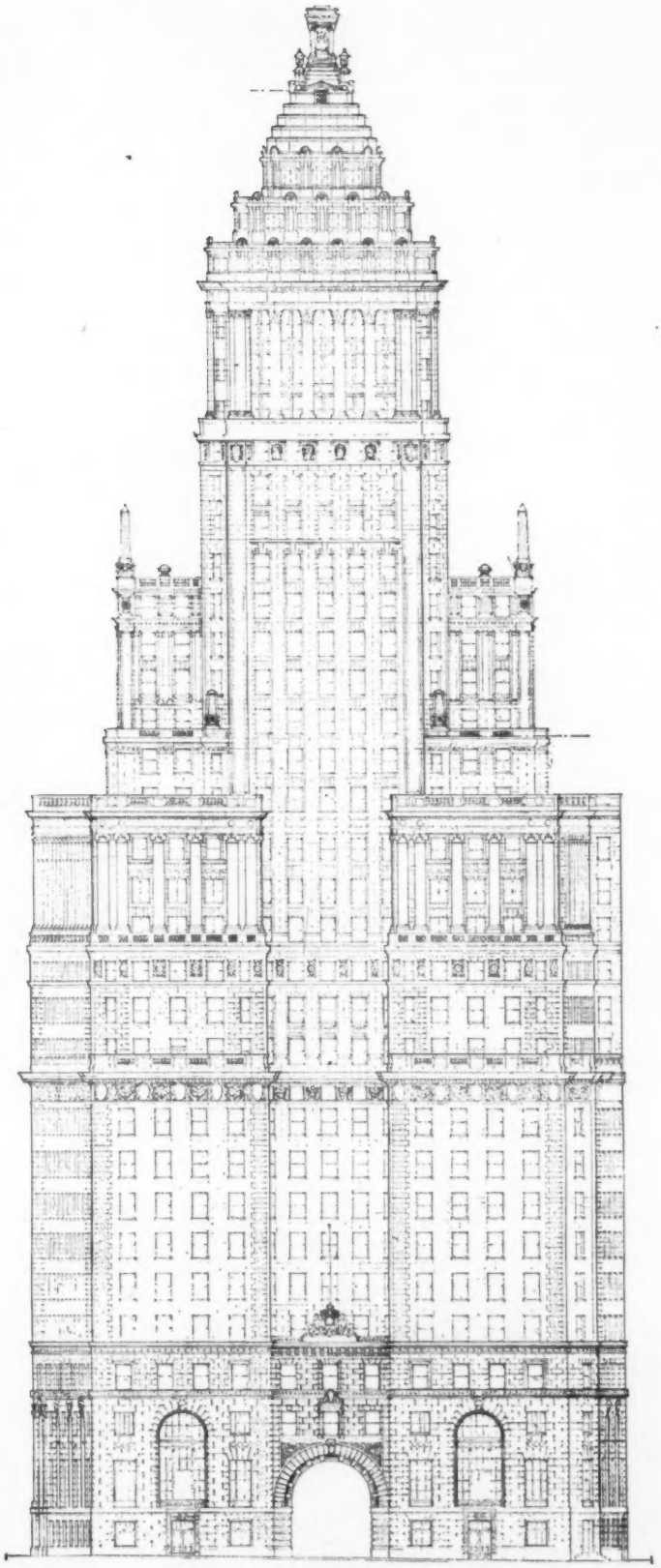
OSWALD C. HERING AND DOUGLASS FITCH, ARCHITECTS

HOUSE NEAR NOBLE, PA.

