

# PENCIL POINTS

An Illustrated Monthly JOURNAL for the  
DRAFTING ROOM Edited by RUSSELL F. WHITEHEAD

KENNETH REID & E. L. CLEAVER Published by THE PENCIL POINTS PRESS, INC.  
Ralph Reinhold, President, L. F. Nellis, Vice-President, William V. Montgomery, Secretary



## A CHAMPION WANTED

IN THE SEPTEMBER ISSUE of "Nation's Business" there is an important article by Thomas Thorne Flagler, President of the Associated General Contractors of America, which merits the attention of architects and all others involved in the production of buildings. Mr. Flagler writes on behalf of the reputable contractor and points out a number of evils existing in the building industry as carried on today. Most of what he has to say concerns the architect and not all of the points he makes reflect credit upon our profession.

Mr. Flagler says, for example, "Mr. Average Man has an implicit but often misplaced confidence in the so-called specifications. This mystic document consists of from 50 to 250 or more pages, frequently copied from previous specifications, old textbooks, and literature put out by energetic manufacturers and material vendors." No one can deny the truth of this statement but it is so baldly put that it implies incompetence on the part of the average architect.

Again he says, "Not one set of plans out of a hundred is made entirely by the architect and his men. Usually the structural frame of the building is the work of an outside engineer. Occasionally the design of the frame is left to the bidder.

"If there ever was a case of hitching the cart before the horse, this is it. Instead of leaving the design of the frame to the last, as is the present

practice, it should be the first and most important consideration after the preliminary layout of the room arrangement. If I had a small part of the money that could be saved by fitting the architectural ornamentation to a carefully designed frame instead of trying to design a frame into a mass of architectural effects, I would be a rich man." Here is the old controversy between architect and engineer all over again, as well as a recurrence of the common confusion of "ornamentation" with "architecture."

Other points Mr. Flagler makes are equally deserving of clarifying discussion before the public. Though his criticisms are honest and have a good bit of justice in them, they may not, unfortunately, be correctly understood by his audience which is made up largely of that section of the lay public from which clients are recruited.

Things of this sort, if repeated often enough, will tend to break down the hard-won prestige of the profession faster than good works can build it up.

We hope that some prominent architect who is competent to speak for the profession may be offered an opportunity to write for "Nation's Business" an article stating the architect's side of the story. The profession cannot afford to let such things slip by without some word of protest if it wishes to make headway in the vital matter of educating the layman to an understanding of the real scope and value of the architect's service.

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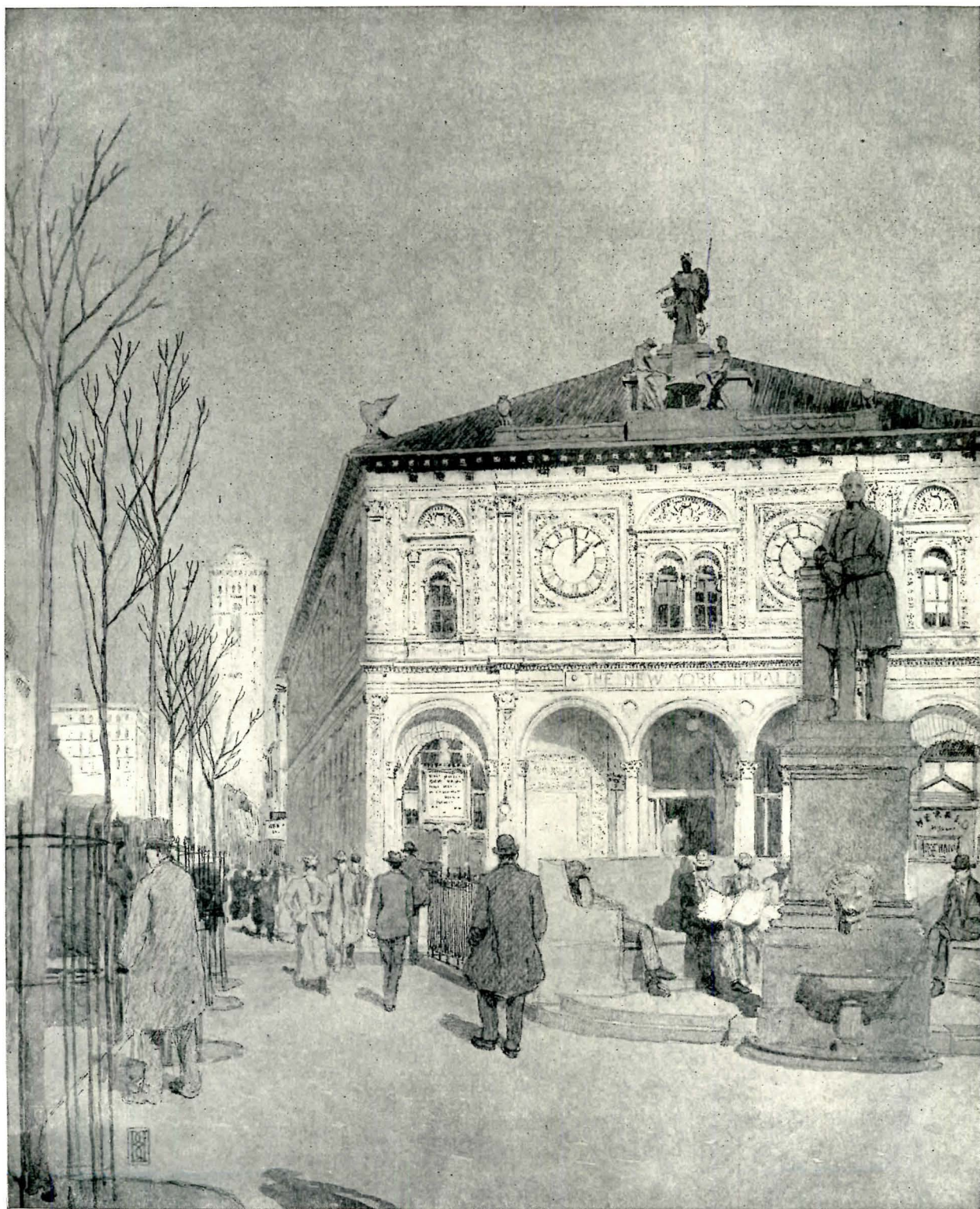
## A FOREWORD

WE ARE DEDICATING this issue of PENCIL POINTS to the memory of Birch Burdette Long, beloved of the architectural profession during his life and, since his death on March 1, 1927, sorely missed both for his personal qualities and for his skill as an architectural delineator and critic. The leading article on his work is by Harry C. Starr of New York, who was one of his closest friends, and is illustrated with a selection of his drawings made for leading architects. The examples shown, chosen from among hundreds, are perhaps typical of his average work. Each is infused with something of the charm of the man himself and they all have that fidelity to the subject for which he was noted. We might have selected others—no doubt many of our readers will think of drawings they would have liked to see included—but we have tried to pick out a group which will bring to some of the younger men a less familiar side of Long's genius. The back files of all the architectural magazines will furnish examples of his better known works for those who wish to investigate.

In addition to Mr. Starr's article we have included a number of personal tributes from some of Long's clients and friends which will convey an idea of the affection and respect with which he was universally regarded. It is our hope that all this material will furnish inspiration to the younger men among our readers who were not fortunate enough to have first hand acquaintance with this kindly man and his work, and that it will, further, help to freshen his memory among those who knew him.







FROM A DRAWING BY BIRCH BURDETTE LONG  
HERALD BUILDING, HERALD SQUARE, NEW YORK—MCKIM, MEAD, AND WHITE, ARCHITECTS



# PENCIL POINTS

Volume X

October, 1929

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## BIRCH BURDETTE LONG

ARCHITECTURAL DELINEATOR AND MAN

By Harry C. Starr

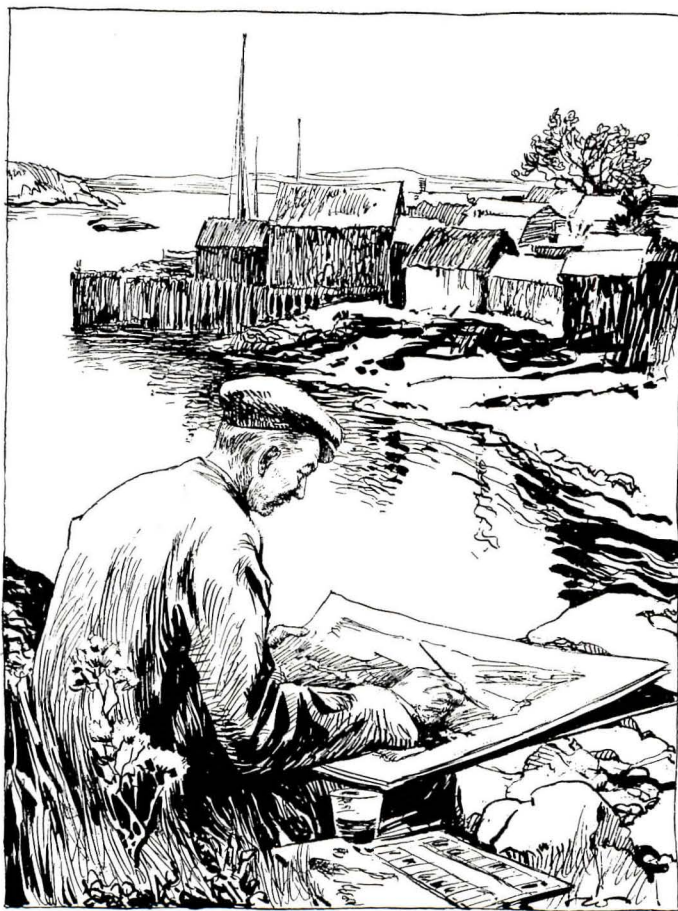
IN THE PASSING of Birch Long on March 1, 1927, the architectural profession lost an artist of exceptional ability. Through his renderings and other illustrations of the works of the leading architects of this country, published widely in the professional magazines during his active career, he became known to all who were interested in the progress of architecture. His work was recognized as having unusual merit and rare artistic quality and taken altogether formed a most important contribution to American architectural illustration. At the time of his death he was at the height of his career and still growing in distinction.

The presentation by him in pictorial form of the work of America's foremost architects was of inestimable value both to the profession and to the public for there was in him a genius which achieved and inspired others to achieve. Through it he exercised an influence more potent than that of other artists who were better known. Though most of his time was spent in the field of architectural illustration he has several mural decorations and many magazine illustrations to his credit. He worked freely in pencil, pen and ink, and water color, sometimes combining two or even all three mediums in a single drawing. During the last few years of his

life he became an enthusiast for lithography and his later works were nearly all drawn on the stone or on the zinc plate.

Long's artistic life began in early boyhood. His mother told me that he started in to draw as a young

child, using his spending money for drawing materials rather than for the usual candies and toys. Even when he was out playing with his companions and they would make for the old swimming hole, Birch would sit on the bank and sketch while the others splashed about in the water. From this time on drawing was life to him and he kept at it incessantly until literally his dying day. So instinctive was his talent that I well remember noticing him, at a time when we both worked in the same office, wandering about the drafting room to rest from bending over the drawing board, still plying his pencil to draw pictures of cats, dogs, and pigs on his turned up cuffs. It seems to me that it was

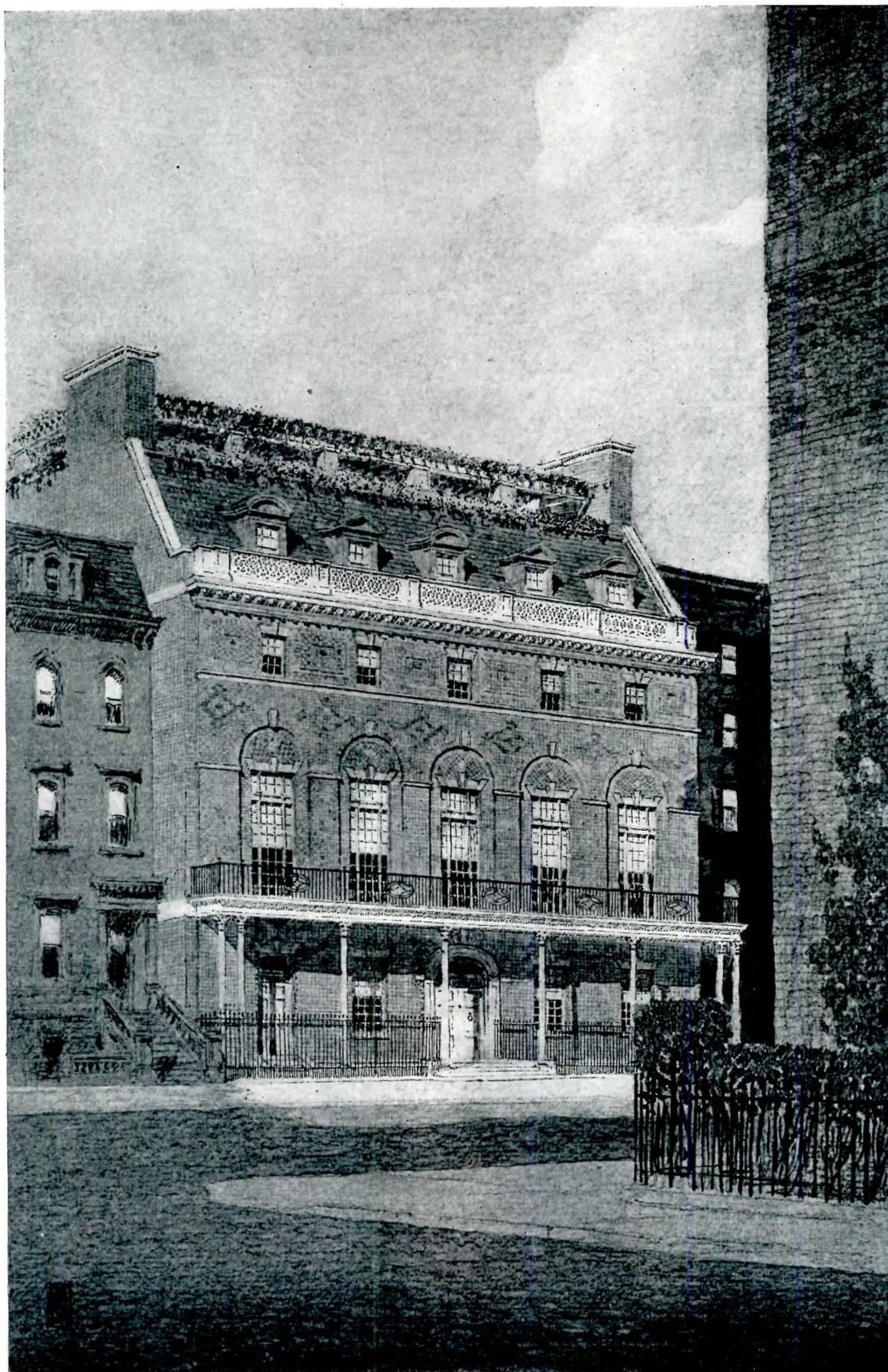


BIRCH LONG AT WORK, SKETCHED BY J. SCOTT WILLIAMS

this love for his work, which must have been born in him, that was primarily responsible for his success.