OSWALD C. HERING AND DOUGLASS FITCH, ARCHITECTS

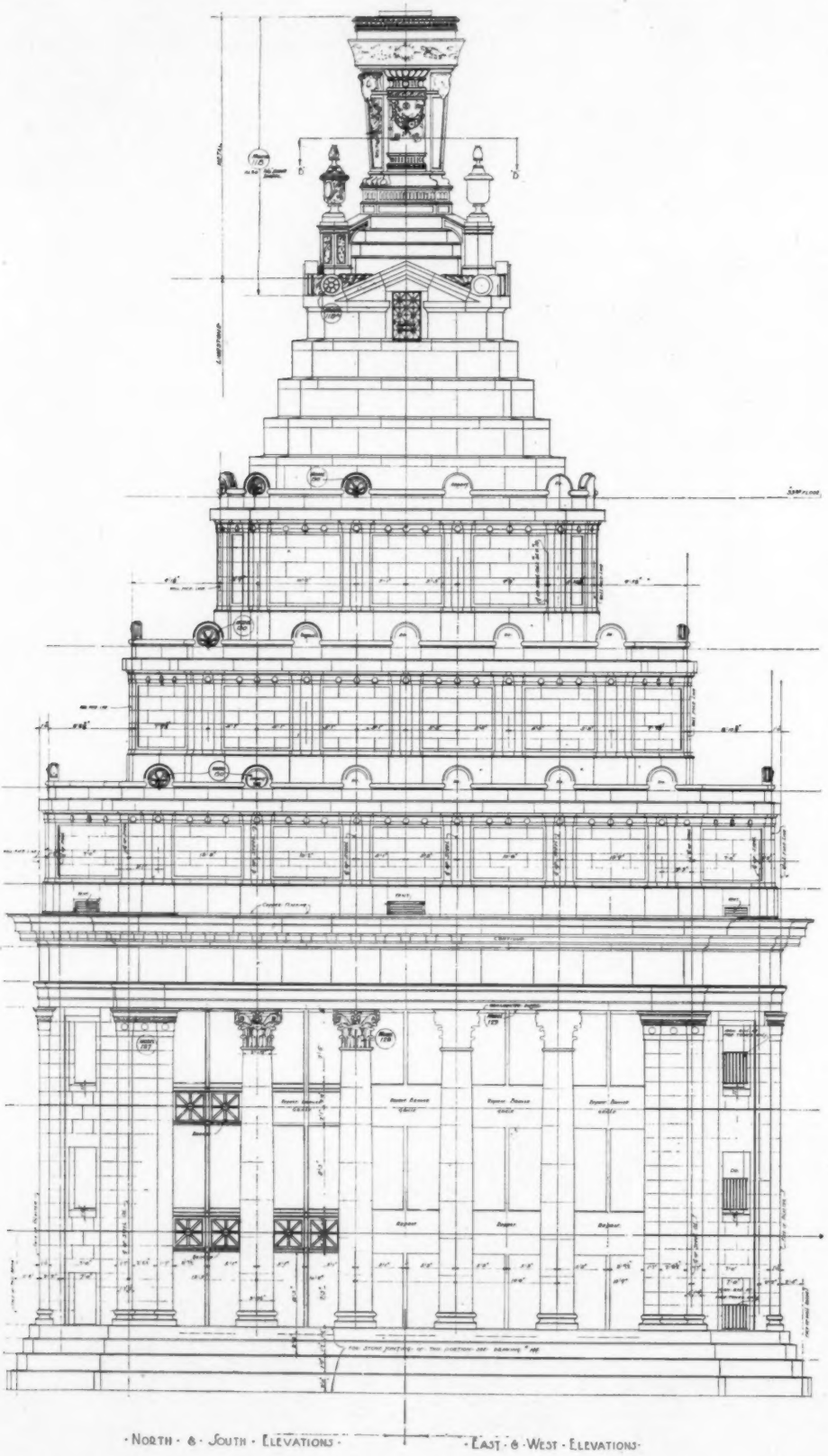
STANDARD OIL BUILDING, NEW YORK CITY

CARRERE & HASTINGS,
SHREVE, LAMB & BLAKE,
ARCHITECTS



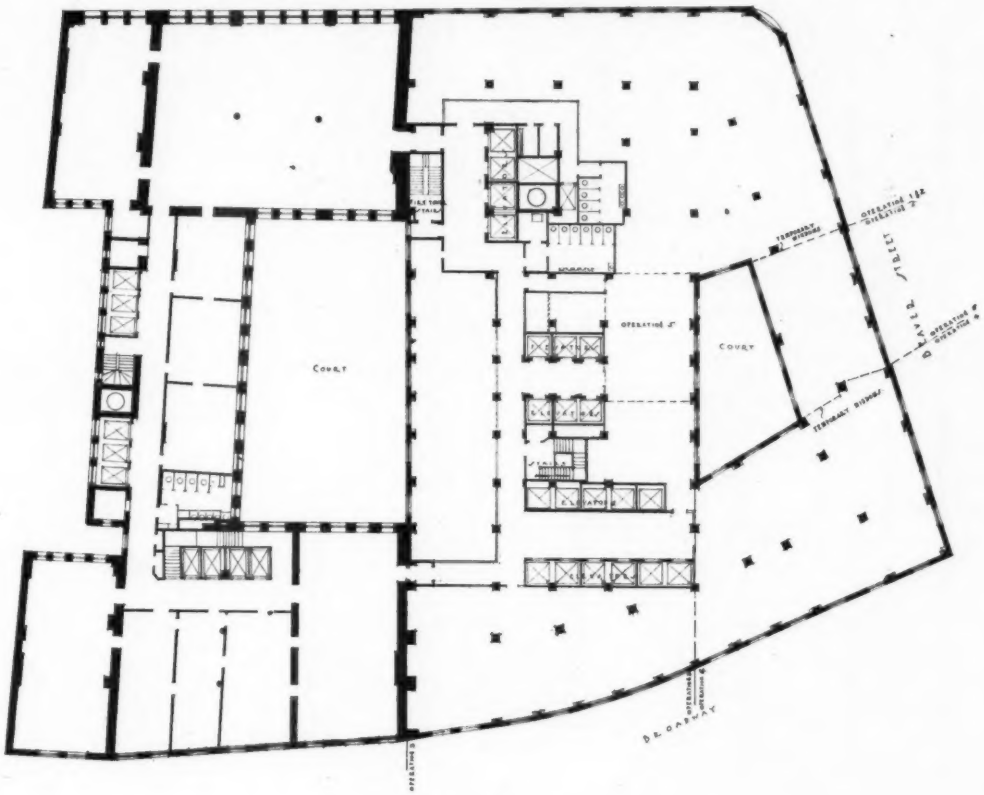
BEAVER STREET, OR SOUTH ELEVATION, STANDARD OIL BUILDING, NEW YORK CITY

CARRERE & HASTINGS,
SHREVE, LAMB & BLAKE,
ARCHITECTS

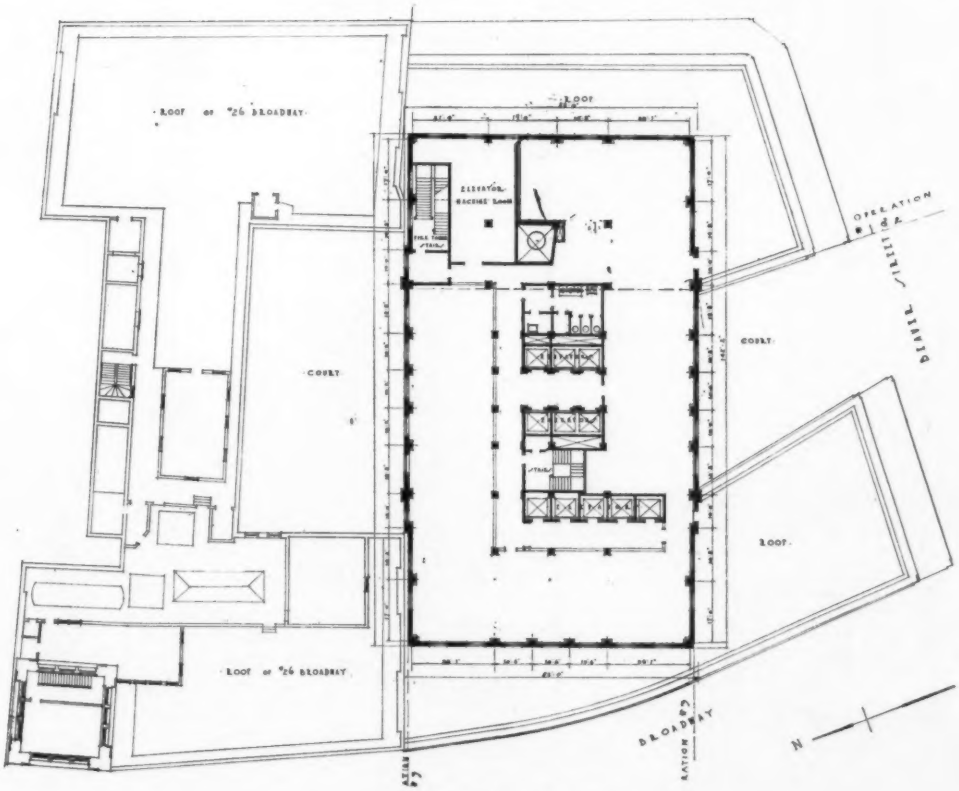


DETAIL OF UPPER PART OF TOWER, 26TH FLOOR TO TOP, STANDARD OIL BUILDING, NEW YORK CITY

CARRERE & HASTINGS,
SHREVE, LAMB & BLAKE,
ARCHITECTS



THIRD FLOOR PLAN

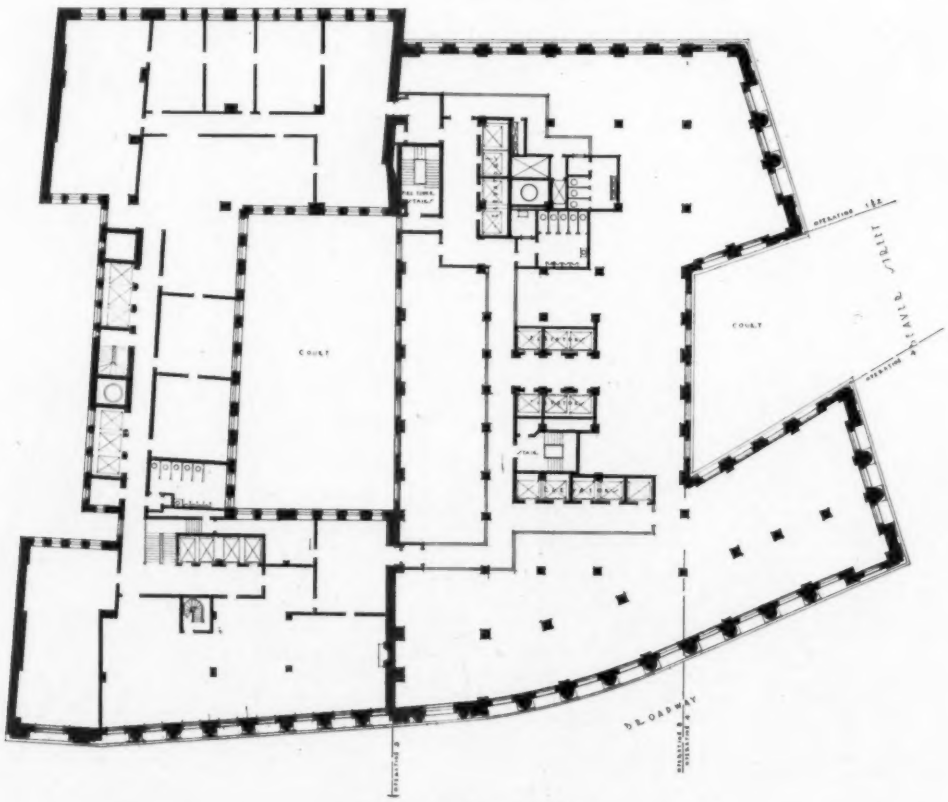


SIXTEENTH FLOOR PLAN

STANDARD OIL BUILDING, NEW YORK CITY

CARRERE & HASTINGS,
SHREVE, LAMB & BLAKE,
ARCHITECTS

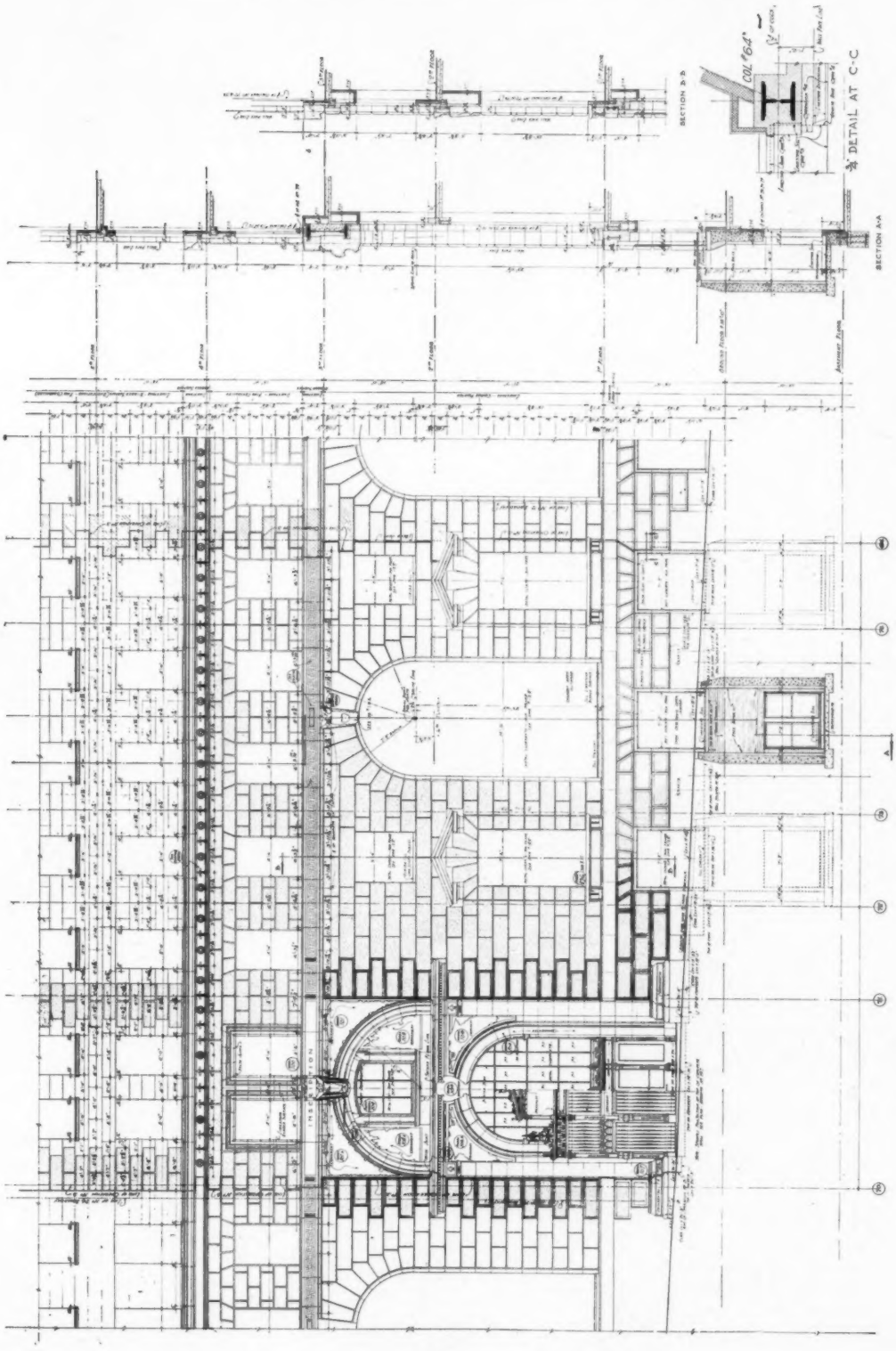
GROUND FLOOR PLAN



THIRTEENTH FLOOR PLAN

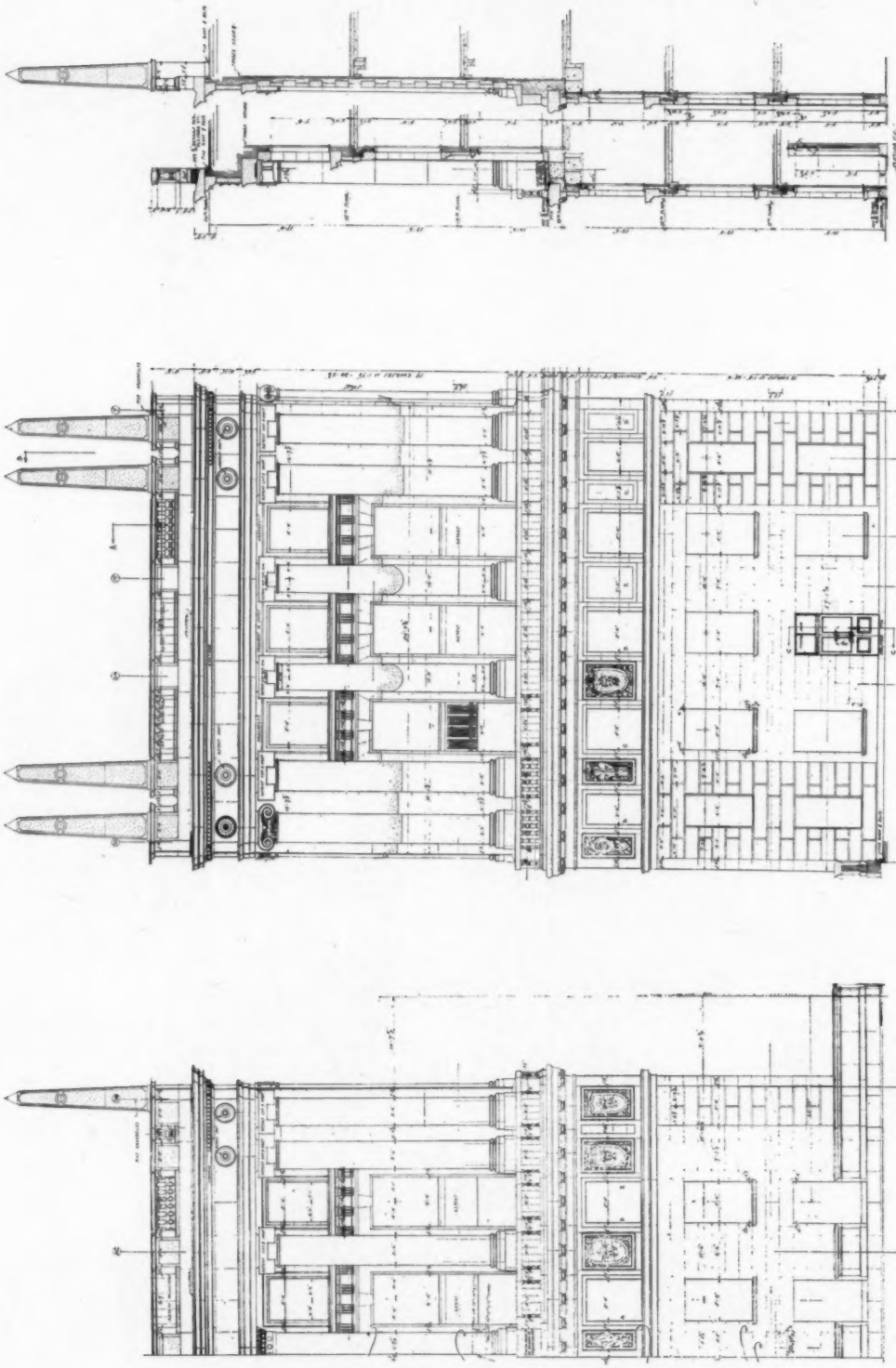
STANDARD OIL BUILDING, NEW YORK CITY

CARRERE & HASTINGS,
SHREVE, LAMB & BLAKE,
ARCHITECTS



BROADWAY ELEVATION, BASEMENT TO FIFTH FLOOR, STANDARD OIL BUILDING, NEW YORK CITY

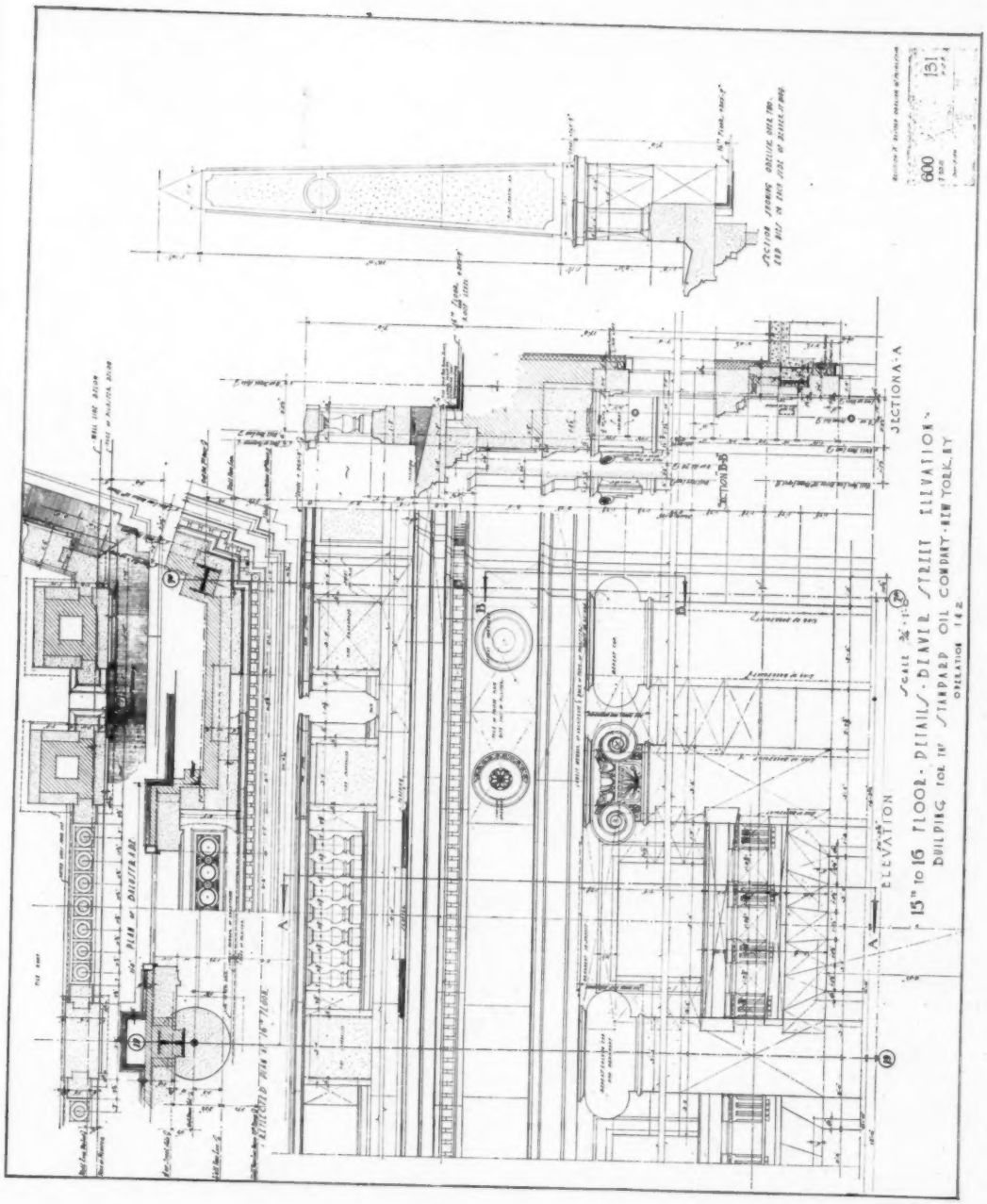
CARRERE & HASTINGS,
SHREVE, LAMB & BLAKE,
ARCHITECTS



DETAILS OF 10TH TO 15TH STORY EXTERIORS. BEAVER STREET ELEVATION AND COURT RETURN

STANDARD OIL BUILDING, NEW YORK CITY

CARRERE & HASTINGS,
SHREVE, LAMB & BLAKE,
ARCHITECTS



STANDARD OIL BUILDING, NEW YORK CITY

CARRERE & HASTINGS,
SHREVE, LAMB & BLAKE,
ARCHITECTS

DEPARTMENT OF ARCHITECTURAL ENGINEERING

THE NEW STANDARD OIL BUILDING

CARRERE & HASTINGS, SHREVE, LAMB & BLAKE, Architects

A description of the foundation difficulties encountered in the erection of a modern tall building in New York City and of the means taken to protect the rights of adjacent ownership

BY RALPH W. CHAMBERS*

THE new office building, now under construction in New York City, for the Standard Oil Company will occupy when completed, the plot bounded by Broadway, Beaver and New Streets, adjoining, and south of, the existing Standard Oil Building. The character of the buildings which occupied the site and have been, or will be, removed is shown in Fig. 1.