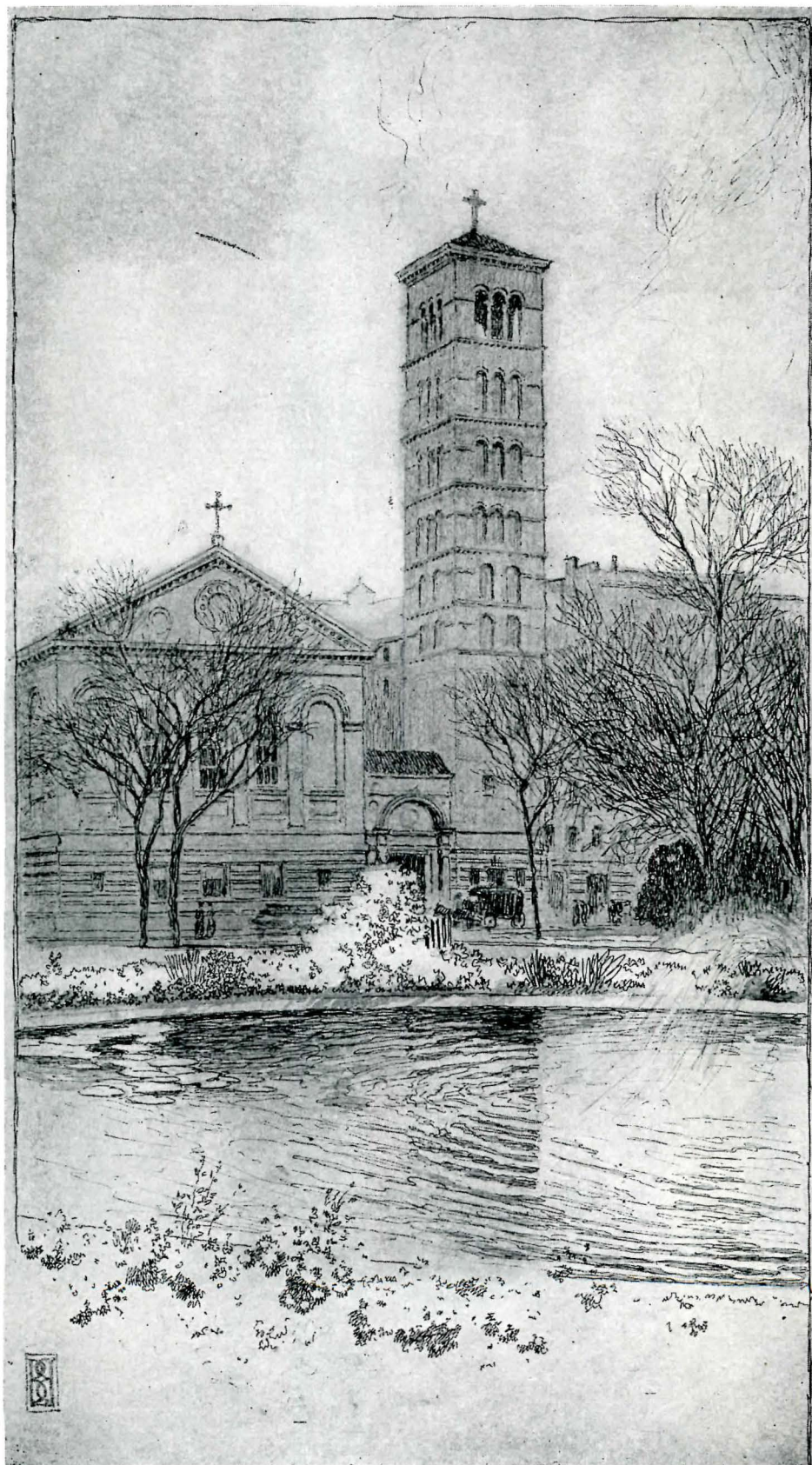
In 1892 he left school and entered the office of his uncle, a Chicago architect. Here he worked for a time, then in other offices, going through the regular routine of the young draftsman. His talent for rendering asserted itself and he progressed rapidly.





FROM A RENDERING IN PEN AND INK, PENCIL, AND WASH BY BIRCH BURDETTE LONG  
COLONY CLUB, NEW YORK—MCKIM, MEAD, AND WHITE, ARCHITECTS

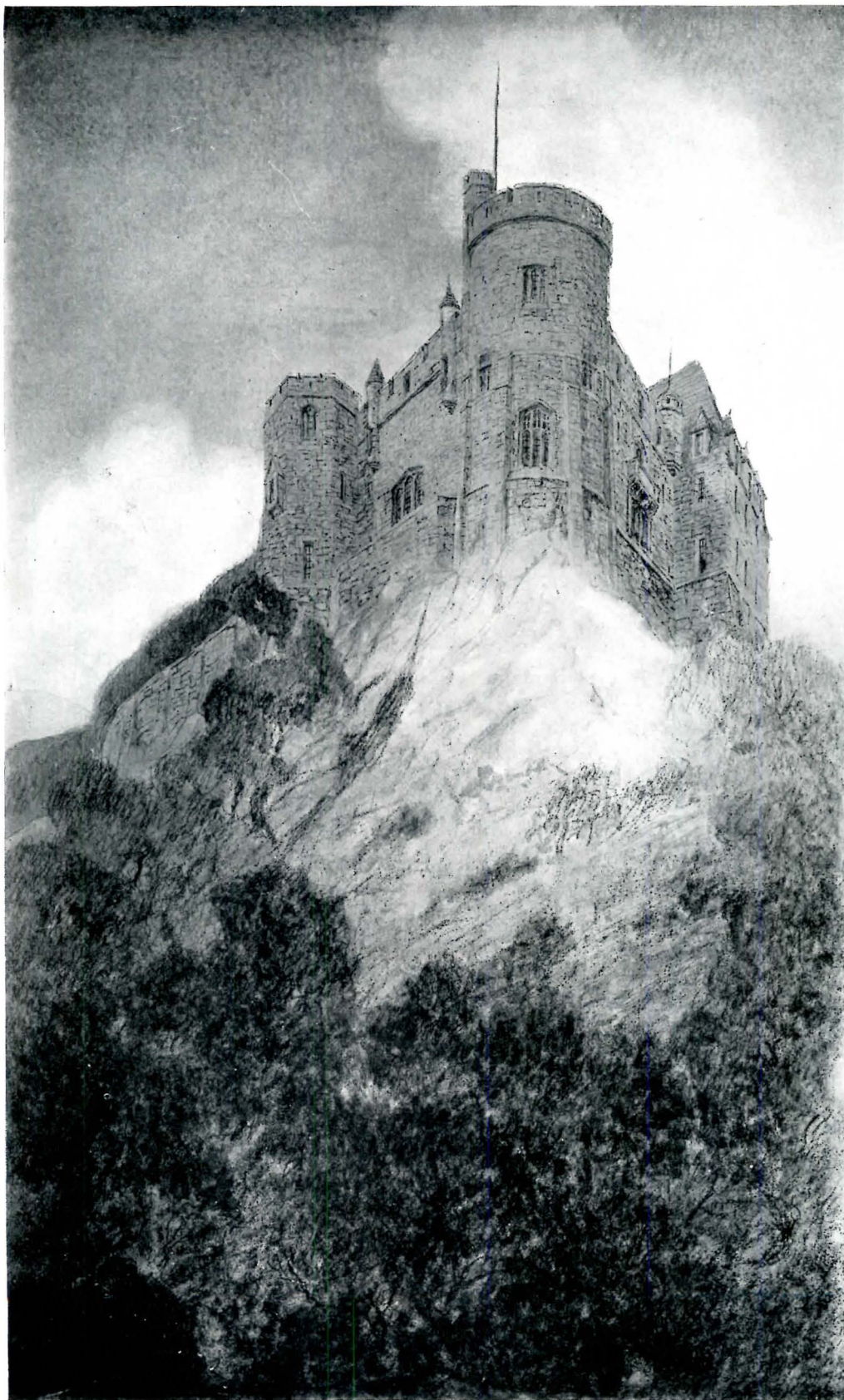




DRAWING IN PEN, PENCIL, AND WASH BY BIRCH BURDETTE LONG  
JUDSON MEMORIAL CHURCH, NEW YORK—MCKIM, MEAD, AND WHITE, ARCHITECTS



PENCIL POINTS



PENCIL AND WASH DRAWING BY BIRCH BURDETTE LONG

"A CASTLE IN WESTCHESTER COUNTY, NEW YORK"—ALFRED BUSSELLE, ARCHITECT



Soon he devoted most of his time to this work and eventually opened a studio of his own. He was well represented in the annual exhibitions of the Chicago Architectural Club where his architectural perspectives attracted much attention and first brought him into prominence.

As a member of the Architectural Club in Chicago he became very active in its affairs and proved himself to be a leader among his fellows and a booster for the organization. He entered all the club competitions, took an important part in its exhibitions, and served a term as its secretary. His efforts helped to make the activities of the club and its committees successful, for he threw his best energy into everything he undertook. To be helpful to others less endowed with talent than himself he gave his precious time to teach two classes a week in water color and pen and ink. This willingness to help the younger men, it may be said in passing, was characteristic of him, as many who were aided by him in advancing their abilities will testify. In later

## Birch Burdette Long

Gentle and generous was Birch Burdette Long. With friendliness and helpfulness his work was done so that his contacts with other men were always harmonious. He was ever a comrade in the quest for beauty, which he captured with pencil and brush and pen. The intangible mantle of his exquisite imagination he wrapt about the ideas of others, so that they shone with rare distinction, for his touch was to them like the sunshine, revealing and healing.

For twenty-five years he has been a member of the Architectural League. During that entire period he has unselfishly rendered a constant and valuable service, whether in the heavy task of directing the hanging of the annual exhibition, which he did for twenty-four years with surpassing skill and judgment, or in promotion and support of the lithographic work of the League. At all times, he was a wise and eager counselor and his influence and presence were all-pervasive.

### The Architectural League

cannot here record its full indebtedness to him, for too long is the list of his deeds. It mourns him as a friend and comrade who made his visions of beauty visible to other men.

April 12, 1927.

*Alfred Buselle*  
Secretary

*Alfred Buselle*  
President

A RESOLUTION BY THE ARCHITECTURAL LEAGUE OF  
NEW YORK

years he took keen enjoyment in seeing some of his former pupils become successful renderers, competing with him on his own ground.

The Chicago Architectural Club established a traveling scholarship in about 1900 and Birch entered the competition. Two years later, on his third attempt, he won the scholarship. His winning drawing is shown here on page 675 and evidences originality of design. He spent several months abroad, sketching and studying in Italy, France, Belgium, Holland, and England. His trip was brought to a close by receipt of a cable from Albert Fellheimer of New York inviting him to return and work for him in New York. He arrived home with a portfolio well filled with delightful sketches, mostly in water

color. Most of these were disposed of immediately after his return, either by sale or as gifts to his friends and are not available for publication. Mr. Fellheimer, however, has kindly lent two for reproduction with this article, one of Venice which is shown in



FROM A WATER COLOR RENDERING BY BIRCH BURDETTE LONG  
HOUSE AT GARDEN CITY, LONG ISLAND—ALFRED BUSSELLE, ARCHITECT



PENCIL POINTS



WATER COLOR BY BIRCH LONG FOR REED AND STEM AND ALFRED FELLHEIMER, ASSOCIATED ARCHITECTS  
POWER STATION FOR NEW YORK CENTRAL RAILROAD AT PORT MORRIS, NEW YORK



color and the other in black and white on page 676.

On arrival home he established his permanent residence (except for a few years in the suburbs) in New York and became engaged by Mr. Fellheimer to work on designs and perspectives for the Grand Central Terminal Development. In a short time he had made himself known to the architects of New York and soon established his own studio there.

The following summer he was commissioned by the *Century Magazine* to illustrate an article on London which necessitated another trip abroad. Upon returning from this second trip he received another commission from the *Century Magazine* to illustrate the new buildings for West Point by Cram, Goodhue, and Ferguson. Most of these drawings were in oil.

About this time Long branched out into decorative paintings and is best represented in this field by his series of paintings for the New York Building at the San Francisco World's Fair and by his decorations in the William Penn Hotel in Pittsburgh.

In addition to his many published drawings there were at least two occasions when he contributed articles to the architectural press. In an illustrated article published in *The Architectural Review* at some time during 1905, under the title "Individual Styles of Rendering," he analyzed the various types and methods of rendering and described the work of the foremost renderers of that day in a charming and scholarly manner. In *The Brickbuilder*, in 1914, he discoursed on "The Use of Color in Architecture."

Just as he was active in the affairs of the Chicago Architectural Club so he entered the life of the Architectural League of New York. For twenty-four years he gave to it freely of his precious time and service in hanging its exhibitions. This work he did with his usual thoroughness, making a regular charette of it, working days at a time from eight in the morning until midnight. Even when his final illness was upon him he insisted on taking part in the important work of hanging the show of 1927 even at the risk of his life, though no one realized at the time, of course, that his sickness was to prove fatal.