In these days of housing shortage, it is important, even imperative, to maintain existing usable space until new quarters can be made ready for occupancy. High rents in desirable localities also act to make tenants with long time leases very tenacious of their rights. Therefore it was decided to erect this new building in sections and to demolish at the outset, only a portion of the buildings which occupied the site. Each section will be completed and will provide quarters for the tenants of the old buildings when they are dispossessed as the successive sections of the old buildings are wrecked to make room for the new construction. Ultimately the whole plot will be covered and the present group of architectural styles of several decades will be replaced by a single structure, representing the highest type of development of a modern American office building.

The necessity for proceeding in the manner stated makes it necessary to maintain and safeguard, not only the foundations of the buildings which adjoin the site of the new work, but also the foundations of those of the old buildings now occupying the site which are to be maintained until the successive sections of the new building are completed.

The first section of the new building occupies the portion of the site facing New and Beaver Streets. This adjoins the twelve story Welles Building on the west and the sixteen story Standard Oil Building on the north. Section two includes the Beaver Street wing of the Welles Building.

Both of these buildings are of the heavy, wall-bearing type so common in New York City thirty or forty years ago. The walls are of brick masonry carried on eccentric footings, that is, the footings are offset on the inside, so that the center of load is near the outside faces of the footings. Typical footings of the Welles Building and Standard Oil Building are shown in section in Fig. 2 and Fig. 3.

The soil underlying these buildings is water-bearing clay and quicksand, to a depth of fifteen to eighteen feet below the footings. Below the quicksand, and above the rock, is a stratum of indurated clay, gravel and boulders forming a hardpan, which is from thirteen to twenty-eight feet thick.

The footings of the Welles Building and of the existing Standard Oil Building rest on piles, ten inches in diameter at the butt and driven about two feet apart, center to center. These piles were driven into the quicksand with the intention of reaching the hardpan below but it was discovered later that few of these piles did reach the hardpan.

The load on the foundations of the existing Standard Oil Building is about fifty tons per horizontal lineal foot of wall and the weight of the Welles Building is but slightly less. The piles in the outside rows in these foundations must, therefore, have sustained a load of as much as thirty-five tons each. The walls of the Standard Oil Building gave evidence of overloaded foundations but there was nothing to indicate that the foundation piles of the Welles Building were being called upon to sustain more than their safe carrying capacity.

The plans for the new building required the construction of a continuous cofferdam wall, im-

*Of Jarrett-Chambers Co., New York, N. Y.

mediately adjoining the New Street end of the existing Standard Oil Building and carried down to bed rock, at depths of from forty to forty-nine feet below the footings. This wall is shown in section in Fig. 3. The foundations for the columns of the underpinning piers and the foundations for the new building are shown in Fig. 3.

The theory set up as governing the work to be done, to safeguard and maintain the existing buildings, was as follows:

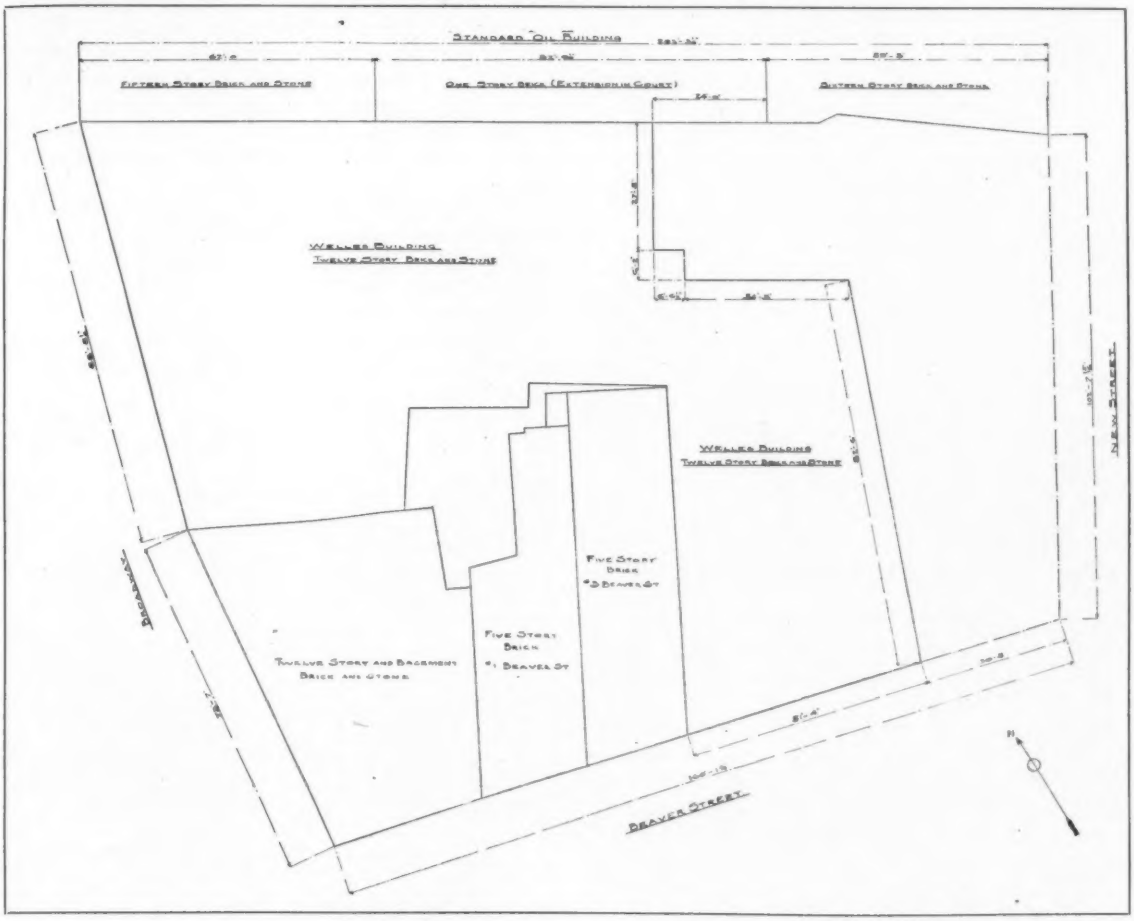


Fig. 1. Site of the new Standard Oil Building, New York City. Section One is the property fronting on Beaver Street and New Street. Section Two includes the Beaver Street wing of the Welles Building

Carrere & Hastings,
Shreve, Lamb & Blake,
Architects

umns of the new building, immediately adjoining the east wall of the Welles building, were located directly under this wall. Also, it was decided to construct foundations for the columns of the new building under the Beaver Street wing of the Welles Building, about midway between the east and west walls of this wing before this building was wrecked. These column foundations are numbered 21, 22, 23 and 24 in Fig. 4.

Confronted with these conditions, it was evident that the south wall of the existing Standard Oil Building and the east wall of the Welles Building would have to be underpinned, down to solid rock, before the caisson foundations for the new building could be sunk. The relative positions

First. Adequate shoring was to be installed before any underpinning work was undertaken The existing foundations being heavily loaded it was necessary to provide shoring equivalent in sustaining value to the portions of the foundations likely to be disturbed.

Second. The type of underpinning to be adopted and the method of installation should be such that existing foundations would be disturbed only slightly, if at all.

Third. The underpinning to be installed should be of sufficient capacity to sustain the existing buildings without dependence upon any part of the old foundations left in place.

The Shoring

Two forms of shoring were used, needles and spurs. The needle form of shores was used under

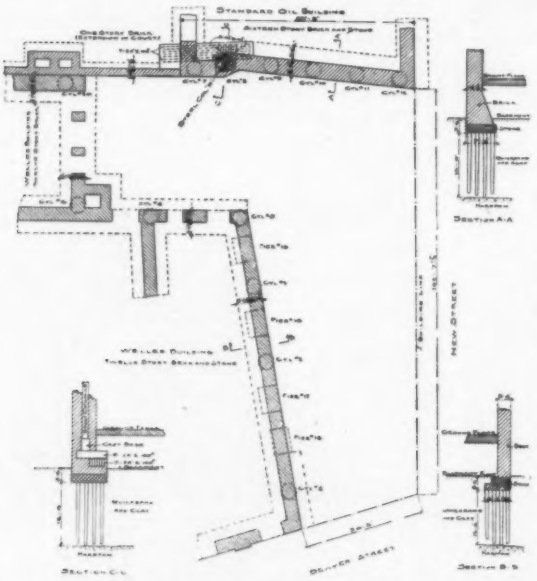


Fig. 2. Plan and section showing the original footing of Column H

the east wall of the Welles Building because access to the basement of this building was to be had without difficulty. These needles are shown in Fig. 5. Needles, however, were inferior to spurs for supporting the corners, so the latter were used at the ends of the building. It was not feasible to install needles under the wall of the existing Standard Oil Building without interfering seriously with the operation of the mechanical equipment of that building. Where it was not feasible, or advisable, to use needles spur shores were used. Fig. 6 shows the details and Fig. 7 is from a photograph of the spur shores used to support the walls of the existing Standard Oil Building. Fig. 8 shows the details of spur shores used under the wall of the Welles Building.

Fig. 9 shows the locations of all shoring. The needles are designated by the letters A, B, E and G, the spur shores by the letters C, D, F, G, I, J and K. The shore H under the Standard Oil Building was a special form of the needle type used to support a steel column. Each set of needles had a capacity of about three hundred tons. The spur shores, adjustable by means of jacks, used on the Welles Building were of about equal capacity to the needles, although the mats were smaller in area. The spur shores used on the Standard Oil Building were each of about five hundred tons capacity. The lifting capacity of the shores was determined in each case by actual test of the screw jacks and the full capacity was maintained until the adjacent underpinning was completed. The wall section on the left in Fig. 3 was taken between shore I and shore J between the underpinning piers and the section on the right was taken through one of these piers.

After the shores had been installed and the jacks were screwed up it was observed that the soil slowly yielded under the pressure. This yielding continued until, after the lapse of some hours, the jacks were found to be comparatively loose. The shores were then again tightened by means of the jacks after which the soil was again seen to yield. The operation was repeated at each sign of loosening and it was usually a week or more, depending upon the character of the soil, before the jacks would remain tight for more than a few hours. This phenomenon is not new to experienced shorers but it indicates that the element of time must be considered in studies of the sustaining power of soil under footings or piles, on which subject there has recently been considerable discussion.

It would appear, when an area of soil is loaded and apparently supporting the load, that in reality the soil is slowly yielding and will continue to yield until the lines of pressure are diffused, laterally, over a large area below the surface. That is, the element of time must be taken into account. The bearing capacity of a pile or footing cannot be determined by a single test but can only be determined by a series of tests on a number of piles extending over a considerable period of time.

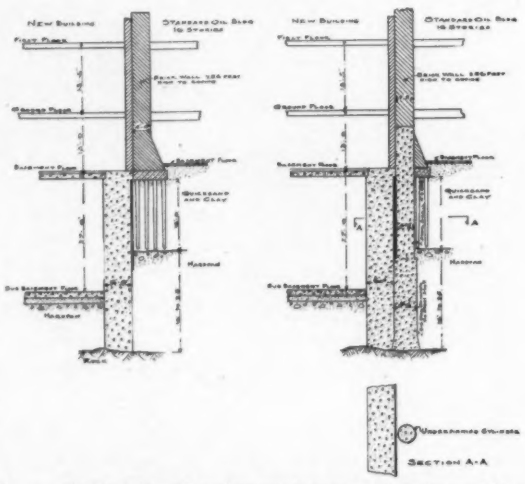


Fig. 3. Sections through underpinning piers and foundations of the new building, taken between shore I and shore J

The second and third conditions in the theory upon which the prosecution of the work was based, were satisfied by the construction of concrete underpinning piers under the walls of the existing buildings. These piers were sunk by the compressed air method to the rock.

All of the shoring shown in Fig. 9 was not in-

stalled at one time. The needles A, B and E and the spur shores C and D were set, after which the underpinning cylinders 1, 2, 4 and 6 were sunk. Needle B was then changed to position G and spur shore D was changed to position F. The underpinning cylinders 3 and 5 were then sunk. Needle A was then removed and a foundation caisson was sunk under the wall between cylinders 1 and 2. Also a foundation caisson was sunk under the wall at the location of needle B. Needle E was removed and a foundation caisson was sunk under the wall at this point. Finally needle G was removed and a caisson was sunk under the wall between cylinders 1 and 5.