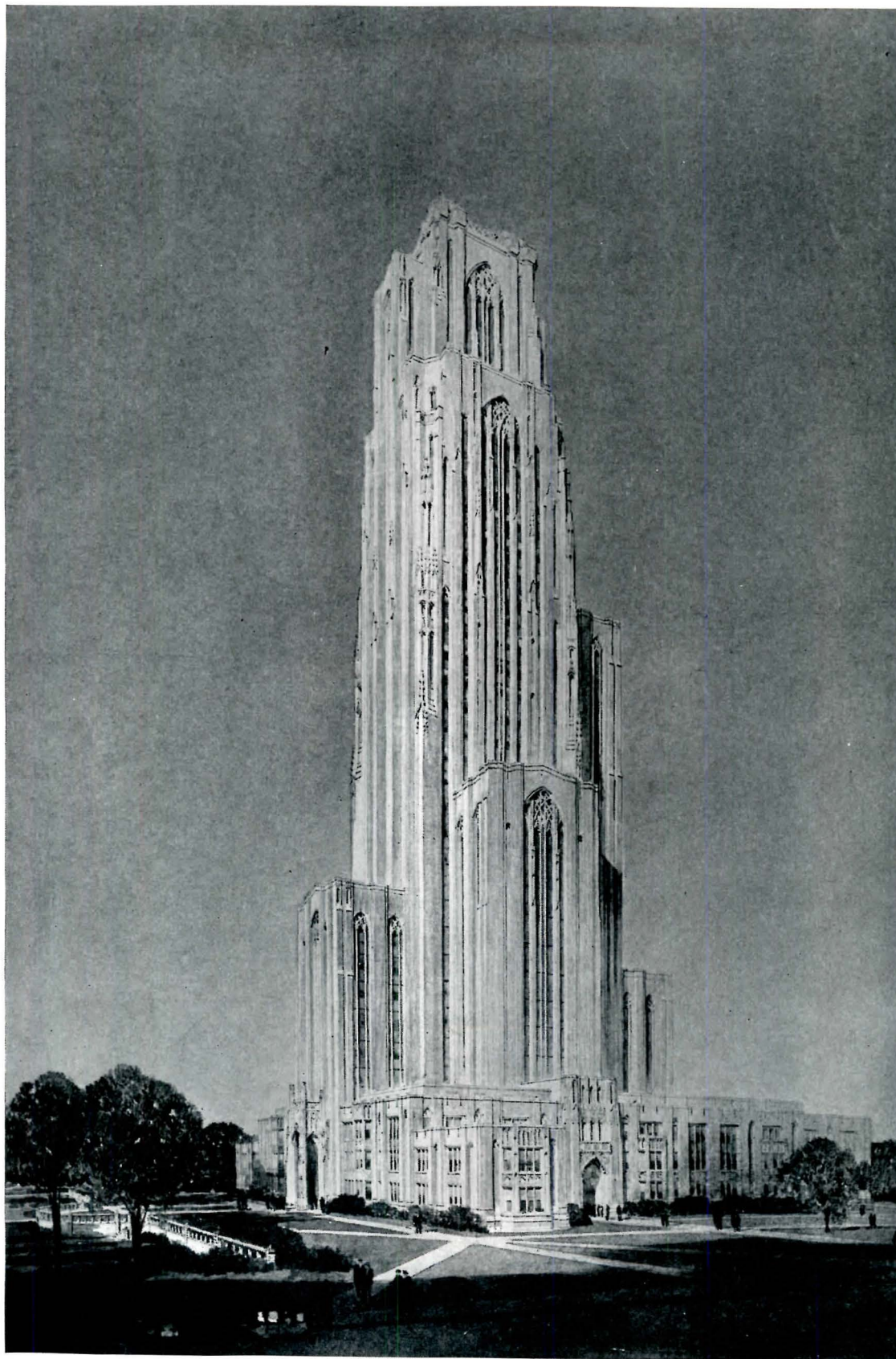
One evening in the fall of 1923, as part of the "current work" program of the League, Long, Scott Williams (the painter and illustrator), and others conducted an experiment on a lithograph-monotype combination at the old League headquarters on 57th Street. Joseph Pennell, who was teaching lithography at that time in the Art Students' League, located in the same building, came in during the session to find out the key secret of double transfer necessary for the success of the experiment. George C. Miller, the lithographic printer, was the technical expert in charge. Long, Williams, and Miller, working together, in the face of a declaration by Pennell that the thing was impossible, succeeded in making a wash drawing on a zinc plate, etching and printing it in twenty-five minutes. Most of the audience of League members was unaware that anything unusual was going on but those who knew got considerable amusement out of the byplay between the principals.



LAST ARCHITECTURAL DRAWING MADE BY BIRCH BURDETTE LONG

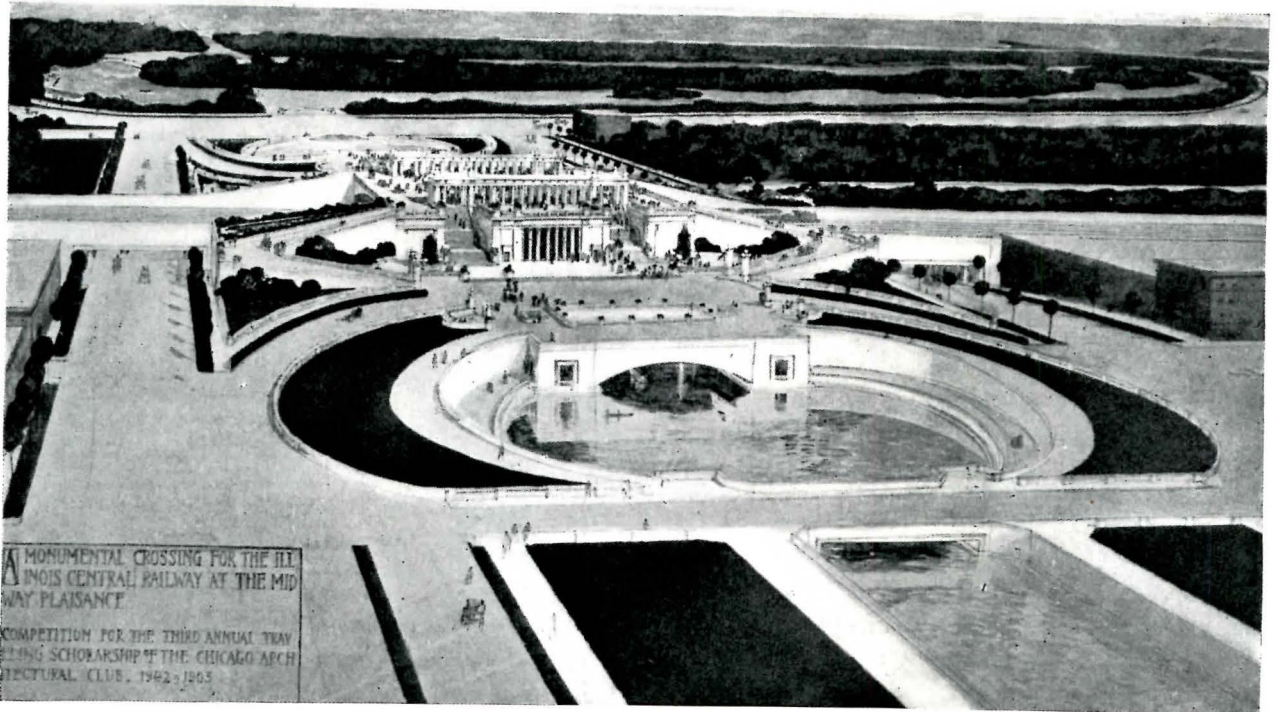
RESIDENCE OF PORTER HOAGLUND, ESQ., RUMSON, NEW JERSEY—ALFRED BUSSELLE, ARCHITECT





FROM A RENDERING IN COLOR BY BIRCH BURDETTE LONG  
"TOWER OF LEARNING," UNIVERSITY OF PITTSBURGH—CHARLES Z. KLAUDER, ARCHITECT





WINNING DESIGN BY BIRCH LONG FOR THE CHICAGO ARCHITECTURAL CLUB TRAVELLING SCHOLARSHIP  
A MONUMENTAL CROSSING FOR THE ILLINOIS CENTRAL RAILWAY AT THE MIDWAY PLAISANCE

The most important outcome of the evening was that after a fifteen-minute talk with Birch Long, Williams was able to get him to work with Miller on architectural renderings in the lithographic medium. The result was that Long made two beautiful lithographic renderings, drawn on stone, for Raymond Hood, the subjects being the Chicago Tribune Tower and its main entrance. These drawings which were about the maximum size possible on stone for hand printing—36 inches high—were enthusiastically received and Long undertook a series of renderings on stone for the profession. From this technique he passed to the use of zinc plates, of the special sensitiveness of which he was quick to take advantage. With these his practice was to put his layout on the plate first and have it etched. The finished work was then drawn complete with the lithographic pencil and a second or counter etch applied, the result of which was to grey down the layout lines so that they became faint sketch lines while the principal work was developed by the etch to its full strength. This little story is told to show how keen was Long's mind and how quick he was to take advantage of the peculiar qualities of the zinc plate as opposed to the stone.

The happy partnership of Long and Miller lasted until Long's death, artist and craftsman combining their efforts to get the best results from the medium. Their work had much to do with bringing to the attention of renderers and architects generally the practical and artistic advantages of using lithography to supplant the common practice of making pencil renderings and photographing them. Many of the

profession use lithographic renderings now in direct consequence of Long's active interest in the medium.

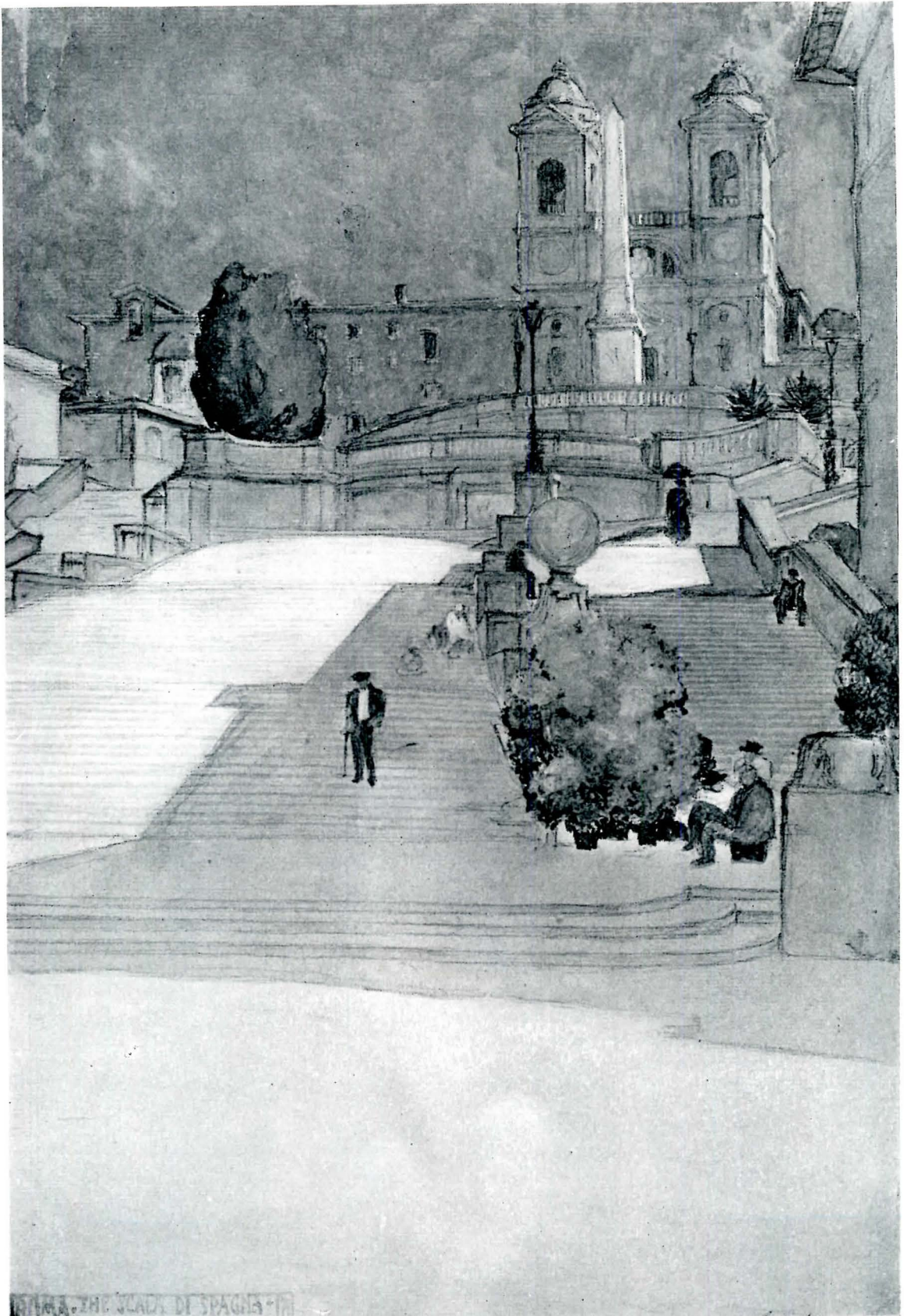
Another outgrowth of Long's introduction to lithography was the formation of a class of Architectural League members who got together evenings in the League studio for study and mutual help. As usual Long proved to be an enthusiastic leader in these studio evenings devoted to lithography, etching, and life drawing, and as a tribute to his memory the classes are still carried on.

Shortly before his death some of his friends and coworkers of the League, including its president and three of its ex-presidents, gave a dinner in his honor and presented him with a loving cup to show their appreciation of his work for the League and their affection for him as a friend. This token from his intimate friends made him very happy.

Birch's nature was kindly, gentle, tolerant, and lovable, tintured with a fine sense of humor. It was my great privilege to have known him since boyhood days—to have lived, traveled, sketched, and worked with him—a wonderful companionship over so many years. A beautiful tribute to his character was given by Raymond Hood in this magazine and another by H. Van Buren Magonigle in *Architecture*, both published soon after his death. Still another is found in the resolution passed by the executive committee of the Architectural League of New York as shown on page 671 herewith. His was a life of work which he loved for its own sake and for the sake of helping others—a true romance of service.



PENCIL POINTS



*Courtesy of Alfred Fellheimer*

THE SPANISH STEPS, ROME—FROM A COLOR SKETCH BY BIRCH BURDETTE LONG



## BIRCH BURDETTE LONG

EDITOR'S NOTE:—*The following letters from architects and others who knew Birch Long will throw much light upon his career and show how highly he was generally esteemed.*

FROM AYMAR EMBURY II OF NEW YORK

"It is pleasant to know that you are going to publish an article on the work of Birch Long, and I am grateful to you for the opportunity to say a few words of appreciation of him both as a man and as an artist although I was so fond of him that I find it difficult to disassociate my affection for him as a man from my admiration for him as an artist.

"One thing which I may say which may not be said by others is that Birch Long was one of the most powerful influences in the architectural world of our time, although I think this is but rarely comprehended even by the men with whom he came in close contact. I know, for my own part, that I have never had criticism so sound and thorough as that from Long. He had, to a very rare degree, the ability to see what one was driving at and to help push the blow home instead of suggesting that an entirely different method of approach might produce better results.