After each of the four foundation caissons had been sunk under the wall, steel grillages to sustain the steel columns of the new building, were placed in the bottoms. Temporary concrete piers were then constructed in these caissons, up to the bottom of the wall of the building, to serve as underpinning.

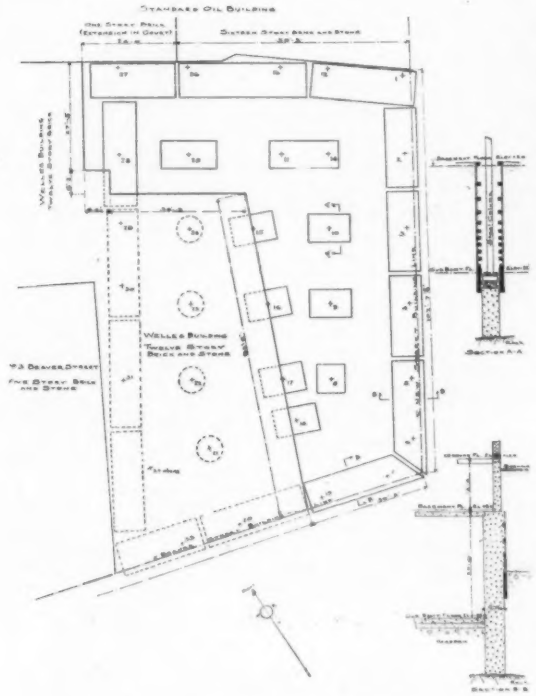


Fig. 4. Plan and sections of caissons

Spur shores I, J and K were set to safeguard the wall of the existing Standard Oil Building and cylinders 12, 10, 11 and 9 were sunk successively. Spur shore K was then removed to G, shores I and J were removed and shoring H was set, after which cylinders 7, 8 and 9 were successively sunk.

When the underpinning work, under the east wall of the Beaver Street wing of the Welles Building, had been completed sixty-four per cent of the foundations of this wall had actually been removed and the portion of the foundations left in place had been subjected to the disturbance caused by the sinking of the foundation caissons under this wall as well as by the sinking of the underpinning cylinders. Fifty per cent of the foundations of the existing Standard Oil Building were removed by the underpinning operations. Notwithstanding this disturbance and removal of the original foundations of these buildings the work was entirely successful and no cracking or settlement of the walls could be observed.

The use, on this work, of adjustable spur shores of considerable capacity, demonstrated that this

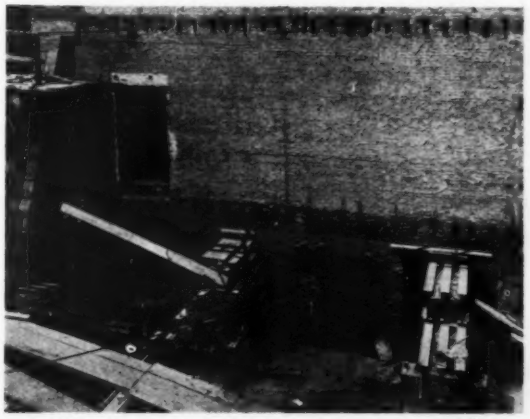


Fig. 5. Needle shoring under the east wall of the Beaver Street wing of the Welles Building

form of shoring may be used with fully as much confidence as has heretofore been reserved solely for well placed needle shoring. Cost data show that for equal capacity spur shores are somewhat cheaper than needles. A decided advantage possessed by spur shores is that they may be used without entering the buildings to be shored.

Pneumatic Caisson Foundations

The floor of the sub-basement is about thirty-seven feet below the curb at New and Beaver Streets, and in the sub-basement is to be installed all the mechanical equipment of the building. The floor of the basement is twenty-seven feet above the sub-basement floor and the walls will have no lateral support between the two floors. It was therefore necessary to provide sufficient thickness and reinforcement in the walls to sustain the earth pressure but the thickness of the walls was limited by the requirement that the available floor space in the sub-basement be as great as possible.

Another condition, new in this type of construction, arose because it was desired to have the deep sub-basement under both the first and second

sections of the building, and one section was to be constructed before the other. This meant that only two sides of the cofferdam wall to enclose the sub-basement, could be constructed at one time.

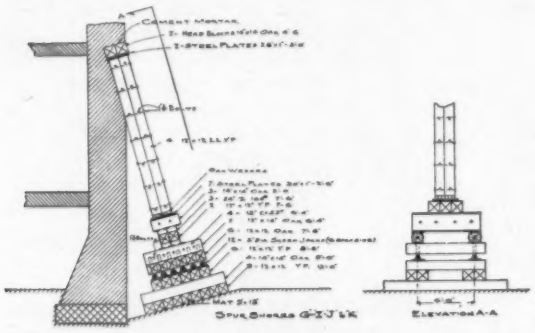


Fig. 6. Spur shores supporting the old Standard Oil Building

The remainder of the wall must wait until the second section was constructed. It meant also that the foundations for the interior columns of the first section must be sunk from the surface instead of waiting until the excavation within the cofferdam, had been completed and then sinking

Fig. 7. Spur shores on South wall of old Standard Oil Building, No. 26 Broadway

from the level of the deep sub-basement floor.

Fig. 4 shows in plan the sizes and location of the caissons for Section One and Section Two, of the new building. Cofferdam caissons 29-30, 31, 32, 33 and 20 were sunk after the Beaver Street wing of the Welles Building had been demolished. Caissons 21 to 24, inclusive, were sunk from the ground floor level of the Welles Building, and caissons 15 to 18, inclusive, were sunk under the east wall of this building without interfering with the occupants. All other caissons shown were sunk from the basement floor level of the building formerly on the site.

Details of the cofferdam wall and the relations of the various floor levels, are shown at B-B in Fig. 4. At section A-A in Fig. 4 is shown one of the interior columns of the first section of the building, with its foundation and a timber cofferdam. This timber cofferdam was used to enable the column to be placed below the sub-basement level before the cofferdam wall was completed and, consequently, before the excavation for the sub-basement could be made.

To take advantage of the comparatively shallow depth to quicksand and to limit the thickness of the wall to a minimum, timber caissons were sunk and were carried only a short distance into the hardpan. Below the timber caissons the excavation through the hardpan down to the rock was limited in width, to the required thickness of the finished wall. When the excavation was completed the concrete was carried to a level just above the bottom of the timber caissons and allowed to set. The air pressure was then taken off, the deck of the caissons was removed and the wall was completed in open cofferdams, the timber bracing being removed ahead of the finished wall.

The forms for the wall below the timber caisson were built against the side of the excavation in the hardpan. The necessary reinforcement was

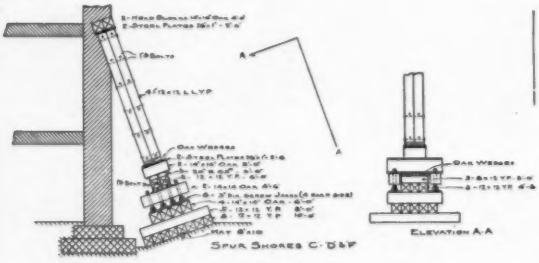


Fig. 8. Spur shores supporting the Welles Building

placed as the wall was built, the long tension bars of the reinforcement being spliced with turnbuckles. Details of the cofferdam caissons and joints are shown in Fig. 11.

It will be evident that the method adopted for sinking these caissons and constructing the wall, made it possible to limit the thickness of the wall to any desired minimum. This cannot be accomplished in the ordinary method because the necessary clear width of the working chamber and the thickness of the walls of the working chamber govern the minimum thickness of the cofferdam wall.

The method used is one that makes it possible to build a cofferdam wall which is continuous from the rock to the top, without any cause for apprehension as to possible voids, which may be left unfilled under the roof of the working chamber. Furthermore, this method makes possible the construction of simple and positive joints in the concrete, although air pressure may be required for the completion of the upper portion of each joint.

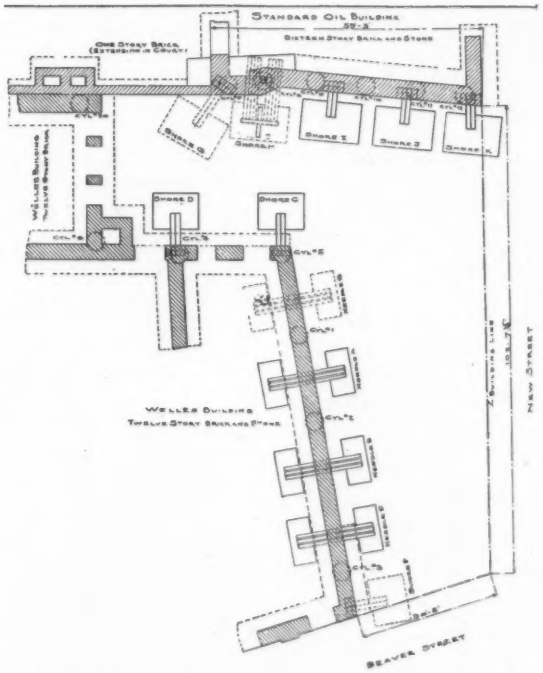


Fig. 9. Plan of Section One showing underpinning and shoring

In Fig. 11, on the right, is shown a section of a caisson sunk under the Welles Building. It is shown to better advantage in Fig. 16. A cylindrical steel shaft in three lengths was sunk into the hardpan just far enough to make a seal. A temporary wooden deck was placed to form a working chamber in the shaft and a small lock was bolted to this deck.

The excavation was carried through the hardpan below the bottom of the steel shaft down to the rock and was then extended laterally to form a rectangular section of the dimensions desired for the column footing. The concrete was then carried up to the bottom of the steel grillage and the grillage in each case was set under air pressure.

In this case, as the building above was to remain in place for a considerable time, the sides of the excavation above the grillage and up to the bottom of the steel shaft were lined with concrete. After the concrete lining had set the air pressure was taken off and the air lock and deck were removed. The foundation was then ready to receive the steel column, which was put in place when the existing building was removed.

Fig. 10 shows the details of the underpinning piers in the foundation caissons sunk under the east wall of the Beaver Street front of the Welles Building. The cross-sectional details of the cylindrical underpinning piers are shown on the left. The details on the right are those of the foundation caissons sunk under the east wall of the Welles Building. Fig. 11 shows on the right the details of caissons 21 to 24, inclusive, under the floor of the Welles Building. On the left are shown details of the cofferdam caissons and joints.

The cylindrical underpinning piers were installed by sinking steel shells down to a level two feet below the surface of the hardpan. From there the excavation was continued, without a shell, to the rock. Each steel shell was in three, or more, lengths and was fitted with air tight heads and doors so that there was an air lock chamber in the second length of each shell. When the excavation was completed to rock the space was filled with concrete up to the bottom of the wall footing. Air pressure was maintained during the whole operation until the concrete had reached a level above the bottom of the steel shell and until it had set for twenty-four hours. After the concrete in the cylinder was set, the notch cut in the wall footing was filled with concrete, with

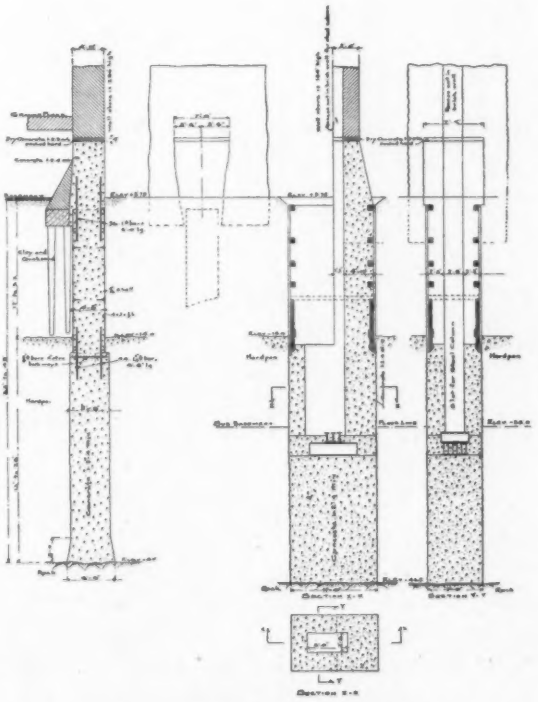


Fig. 10. Underpinning cylinders and piers under east wall of the Beaver Street wing of the Welles Building

the exception of a space about four inches high at the top. This space was finally filled with slightly damp concrete tamped into place. Each underpinning pier has a carrying capacity of about seven hundred tons.

Supporting an Existing Column

The existing Standard Oil Building was erected about thirty-five years ago and is of the wall-bearing type. Originally built as a ten story building, six stories were added about sixteen years ago. Deep girders of steel were placed on the walls at the level of the ninth floor, to distribute the weight of the added stories uniformly over the old walls.

Varying from this general plan, however, the new floors were not permitted to rest on one of the older walls but were independently carried by a truss, two stories in depth. This wall was parallel to the east, or New Street, wall of the building and about sixty feet west of it. The deep truss, which was provided to support the floor loads, was placed just clear of the wall mentioned. The south end of the truss was supported

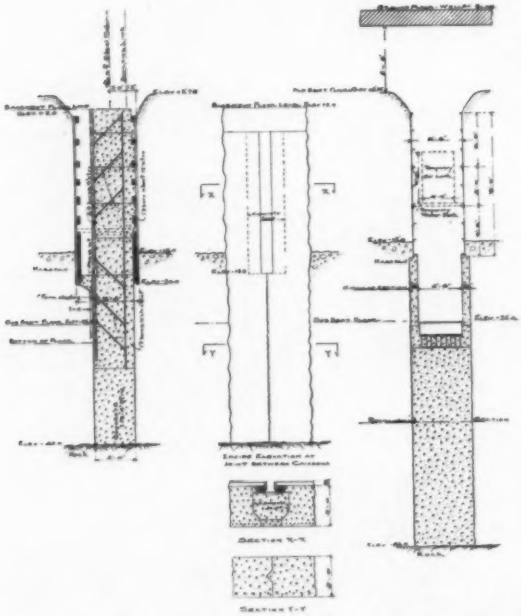


Fig. 11. Details of cofferdam caissons and joints on the left. Details of caissons under the Welles Building on the right

by the distributing girder on the top of the south wall of the building.