"It was very unusual when I sent a scheme to him for a rendering that he did not, in some way, improve the design either directly after consultation with me or indirectly by accentuating the important and valuable features of the design and suppressing or slightly altering that which he considered unfortunate. I doubt if this was a conscious process; it was probably the result of his genuine and sensitive architectural appreciation; but he never tried to accomplish these changes by blurring, or slurring over portions of the drawings as many of the renderers do. His drawings

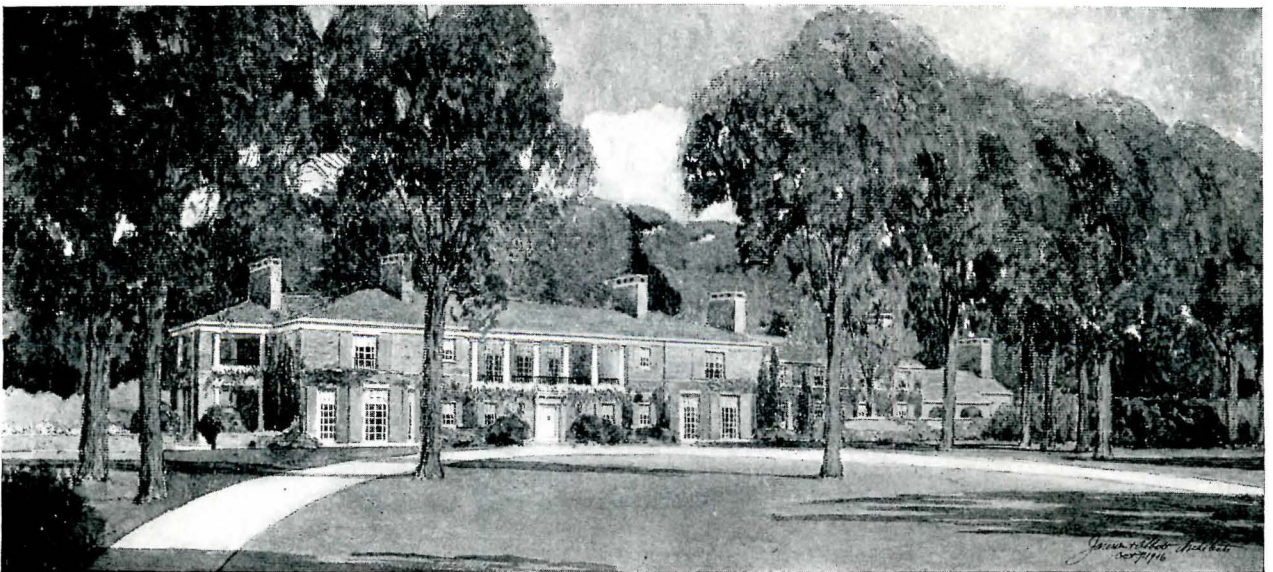
were literal, legible, and accurate, as well as being beautiful, and I have many times studied them because in their indication of texture and of quality of shadow so as to produce in the executed work, as nearly as I was able, the factors which gave charm to his drawings.

"He was, I suppose, of a greater catholicity of taste than any other man of my acquaintance who had genuine convictions on the subject of architecture. The derivation of motives was not to him all which was important; the method of their use was the essential. He had little fondness for 'the same old thing in the same old way,' and thirty years ago anticipated the motives of the so-called 'style moderne' but was himself a person of great ability as a designer and of a fertile imagination. His use of unprecedented motives was never dry and dull or clumsy as is so much of the modern work.

"It appears that I have not said much about him as a man nor much about him as an artist and I think it is unnecessary to do so. Mr. Starr will doubtless tell of his personal charm and kindness and his friendly spirit. His drawings speak for themselves. I would prefer rather to accent his great value to American architecture through what he meant to the many hundreds of architects for whom he made colored drawings and through these drawings to all the rest of us; and also what he gave directly to the multitude of young men whom he liked and who liked him."

FROM BENNO JANSSEN OF PITTSBURGH

"Birch was always an inspiration to an architect as beautiful lines flowed from his pencil that often suggested many things to the architect."



FROM A RENDERING IN WATER COLOR BY BIRCH LONG FOR JANSSEN AND ABBOTT, ARCHITECTS





FROM A DRAWING IN PEN AND INK AND WATER COLOR BY BIRCH BURDETTE LONG  
STUDY FOR A PROPOSED RESIDENCE IN WINNETKA, ILLINOIS—ALFRED FELLHEIMER, ARCHITECT





BIRCH LONG'S RESIDENCE AT PEEKSKILL, NEW YORK, WHERE HE WORKED FOR YEARS—HIS OWN DESIGN

FROM H. VAN BUREN MAGONIGLE OF NEW YORK

"I don't remember just when I met Birch Long—it must have been about 1904, soon after he came to New York to begin the long series of drawings for which the profession is so deeply indebted to him; it seems to me that I knew him well from the start; I can't remember any period of mere acquaintanceship; he had such a friendly way with him that one felt one had known him always—which accounts for the words I began with.

"First and last he made quite a number of drawings for me—two of them at least are among the best he ever made. Sometimes I had him make them in the office for the sake of his influence on the boys and so that they could see how he went at it, and with them he was always friendly and helpful and gave them freely of his great store of knowledge; he always worked with a cigar in his hand, and I think it amused those who were used to my rather particular habits to see how Birch dropped cigar ashes on a wet sky, left it alone until it dried and flicked it off with a handkerchief. It never seemed to hurt the sky; I daresay it did it good; and I know it did me good.

"In all the years of our friendship—for I am proud to say it was a friendship—he was always dependable and would work straight through night and

day, if necessary, to meet the time schedule, always cheerful, amusing and optimistic.

"There are some men easily forgotten; there are others one misses more and more as time goes on; Birch Long is one of those."

FROM MCKIM, MEAD & WHITE OF NEW YORK

"We are glad to record our admiration for the work of Birch Burdette Long. Of the dozen or more examples of his drawings in our possession, all show how preeminent he was in matters of composition and imagination. They are veritable pictures executed with an astonishing delicacy of touch."

FROM J. H. PHILLIPS OF NEW YORK

"Mr. Starr has asked me to write you a few words relative to Birch Long. I understand you are devoting a special number to him soon. Birch was one of my closest friends in Chicago, where I arrived shortly after the World's Fair.

"The Chicago Architectural Club was the place where all the rising young draftsmen of the city gathered and Birch Burdette Long soon became the star performer on the sketching jaunts Saturday and Sunday. He was always placed first when the sketches were placed on exhibition in the fall.

"I recall how delighted we both were to meet in



Liverpool, England, and to have a sketching trip in England in early summer, Birch having just won the Competition for the Third Travelling Scholarship of the Chicago Architectural Club. I won the second the year before. My vacation was at an end and his just beginning. We had many delightful experiences and I regretted having to leave him.

"It was less than a year later that I had arranged with Reed & Stem to give him a place on their staff which was the stepping stone to his success in the New York field of architectural rendering where, I am sure other architects in New York will agree, he held a place which has been impossible to refill."

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FROM HARVEY WILEY CORBETT OF NEW YORK

"I am very glad to say a few words in regard to Mr. Birch Burdette Long's contribution to the field of architectural rendering. We all know and deeply appreciate the great artistic merit of his work, bringing into the presentation of architectural work the quality of the painter.

"PENCIL POINTS may be interested in one very personal phase of Long's work that always impressed me throughout the many years of our acquaintance, and it is a point which is encouraging to men who have real architectural feeling but are not particularly skillful as sketchers:

"The work Long did in preparation for an architectural rendering was always most discouraging. One had the feeling that the drawing could not possibly come out right. He lacked, in other words, that sketch facility which can make just a few rough lines look attractive. But when the work was finished and he finally brought his picture together, then the ensemble had a quality far more attractive than that of any other renderer I have known. The progressive steps were quite imperfect; the finished product was perfect. We have many examples among draftsmen where the progressive steps look highly attractive and the finished product is a failure. This was never true of Long's work."

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FROM ALFRED BUSSELLE OF NEW YORK

"In sending you several examples of the work of Birch Burdette Long, I am glad to add an affectionate tribute based on many years of what I am proud to call friendship.