This south wall has an offset near the west end, so that, for a portion of the length the distributing girder does not rest upon the wall. This offset is shown in Figs. 1, 2, 4 and 9. To provide a proper support for this section of the distributing girder, as well as for the load from the floor truss, a steel column was placed in the wall of the building extending down through nine stories to the foundation. It was assumed evidently that this column would be stiffened by the encasing brick work of the wall. The base of the column rested on a footing of steel beams and concrete, which was a part of the footing of the south wall of the building. Section C-C, Fig. 2, is a section through the column footing, the plan of which is shown in the plan of the wall near the top of the figure. The plan of the distributing wall girders, the truss and the top of the column at the level of the ninth floor, is shown in Fig. 12.

It is evident, no matter what may have been the original intention, that the footing as constructed was not well adapted to transmit and distribute the load of the column uniformly over

Fig. 12. Framing of the old Standard Oil Building at the ninth floor, showing the area on the 9th to 15th floors, inclusive, carried by Column H

the bearing area provided. The load brought down by the column to the footing was about four hundred tons. The column was well bricked into the wall but some doubt was felt as to whether the shoring of the wall would take care of the column also. Later it developed that this doubt was well founded, for it was found possible to lift the column without lifting the wall. On account of the deep sub-basement to be provided in the new building, with a cofferdam wall going down fifty feet to rock, alongside the footing for this column, it was evident that the column must be underpinned and, to accomplish this, must first be safely shored.

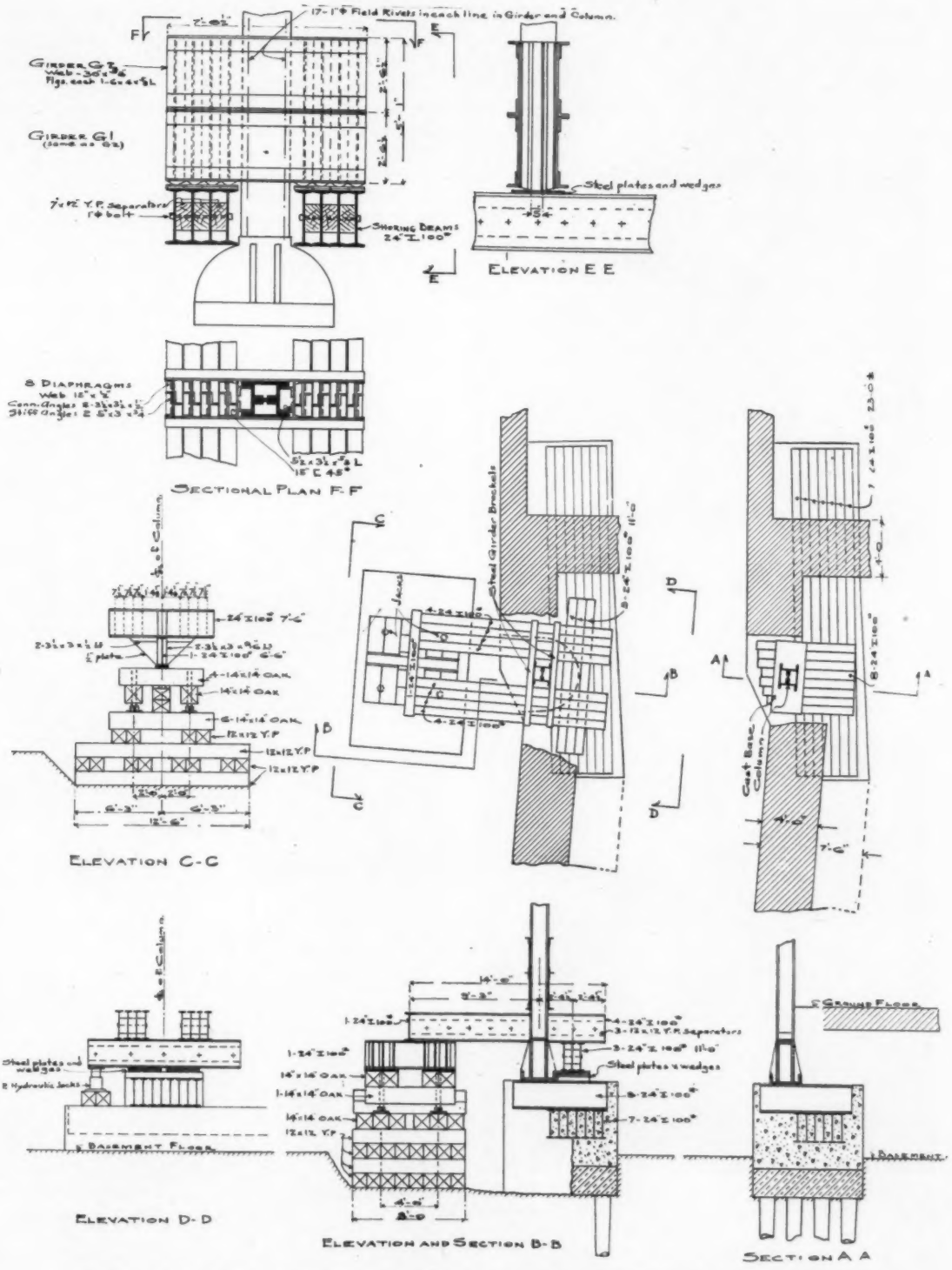


Fig. 13. Details of shoring of Column H in south wall of the old Standard Oil Building, No. 26 Broadway

Carrere & Hastings,
Shreve, Lamb & Blake,
Architects

The shoring of this column was planned upon the assumption that no appreciable settlement could be permitted. The slightest settlement would redistribute the stresses and reactions in the cantilever girder above and the consequences would

Fig. 14. Method of attaching bracket shore to Column H in south wall of old Standard Oil Building

be uncertain and far-reaching. It was decided after thorough examination, that the footing originally provided would be fully adequate, even if

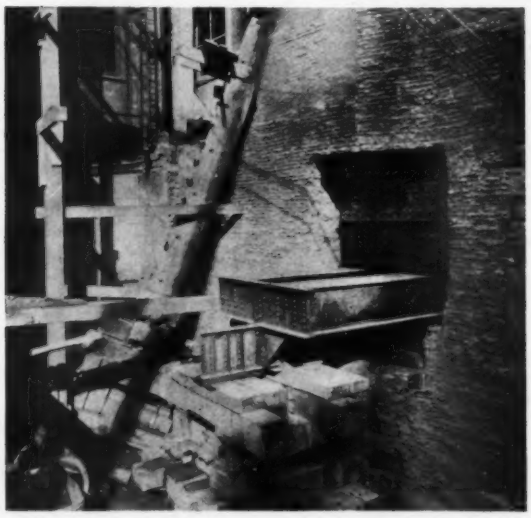


Fig. 15. Bracket shore on Column H completed and supported on mat

slightly disturbed by the underpinning operations, provided the load carried to it was properly distributed.

There was no way to support the column until a bracket, or similar device, had been attached to it. To serve as a bracket there were riveted to each of two sides of the column, two short plate girder sections. Rivets near the bottom of the column were cut out and the holes were reamed for the rivets by means of which the girders were attached. The details are shown at E-E and F-F in Fig. 13. The reason for providing two girders on each side instead of one deep girder, was to avoid cutting out too many rivets at a time. One piece at a time was connected, Fig. 14 being made from a photograph taken when the lower girder was complete and one-half of the upper girder was in place.

The ends of these short cantilever girders rested on 24 in. 100 lb. I beam needles, arranged as shown. Between the girders four diaphragms were riveted on each side of the column. These

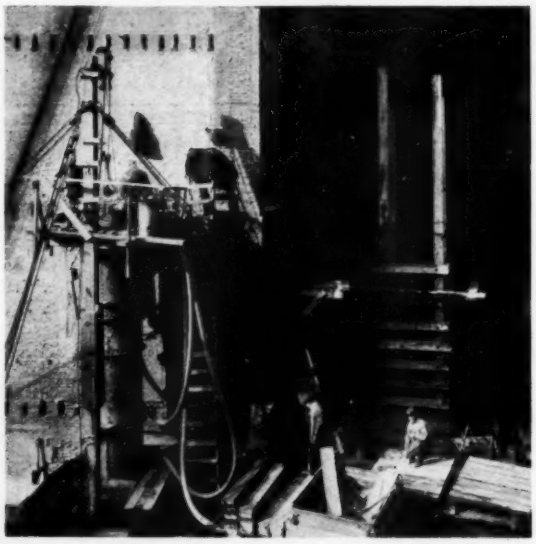


Fig. 16. Air lock and caisson at corner of Beaver Street wing of the Welles Building

diaphragms were intended to carry the column load properly to the shoring needles. In order to distribute the reactions equally to the two girders the bearing surfaces of the diaphragms were confined to the mid-sections of their ends.

The ends of the shoring needles rested inside the building on steel beams, which, in turn, were supported by the grillage beams of the original footing. No settlement of this footing was anticipated, but means were provided for jacking up the ends of the needles should the emergency arise.

The outer ends of the needles were riveted to a distributing beam, which was supported at the middle on a beam placed as shown in Fig. 15, which was made from a photograph taken after the assemblage was complete. The details are shown in Fig. 13. The support under the dis-

tributing beam rested upon four screw jacks, which, in turn, rested upon a timber mat on the soil. Thus the column which sustains the floors of the six upper stories of the building transmitted its load to the girders riveted to it and through the girders to the diaphragms, then to the shoring needles and, finally, to the two end supports of the needles which were the mat resting on the soil outside the building and the original column footing inside the building. The system of shoring needles had three points of support, two on the original footing within the building walls and one at the middle of the distributing beam at the outside ends of the needles. This arrangement distributed the reactions, from the mat on the outside and the footing on the inside, uniformly to the two ends of the girders attached to the column.

This balanced system of support was deemed necessary as a precaution against unequal loading of the ends of the girders riveted to the column, which unequal loading would have produced torsion in the girders with greatly increased shearing stresses on the rivets connecting the girders to the column, as well as a bending stress in the column itself.

When the shoring was completely installed the jacks were screwed up and it was found that the column could be lifted independently of the wall. When the jacks had been adjusted and kept tight for a time which was sufficient for the pressure on the soil to be distributed, the mat came to rest. Practically no further adjustment of the jacks

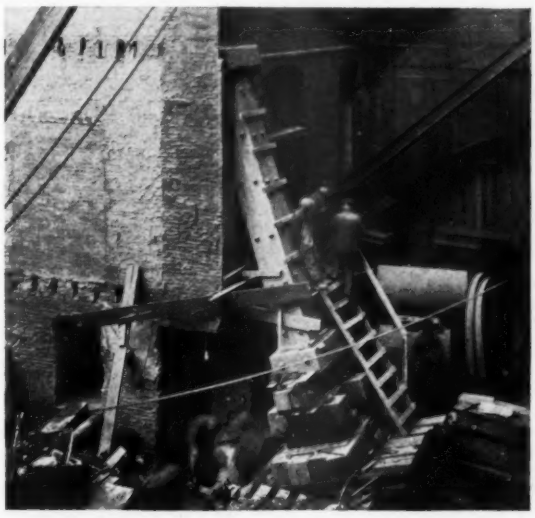


Fig. 17. Spur shore at the northeast corner of the Beaver Street wing of the Welles Building before caisson was installed

was necessary during the progress of the work.

The shoring having been accomplished the masonry under the column was cut away as shown in plan and Section B-B, Fig. 13 and an underpinning pier was sunk by the compressed air method under the column to the rock. The concrete of the pier was carried up to, and rammed tightly under the column, after which the shoring

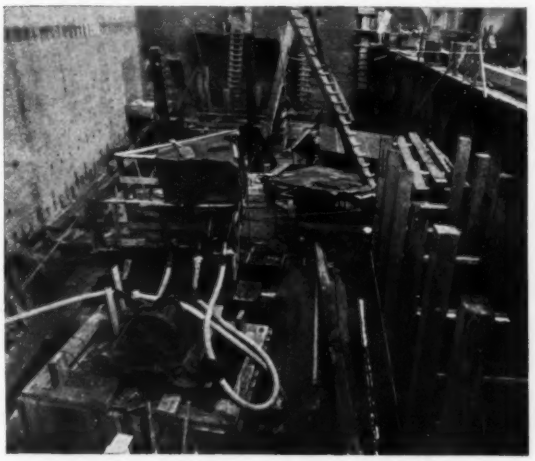


Fig. 18. General view of operations on Section One of the new Standard Oil Building, at corner of New Street and Beaver Street

was removed. The work was carried out without any settlement of the column, either during, or subsequent to, the operation.

Progress of the Work

Fig. 17 is a view of the corner of the Welles Building after the shore had been placed and work commenced on preparing the wall to rest on the new foundations. Fig. 18 is a general view of Section One and shows the working deck of one of the caissons used in sinking a column foundation. Fig. 19 is an inclusive general view taking in the spur shores against the walls of the existing Standard Oil Building, the opening in the wall exposing the nine story high column and the caisson at the corner of the Welles Building. The four timbers on the left are not shores, being merely heavy timbers which were leaning against the wall at the time the photograph was taken.

The foundations for Section One and Section Two, including the deep sub-basement and the superstructure of these two sections of the building, have been completed. The floor of the deep sub-basement is twenty-five feet below the water level but there is no evidence of moisture on this floor or on the surrounding walls.

The foundations for Section Three, which will occupy the whole of the site formerly occupied by the Broadway wing of the Welles Building, have now been completed. The Welles Building has been wrecked and the erection of the steel for this section will begin at once.

The foundation work for the third section in-

volved the sinking of twenty-five foundation caissons and of two underpinning piers. These were sunk by the pneumatic method to rock and this work, together with the necessary shoring of adjoining buildings, was done under the walls and floors of the Welles Building without disturbance to the occupants or settlement of, or damage to, the old building.

It is believed that this is the first instance in New York City, where extensive foundations have been installed by the compressed air method before the removal of existing buildings on the site. The advantage of this procedure is of course that the old building need not be vacated until the foundation work is practically completed and, that as soon as the old building is wrecked the foundations for the new building are ready for steel.

This work is under the direction of Theodore Pratt of the Standard Oil Company. The architects are Carrere & Hastings, Shreve, Lamb & Blake. Charles T. Mills, Inc., is the builder. The plans for the shoring, underpinning and foundation work were made by Jarrett-Chambers Company, Inc., and the work was executed by that company, with L. P. Hover as superintendent in charge.

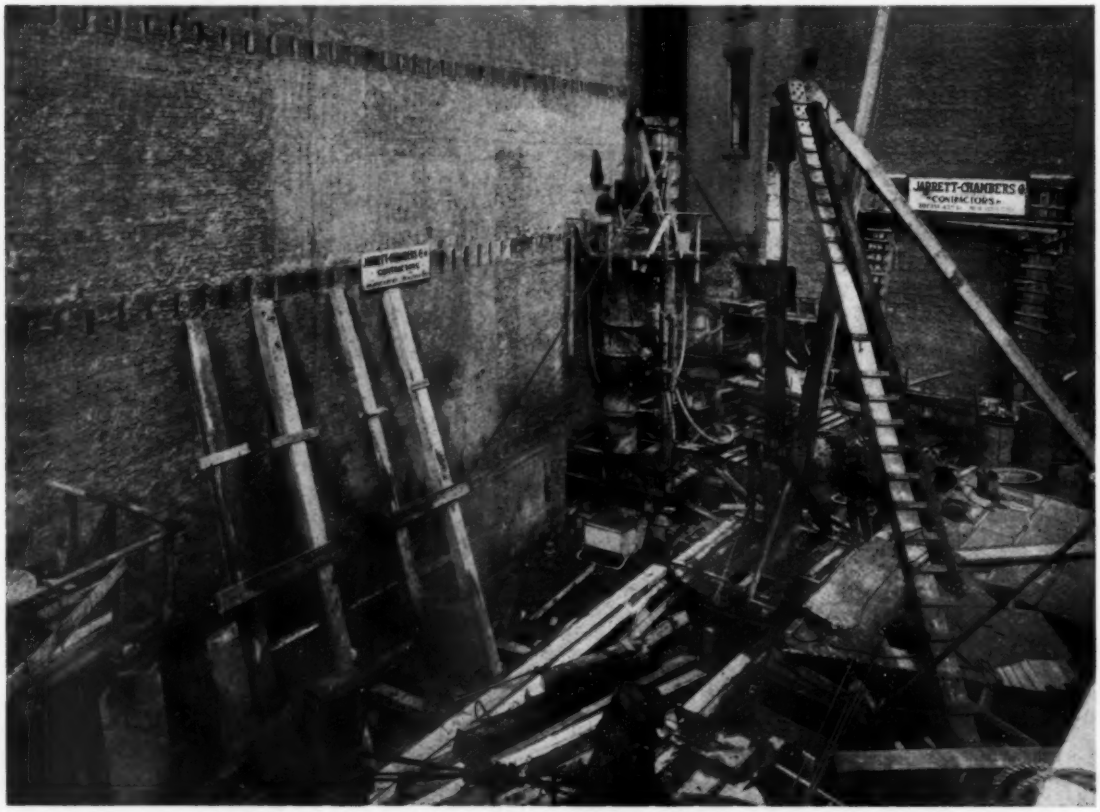


Fig. 19. View of Section One of new Standard Oil Building, New York City, showing east wall of Beaver Street wing of the Welles Building and south wall of old Standard Oil Building

DANGERS OF ANTHRACITE SUBSTITUTES

THE impending coal famine, like most emergencies, presents certain factors of fire hazard not realized by the general public, states The National Board of Fire Underwriters, in issuing the following precautions designed to prevent loss of life and property by fire, due to the use of substitutes for anthracite:

Since bituminous coal is subject to spontaneous ignition, particularly when stored in large quantities, it should never be piled near the furnace, nor against a combustible surface.

One of the important safety measures is to see that smoke pipes and flues are thoroughly cleaned before the furnace is started.

The radiated heat from a smoke pipe leading to the chimney is greater when bituminous coal instead of anthracite is burned, and this increases the chances of igniting combustible material nearby.

The hazard will be particularly acute where furnaces are designed for the use of anthracite; hence, to overcome the additional dangers created by substituting bituminous coal, the following precautions should be taken, in addition to the flue-cleaning already mentioned:

(a) Furnaces should be encased on all sides and top with incombustible protective covering, not less than 1½ inches thick, and the overhead clearance should be not less than 15 inches. Any wood construction within 2 feet of the top should be protected by a loose fitting metal shield, so placed as not to form concealed spaces.

(b) Any woodwork, or wooden lath and plaster partitions within 4 feet of the sides or back, or 6 feet from the front of furnace or heating appliances, should be covered with metal shields, or other approved incombustible material to a height of at least 4 feet above the floor. This covering should extend the full length of the furnace, or heating appliance and to at least 5 feet in front of it. All metal shields should be so attached as to preserve an air space between them and the woodwork. In no case, should combustible construction be permitted within 2 feet of the side or back of the heating appliance, or within 5 feet in front of it.

(c) Smoke pipes should be at least 18 inches below any wood lath and plaster, or other combustible ceiling, unless at least the upper half is protected by 1 inch or more of asbestos covering, or its equivalent. In such case, a 9 inch clearance is sufficient. Smoke pipes should not be permitted to pass through floors, closets, or other concealed spaces, and where they pass through a wooden lath and plaster partition, a ventilated metal thimble having a diameter of not less than 12 inches larger than the smoke pipe, should be used. Equivalent protection would be afforded by 4 inches of brick work, or other incombustible material.

The same precautions apply if wood is used.

Numerous roof fires may be expected when soft coal and wood are burned because of the burning embers that will escape from the chimneys, and fires from defective chimneys and flues are also fairly certain to increase.

Sprinkler Systems

The coal shortage is likely to result in the freezing of many wet pipe sprinkler systems and consequently they should receive special attention.

Use of Oil

Oil burning equipments should be safeguarded in accordance with the regulations issued by The National Board of Fire Underwriters.

While kerosene is not as hazardous as gasolene, it gives off inflammable vapors that are explosive under certain conditions.

The use of the portable oil stove should be attended with great care. Numerous fires have been caused by filling the reservoir while the wick was lighted. All filling should be done by daylight and away from open fires or lights.

Do not place heaters where they will come in contact with light, inflammable house furnishings. Fires have also been caused by placing oil stoves and heaters too close to woodwork. The portability of the device is in itself a hazard; not being secured in place, it is easily overturned. In numerous cases, serious injury by burning has resulted from weak spring catches securing the upper cylinder to the lower section. If, in such cases, the heater is lifted, the catch gives way and causes the heater to open like a jackknife, with the consequent probability of fire and injury. Therefore the catch should be examined frequently and repaired if it is not functioning properly. The heater should not be carried or moved while lighted.

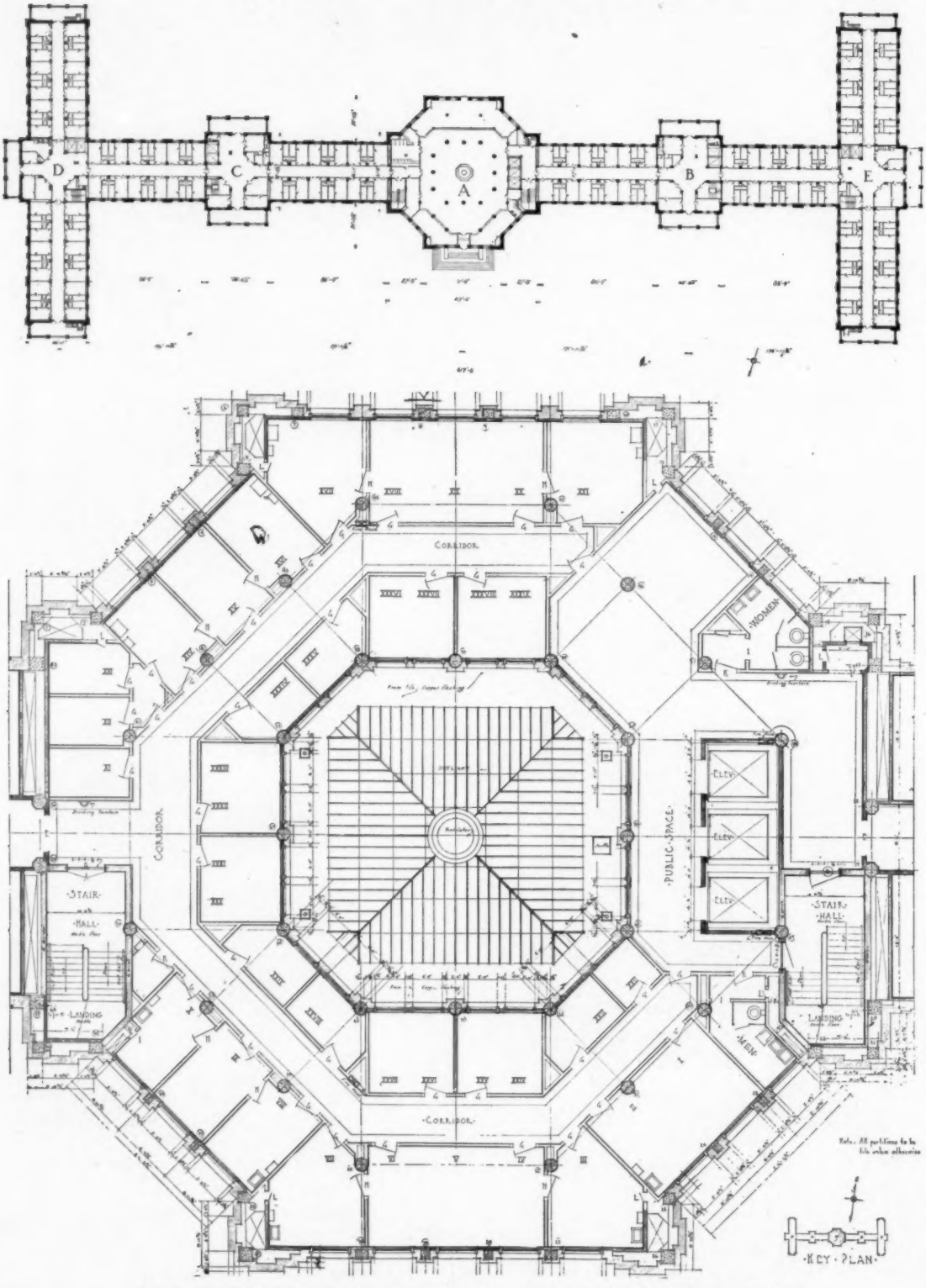
Explosions have been caused by defective wicks which do not entirely fill the wick tube section of the burner. Occasionally the wick and burner should be boiled in a strong solution of soda or lye and carefully dried before again being placed in service. This not only gives a better light, but enhances the safety of operation.

Gas

The portable gas heater should also be kept at a safe distance from wood construction or furniture and connections should preferably be made with rigid iron piping. The safest form of flexible gas hose is that which is metal covered. Particular care should be exercised where open front gas heaters are used. Cases have occurred where persons wearing loose garments have passed too closely to the flame, with the result that they have been painfully, and sometimes fatally, injured.

Electricity

Similar care should be taken where electric reflector heaters are used. Always disconnect electrical appliances at the socket when they are not in service.

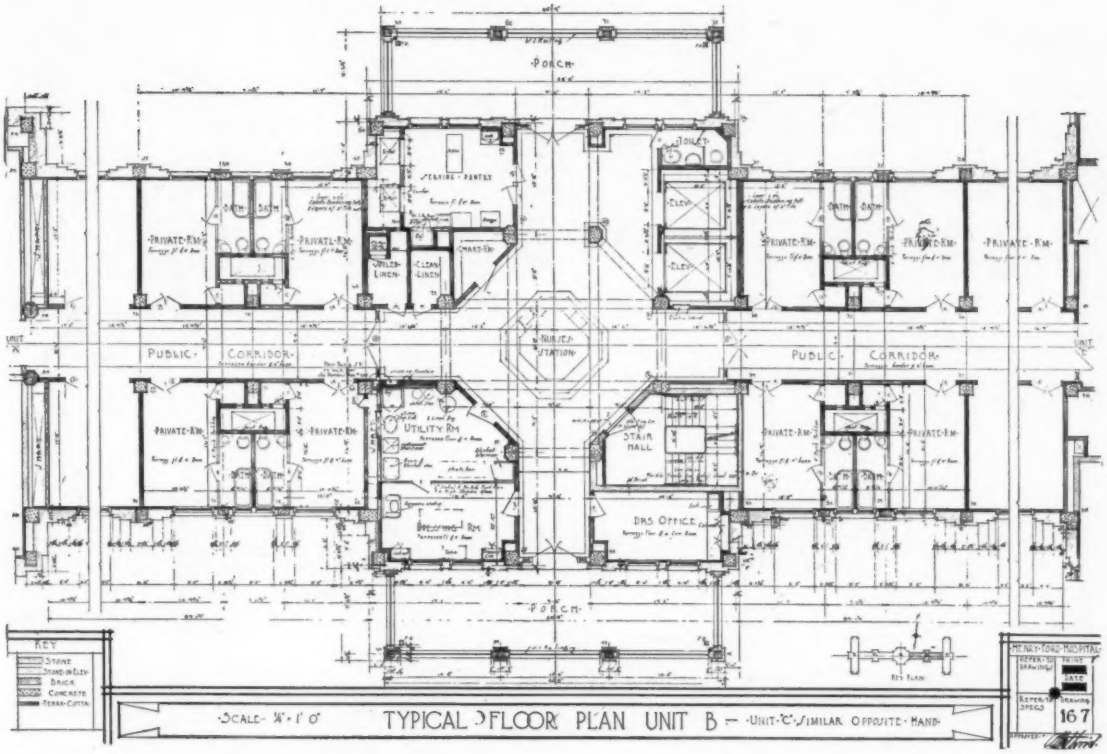


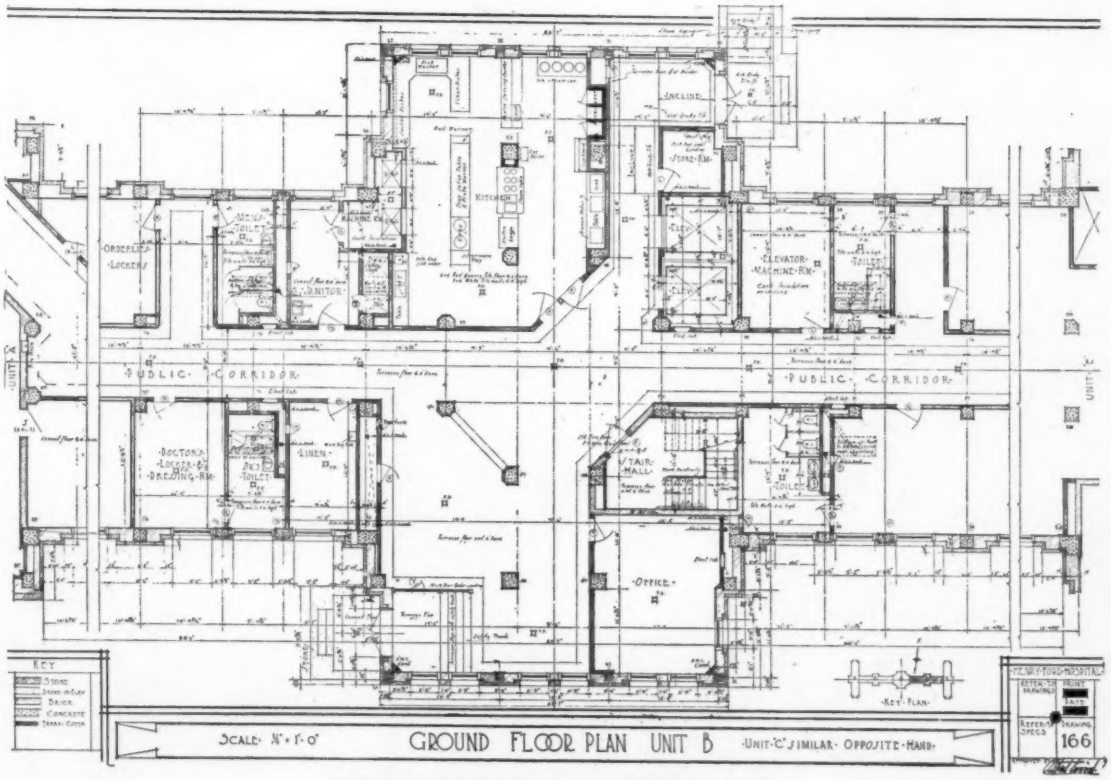
ABOVE: GENERAL FIRST FLOOR PLAN BELOW: THIRD FLOOR PLAN, UNIT A

HENRY FORD HOSPITAL, DETROIT, MICH.

ALBERT WOOD, ARCHITECT

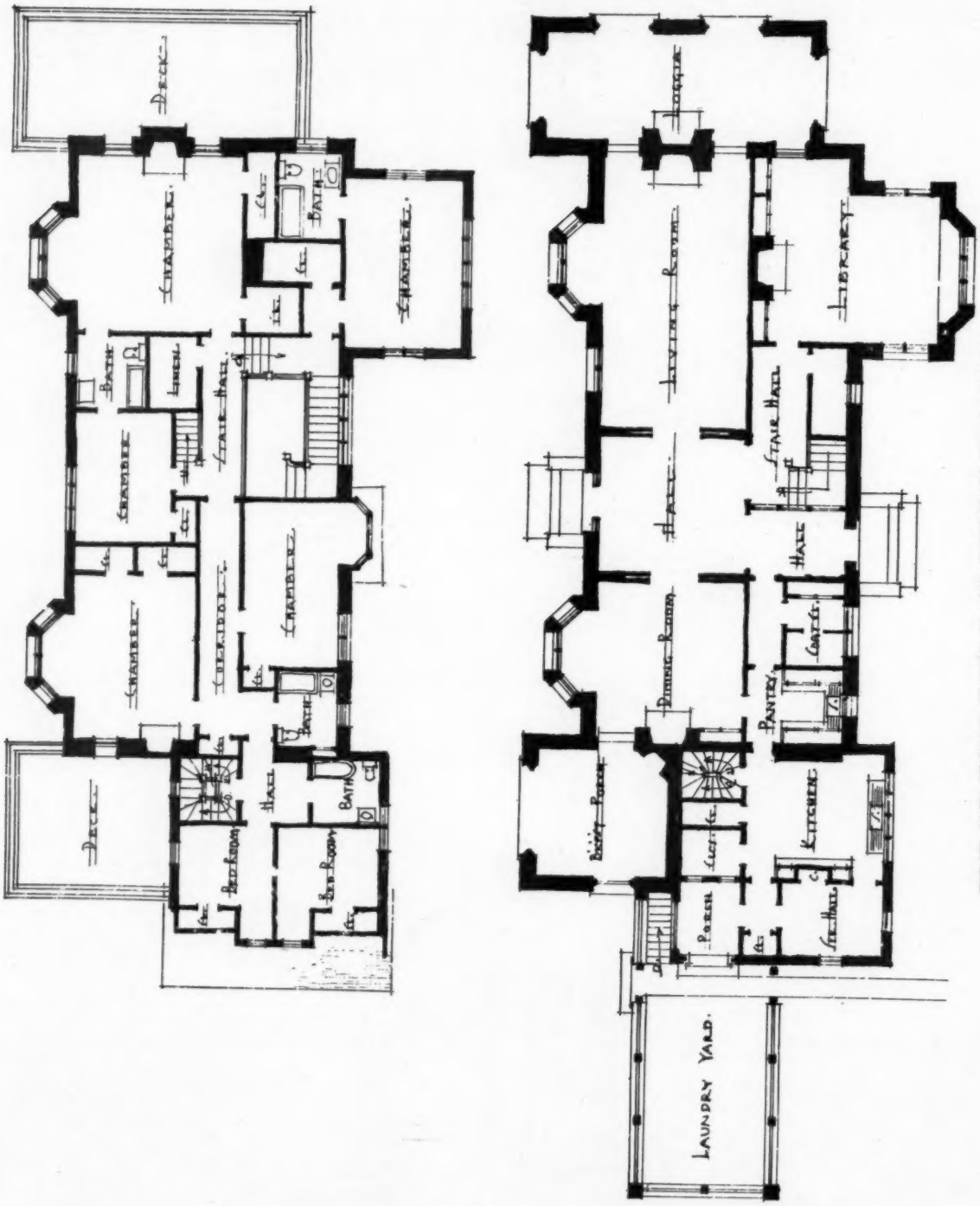
(For illustrations of this hospital see Plate Section)





HENRY FORD HOSPITAL, DETROIT, MICH.

ALBERT WOOD, ARCHITECT



FIRST AND SECOND FLOOR PLANS, HOUSE IN ABINGTON, PA.

OSWALD C. HERING AND DOUGLASS FITCH, ARCHITECTS

(For illustrations of this house see Plate Section)

DEPARTMENT OF SPECIFICATIONS

Outline for Concrete Specifications (Continued)

XXIII. Protection of Green Concrete

A. There must be a clause of warning regarding the protection of green concrete during warm weather as well as cold weather. State that in excessively warm weather the faces of concrete exposed to premature drying are to be kept wet for a period of at least ten days unless the surfaces are in shade where a lesser period will be allowed according to the judgment of the superintendent

B. During cold weather, heat the ingredients of concrete and specify that heat is to be applied in spaces where concrete after being poured will be subject to low temperatures, ranging from about fifty degrees downward

C. If the burden of responsibility for safety of green concrete is to be placed on the contractor, the specifications should be brief without being explicit

XXIV. Limestone Protection

A. Where concrete slabs or other structural work is to rest on masonry walls faced with limestone or other stones that may be stained by Portland Cement, the specifications should require protecting media to insure that the grout from concrete will not be allowed to penetrate the stone backing and find its way through the wall to the stone

B. The protecting media may consist of lime mortar plastered against the surfaces of stone backing against which the concrete will be poured, or it may consist of unsaturated felt and asphalt applied cold which is so arranged that any grout will not penetrate lap but will be thrown off the edges of the felt to drop on to the floor below a sufficient distance back of the wall so that it cannot reach the wall by any means

C. Each problem must be studied by itself and it is advisable to be quite explicit in specifying the means to accomplish the desired result

XXV. Mechanical Surfacing

A. Concrete surfaces to be finished after forms are removed should be specified to be finished mechanically by means of hand, air, or electric tools

B. Whichever method is desired should be specified clearly and the desired finish should be indicated by a name given to it by local custom or by reference to some existing surface that may be inspected readily

XXVI. Tests of Reinforced Concrete

A. Building ordinances often require concrete construction to be tested for workmanship. Specifications should describe portions of the structure that are to be tested

B. State the character of gauges to be used and their number and how often they are to be read, with a clause requiring the recording of reading and other pertinent data

C. The kind of material used for applied loads, its placing and removal, should be specified clearly

D. If ordinance requires, specify that the proper authorities are to be notified by the contractor at least twenty-four hours before making the test, giving in this notification the time and place of the test and asking for any special instructions

XXVII. Miscellaneous Concrete Construction

A. Should there be any miscellaneous concrete work such as machinery foundations, wheel bumpers, direction monuments, gate and fence posts, or other similar items that are not distinctly shown on the drawings or that require descriptive matter in the specifications attention should be called to them by means of specific paragraphs in the specification. If these suggested clauses are not to be written, the subject matter should be specifically listed in the schedule under "Scope of Contract"

B. Oftentimes it is desirable to direct attention in the specification, to the necessity for forming chases, pockets, raglets, or similar formations in the concrete, even though the drawings show these clearly. The particular items and their character must govern the treatment given them

XXVIII. Floors

A. For floors on earth sub-base specifications should state what areas are to rest on earth

B. The earth sub-base must be prepared so that it may be in a condition as stable as that of surrounding undisturbed soil

C. In all cases it is best to require sand or cinder bed at least six inches thick

D. Special precautions must be taken to prevent the laying of earth base or a concrete floor itself in water unless the specifications carry specific instructions for such work

E. In all cases the sub-base must be brought to a level or to grades parallel to the finished floor levels or grades and at a distance below the finished floor levels of grades equal to the thickness of concrete base and finished cement topping, unless other finish material such as tile will be placed, in which case such additional thickness will be added

F. An advisable clause will require that where walks are placed adjoining foundation walls, a part of which will be laid on backfilling, the remainder to rest on the undisturbed soil of the excavation bank, extreme care be used in preparing this sub-bed by means of copious flooding over a period sufficiently long to insure the best sort of settlement

G. In all cases prohibit the use of excavated lumpy clay for backfilling or sub-grading under floors or walks unless fine sand is used to fill the interstices with sufficient puddling to insure compact soil

H. Require that the sub-base after being laid down shall be puddled, rolled and tamped to provide substantial foundations

I. Concrete floors that are to be laid on rough slab construction of concrete or hollow tile or other structural work, must have the under construction substantially built and prepared to receive the finished work. All pipes that are to be embedded in floor slabs should be inspected to insure that all work is ready to be buried. Where wood construction occurs, large cracks should be filled in using metal sheets or metal lath, or other effective means to prevent leakage of grout

J. It is often necessary to reinforce floor slabs to resist the uplift of water pressure to distribute stresses of live loads over soil of uneven bearing power, or to strengthen the concrete laid on wood construction. The character of reinforcing should be described to some extent, even though it is handled under the general subject of reinforcing. In certain instances it is considered sufficient to use woven wire of light gauge such as "chicken wire" to provide the desired reinforcing

K. Unless the thickness of floors is shown on drawings, specifications should be explicit in the thicknesses required. This clause should also specify those surfaces that are not to receive cement finished topping or that are to have finish material provided by other contractors

L. For work provided by marble, tile floor, terrazzo, or other contractors who through custom provide concrete base for their finish work, specifications should describe those places that are to be so finished

M. For the placing of concrete base regardless of the character of top finish, specifications should require the concrete to be tamped or rolled to a compact mass. If expansion joints are required, their location should be specified if not shown on the drawings, likewise the character of the joints. Where small spaces are being laid in important spaces divided by partitions, specifications should require that the placing of concrete base be stopped at such a time during the day that finished cement topping may be applied and completed before dark unless the specification writer does not intend to require the placing of topping on the green base. The upper surface of the base must be brought to correct levels and carefully screeded to receive whatever top finish is to be used

XXIX. Roof Fill

A. If cinders are to be used for roof fill, specifications should require that they

be placed dry and brought to proper level to receive a thin cement topping unless structural conditions indicate that expansion of cinder concrete will not be harmful, in which case usual cinder concrete may be installed

B. Where stone concrete fill is to be used, it is advisable to specify the installation of clay tile block fill to within three or four inches of the finished surfaces in order that the dead load of thick concrete may be saved. The finish surfaces to receive finish cement topping or other finish materials should be graded to drainage points

C. Where concrete fill is to intersect vertical walls that are to be flashed when the waterproof roofing is installed, specifications should require the formation of cant strips, and if necessary, there should be a requirement for the formation of saddles, or other auxiliary drain surfaces

XXX. Stair Steps and Landings

A. If reinforced concrete stairs are used the specifications must require that the surfaces of treads and risers be brought to within a distance from the finished surfaces equal to the thicknesses of the finished cement desired. It is probable that this work will be handled sufficiently in the specifications for placing of concrete and on the drawings

B. Where metal stair construction is used, the treads and landings to be filled with concrete, specifications should be specific in indicating all such work that is to be included

C. It is customary to have the finished tread two inches thick and the finished landing two and one-quarter or two and one-half inches thick. The aggregate for this work should be of finer size than used for heavy work and the concrete should be specified to be placed with care so that later damage will not result

D. If non-slip treads are to be provided, the specifications should state who will furnish them as well as who will set them. If they are to be set by the concrete contractor, they should be provided with the proper type of anchorage and he should be held responsible for the embedding of the anchorage and the fitting in of concrete under all bottom surfaces of the treads

(*To be continued*)

The Great Opportunity of Boston Architects in Regard to the Education of Those Employed in Their Offices

THE Education Committee elected by the Boston Society of Architects desires to draw attention to the present admirable conditions for furthering the professional education of those employed in the architectural offices of Boston, as well as for co-operating with the schools in the endeavor to give their students practical experience.

The Architectural Schools of both Harvard and the Massachusetts Institute of Technology have risen to new heights of usefulness. Under strong leadership, with a corps of instructors unequalled in America, notably, Messrs. Ferran and Haffner, both holders of the Grand Prix de Rome, and a system of instruction unsurpassed for results, these schools are forming a center of architectural education such as our country has never before seen.

The Atelier of the Boston Architectural Club, also, is growing as a great influence in architectural education. This is largely through the cordial support of these big schools and the enthusiastic co-operation of their most valued teachers. When a student cannot give his whole time to study, the night classes of the Club provide the very best substitute. There is no deterioration in the quality of instruction. The teachers are the same men, working voluntarily and without pay.

It is essential that the architects of Boston give their sincere support to these schools.

A great opportunity lies at hand, to further local architectural education in general and the education in particular of those employed in our offices. It is believed that participation in school work by slightly more experienced men, will not only strengthen these men, but also strengthen the schools.

At Harvard and at Technology, the schedules are being arranged so as to encourage students to continue their relations with their parent school for the years immediately following their graduation. The schools hope to foster in this manner the custom prevalent in France of insuring the occasional competition of older men with the stu-

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THE AMERICAN SPECIFICATION INSTITUTE

Member of The American Society for Testing Materials

19 South LaSalle Street, Chicago, Illinois

THE Board of Governors represent memberships in the following national societies: American Institute of Architects; American Society of Civil Engineers; American Society of Mechanical Engineers; American Institute of Electrical Engineers; American Society for Testing Materials; American Concrete Institute; American Iron and Steel Electrical Engineers; which indicates the scope of activities of The American Specification Institute.

THE American Architect and the Architectural Review has gratuitously set apart this section for use by The American Specification Institute. The Editors and Publishers assume no responsibility for any statements made, or opinions expressed.

The purpose, simply stated, is to afford an organization which, it is believed, will become a most important element in architectural practice and building operations, a medium through which it may, without expense to itself, reach a class of readers that are most intimately identified with the field of the activities of The American Specification Institute.

Publishers, The American Architect and The Architectural Review.

THE following letter was received some time ago by the Secretary's office and because of the many valuable suggestions regarding the method of writing specifications, it is felt that the members should be given the opportunity to gain what assistance they can from it:

"The following is a description of the procedure adopted in this office for writing specifications:

"It is our aim to make the drawings so complete in all detail parts that nothing is left for the contractor to assume, and in notes his attention is called to any special conditions.

"When the drawings are about 60% complete, we build up from a number of sheets of paper a tablet, which we call a snake; each sheet at the bottom right hand corner has the sub-heading of the work entering into the construction of the building, such as 'Instructions to Bidders, Wrecking, Excavation, Concrete, Brick Masonry, etc.'

"While the draftsmen are at work, the specification writer, who happens to be the Chief Draftsman in the office, goes over the drawings with the draftsmen and makes notes, placing them under their proper sub-heading in the snake. At the completion of the drawings, the snake contains a full synopsis of the materials entering in the work and also the special notes to be placed under 'General Remarks.' When the drawings are almost finished, the specification writer takes the tracings and his snake and carefully goes over each item, making pencil notes on the tracings so that they agree with the information contained in the specification. No draftsman is allowed to put notes on the drawings except those placed by the person writing the specification, so that any conflict in the work may be avoided.

"The specifications are then drawn up in a rough draft, carefully revised to conform to the finished drawings. The final specifications are then made from the corrected original specifications.

"With reference to General Conditions, would say that we do not use the form adopted by The American Institute of Architects. We have carefully analyzed these Conditions and find that they do not conform to certain parts of the contract we have drawn up. We therefore built up our own General Conditions, painstakingly comparing each and every item with the Agreement and Contract we use in the work.

"It is my belief that the General Conditions in most architects' specifications are too lengthy and dangerous, the architects having a tendency to make them very rigid, and in doing so pay little attention to the Contract Form they turn over to the contractor, only later to learn that they have

contradicted themselves in these two documents. In my opinion, the function of the General Conditions is merely the calling of the general contractor's attention to the parts the architect will hold him responsible for in the agreement and parts in general to carry out the work. I am enclosing a copy of our General Conditions, and no doubt you will notice that we have sifted it down to a fine point. In my experience as an estimator, I have read quite a number of General Conditions. Some architects' specifications would contain as many as from 16 to 30 pages, some of them absolutely meaningless.

"Some time ago I was asked to arbitrate a dispute between the owners of a banking institution and a cabinet maker in this city,—I acted as arbitrator for the cabinet maker. In going over the contract between the two parties and the General Conditions in the specifications I found that the two papers conflicted with one another in many places. Later, the work was put in the hands of a third arbitrator, an ex-Judge of the Supreme Court of the State of Missouri, and he upheld every instance where I had found conflict between these two documents. The opponent maintained that this was common among architects and should not be held against the owner, but the Judge ruled that it should. In many cases the architects endeavor to use the General Conditions to cover up defects in their work, and this, in my opinion is unfair.

"Another difficulty with many specifications is placing the materials under their proper subheadings. While estimating, I have often come across specifications, generally those of Eastern architects, in which there would be a general heading of 'Masonry' which would include the brick work, all concrete work below grade, floor construction, fireproofing, cut stone, granite; almost all items placed by men using trowel, hose, wheelbarrow and mortar. Again I have found specifications where bronze work was specified under the headings of bronze, carpentry, marble work, cabinet work, and possibly one or two other items. The same difficulty will occur in ornamental iron work. Under woodwork, one often finds concrete floors, carpentry, mill and cabinet work. Specifications of this type are very embarrassing to a contractor and estimator, in taking off quantities. I have known occasions where sub-contractors became so disgusted with this sort of a specification that they have refused to figure the job, making it necessary for the contractor to spend several days going over the plans and specifications, picking out the various items and classifying them under separate headings, that they might receive a lump sum figure for the items which were strewn throughout the specification. It is my conviction that the sub-heading of a specification cannot be given too much consideration.

"In this connection, it would be a wise move for the Specification Institute to get in touch with the National Board for Jurisdictional Awards in the Building Industry and co-operate with it in classifying materials for the various trades, and putting them in their proper place in the specification, so that when a manufacturer, sub-contractor or contractor picks up a specification he has but one sub-heading to deal with in making up his proposition. If the architects would realize this, they would get far better bids and find less trouble in their work in connection with the different trades.

"I have gone through this experience in 1911, in a specification for a large club house, where it was necessary for the contractors with whom I was employed to analyze the entire drawings and specifications before it was possible to get the sub-contractors to estimate on them to obtain an intelligent figure. However, our efforts were not lost in doing this, as we were the successful contractors, as the majority of the contractors asked to estimate on the job refused to put in a bid.

"In building up a specification our first paragraph under each heading calls attention to the General Conditions of the specifications.

"The next paragraph, when necessary, contains 'General Remarks,' calling the contractor's or sub-contractor's attention to special features in the work and specifications; or if a certain item which may belong to another trade needs to be considered in connection with this work.

"The third paragraph is headed 'Extent of Work.' Under this paragraph we call attention to all the items that have been incorporated in our snake which enter into the work, leaving nothing for the contractor to guess. Each item is separately paragraphed, thus avoiding the misplacing of punctuation which might destroy the sense of the word.

"Following this item we call attention to the 'Materials.' All materials are mentioned by *trade* names, and the term 'or equal thereto' is never employed. If a material man is offended that his material is not mentioned, we allow him the privilege of submitting a separate figure for this work.

"After 'Materials,' 'Workmanship' is described, stating the quality we expect in each part of the work.

"Following 'Workmanship,' each item, in the 'Extent of Work' is sub-headed and fully described in detail, leaving nothing in doubt for the contractor as to the method of construction we have in mind and the materials to be used.

"In mill work, cabinet work and marble work, and items of this kind, after describing in detail the materials in general, each compartment is analyzed for the units contained therein, making special mention of special parts.

"It is our practice to have the drawings contain such notes as are necessary to give the contractor a guide to the specifications. We also are firm believers in a good catalog system for reference in selecting the best of materials for the particular kind of work that we have on hand. This gives us an opportunity to search the field for the best results. I can safely say that I cannot see how any specification writer can intelligently write a full descriptive specification without the assistance of catalogs, and full knowledge of materials. Let us analyze 'building' from the architect's standpoint. Is it not the assembling of various materials in such a manner as to create the structure best suited to its particular purpose? If this is true, is it not essential that he have a full knowledge of the materials he intends using?

"It should be borne in mind in writing a specification that there are four facts entering into the work. First, the obligations of the contractor to the owner, fully covered in the General Conditions, Contract and Agreement; second, an exact indication of the work; third, materials, fully and intelligently described; and fourth, workmanship, clearly set forth. The specifications should contain nothing beyond this.

"In this connection may I say that the drawings should be made as clear as possible with reference to the specification, so the estimators, material men and sub-contractors can easily find their way in locating material from the specifications, under 'Extent of Work' on the drawings.

"In the above, I have endeavored to give you information as to our experience in writing specifications, in answer to your letters and specifications. We should by all means bear in mind the danger the architects may fall into in making a specification too complicated for the use to which it is put.

"One suggestion I should like to offer, as of benefit from our experience and practice, is to take a certain subject, read all catalogs containing information on this subject, and from them build up a general specification for this item. It would seem that a good move would be to write all manufacturers throughout the country, whose material is of interest in building, asking them for a brief and yet complete specification for their work, compiling them under their proper headings for a direct specification in case one wishes to incorporate the work of a certain manufacturer in the specification, while, on the other hand, from the various specifications of this particular branch of the work, one may draw up a general specification on which numerous sub-contractors and material men may base their estimate."

Great Opportunity of Boston Architects

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dents, much to the benefit of the school work.

To encourage this movement back to the schools, the Boston Society of Architects, at a recent meeting, voted to offer for the first time as part of its Annual Competition, a First Prize of $150, "to go to the best project presented by a regular or special student at Harvard, Technology or the Club, or to *any former student,* (not necessarily a graduate), *who has been out of school for not more than five years.* All projects must be done at one of the three schools."

Other substantial prizes are being offered to induce recent scholars to return for other projects to their school.

Our opportunity and our duty as individual offices is to permit our less experienced helpmates to participate from time to time in the work of the schools and the Club. We should urge our younger draftsmen, who are former students of Harvard and Technology, to take advantage of the new welcome now to be given them.

Thus will our profession be best served.

This circular is signed with the names of practically the entire profession of architecture in Boston.

Taste of Nails Causes Strike

A RATHER unusual strike was recently brought to the attention of the Department when a force of lathers employed on a building in course of construction on Long Island struck because they did not like the taste of the nails they used, states a recent issue of *The Industrial Bulletin.*

In explanation, it may be said, that these craftsmen hold the nails that they are using in their mouths. It is a practice that has been followed for years and in the case cited the men announced, when they struck, that they did not like the taste of the nails. They explained that the nails appeared to have been treated with some sort of an acid that very quickly caused inflammation of the mouth.

The strike was of short duration as the Department mediators in short time disposed of the complaint, the contractors agreeing to furnish the kind of nails that are generally used in lathing work.

DETAILS OF PRIVATE HOUSE AT BRESCIA, ITALY. FROM THE RESTORATIONS OF LOSE

ARCHITECT UNKNOWN

(From The Terra Cotta Architecture of Northern Italy)

Evidently one of the finest examples of painted polychrome decoration in cement and terra cotta. This fragment is no longer available for first hand study. Note the charmingly harmonious shades of warm gray and the beautiful suggestion for modern ceramic treatment in low relief