"These drawings were made in Long's typical way with me, and doubtless with others:—'When do you have to have it?' and always the drawing was done, whatever inconvenience it might entail.

"He enveloped the architect's thought with the aura of his genius so that our effort was stimulated to make the finished work as good as the drawing, and always it was the architect's story he tried to tell in more beautiful language, rather than a story of his own.

"The last drawing he ever made was characteristic. I called him up on a Saturday and asked if he

could make a drawing of a little addition to a house I built. He said he would have to do it on Sunday as they were starting to hang the League Exhibition on Monday. I took the sketch elevation to him about eleven o'clock, together with the working drawings of the original house. He said he was going to dine with his mother but that I could have it in the afternoon. He produced it as you see, without laying out the perspective, and showing the house itself also, although I told him that under the circumstances this would not be necessary. 'If a man compel thee to go with him a mile, go with him twain.'

"He was a great artist, a great sweet soul, and a gentleman."

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FROM GEORGE C. MILLER OF NEW YORK

"In my work with Birch Burdette Long, as his lithographic printer, I had an opportunity to know him perhaps as intimately during his last years as any one of his friends. Practically all of his work of that period was in lithography and he took a studio adjoining my shop so that he could be near the scene of action. In all my relations with him I found him most reasonable in his demands upon my time and skill. He never asked for the impossible and always showed the utmost consideration for me in every way, seeming to have an instinctive understanding of the difficulties and limitations of the lithographic art. He was a true artist and I am proud to be able to say that he was my friend."

---

FROM CHESTER B. PRICE OF NEW YORK

"I think that the most vivid impression I received of Birch Long's work was when, about a year and a half ago, it fell upon me, as chairman of the Architectural League's Minor Exhibition Committee, to collect a group of his drawings and paintings for a Memorial Exhibition, at the League Clubhouse in New York.

"We called on his family, his friends, his clients and received a very comprehensive collection. Viewed as a whole, it presented an astonishing variety and interest. The delicate charm of some of his earlier pen and ink drawings was contrasted with the strength and colorful atmosphere of his later lithographs—the quick, sure, free touch in an outdoor water color with the studied composition in opaque color.

"His work had and still has a tremendous influence for good in architectural illustration.

"At his worst, and he occasionally did some poor things, he could merely be called indifferent—the indifference of a tired mind which had so many times brought forth beauty out of mediocrity in subject matter that he could hardly be blamed for thinking, 'What the hell's the use'—and slap it out.

"At his best, he has never been surpassed for delicate strength and beauty of color or in feeling for architectural form. He founded a tradition."



# THE GEOMETRY OF ARCHITECTURAL DRAFTING

## PART 3—MANIPULATION AND LAYOUT

By Ernest Irving Freese

EDITOR'S NOTE:—This article, which is copyrighted, 1929, by the author, continues the series begun in the August issue.

IN THE LANGUAGE of drafting, a horizontal line is not necessarily a level one. Nor is a vertical line always plumb. On the drafting-board, the T-square, when placed in normal working position, is the base or datum to which all lines of this normal rectangular system are referred. Any line, then, drawn along, or parallel with, the working edge of the T-square is a *horizontal*. A line square with this is a *vertical*, regardless of whether it is a plan line or a line in elevation. And any line not congruent with this rectangular system of the board, is an *oblique*.

As indicated in Figure 16, herewith, all horizontals and verticals, as well as all obliques paralleling the ones shown, are inherent in the lines of the T-square and the three triangles, either singly or in combination, as the case may be. This drawing represents the full range of lines procurable by manipulation or placement of the sliding instruments when referred to the T-square as a base. In regard to the obliques, it is to be noted that the  $22\frac{1}{2}$ -degree triangle increases the number of obliques obtainable with the two commonly-used triangles by 120 per cent. Any of the inherent obliques shown can be reversed in direction, while maintaining the same angle to the horizontal, by the obvious process of reversing the instruments or the combination. A perpendicular to any one of them can be drawn by transposing the hypotenuse of the triangle used in drawing the original line,

as is indicated by the dotted-line positions shown in the Figure. And a parallel to any inherent line shown is the simplest possible thing to produce—merely slide the instrument on the base with which it is in contact, or slide the entire combination on the T-square or by means of the T-square. Moreover, since the increment of obliquity is  $7\frac{1}{2}$  degrees, or  $1/48$ th of a circumference, it is evident that a complete circle can readily be divided into 48, 24, 16, 12, 8, 6, 4, 3 or 2 equal parts, and that eight regular polygons can thus be drawn, inclusive of the equilateral triangle, the square, the hexagon, the octagon, dodecagon, etc. All this can be accomplished by direct manipulation of the instruments, without recourse to the compass or extraneous construction lines.

All lines taking directions other than the directions shown in Figure 16 are extraneous to the instruments, and each such oblique line, or series of them, establishes another system of lines, one of which must then be determined by construction or layout. Once this single line is correctly established in direction, it thereby becomes a key to all other lines of the extraneous system. The others can then be gotten either by direct manipulation of the instruments in an oblique position or, in case this process should prove non-expedient, by shifting the drawing bodily on the board so that the normal position of any one ruling edge of the sliding instruments will become coincident with the established datum line of

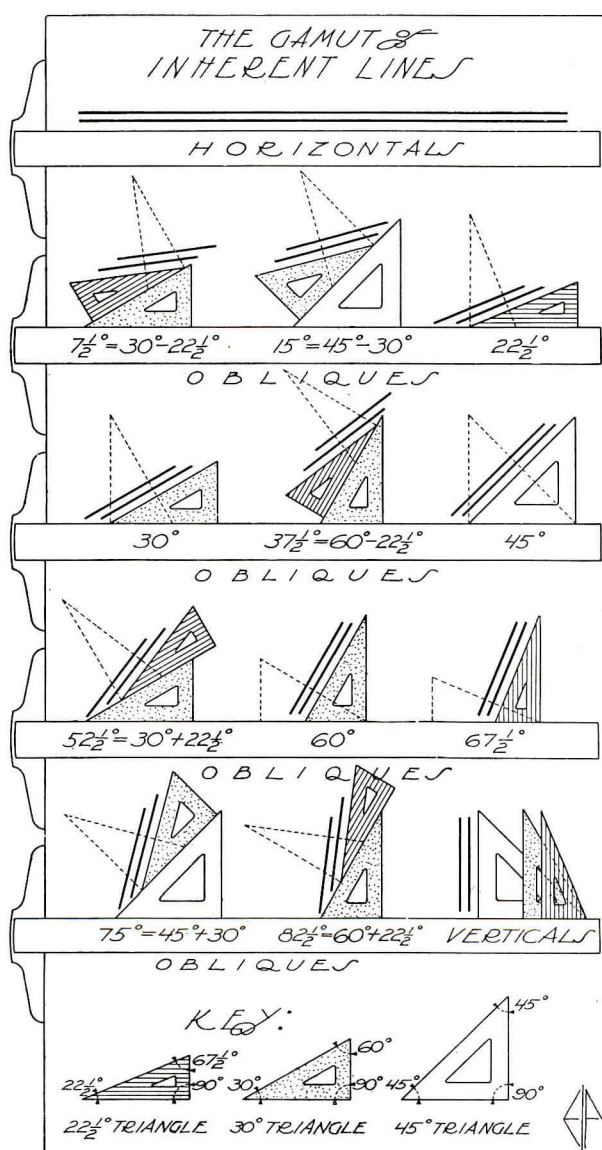


FIGURE 16



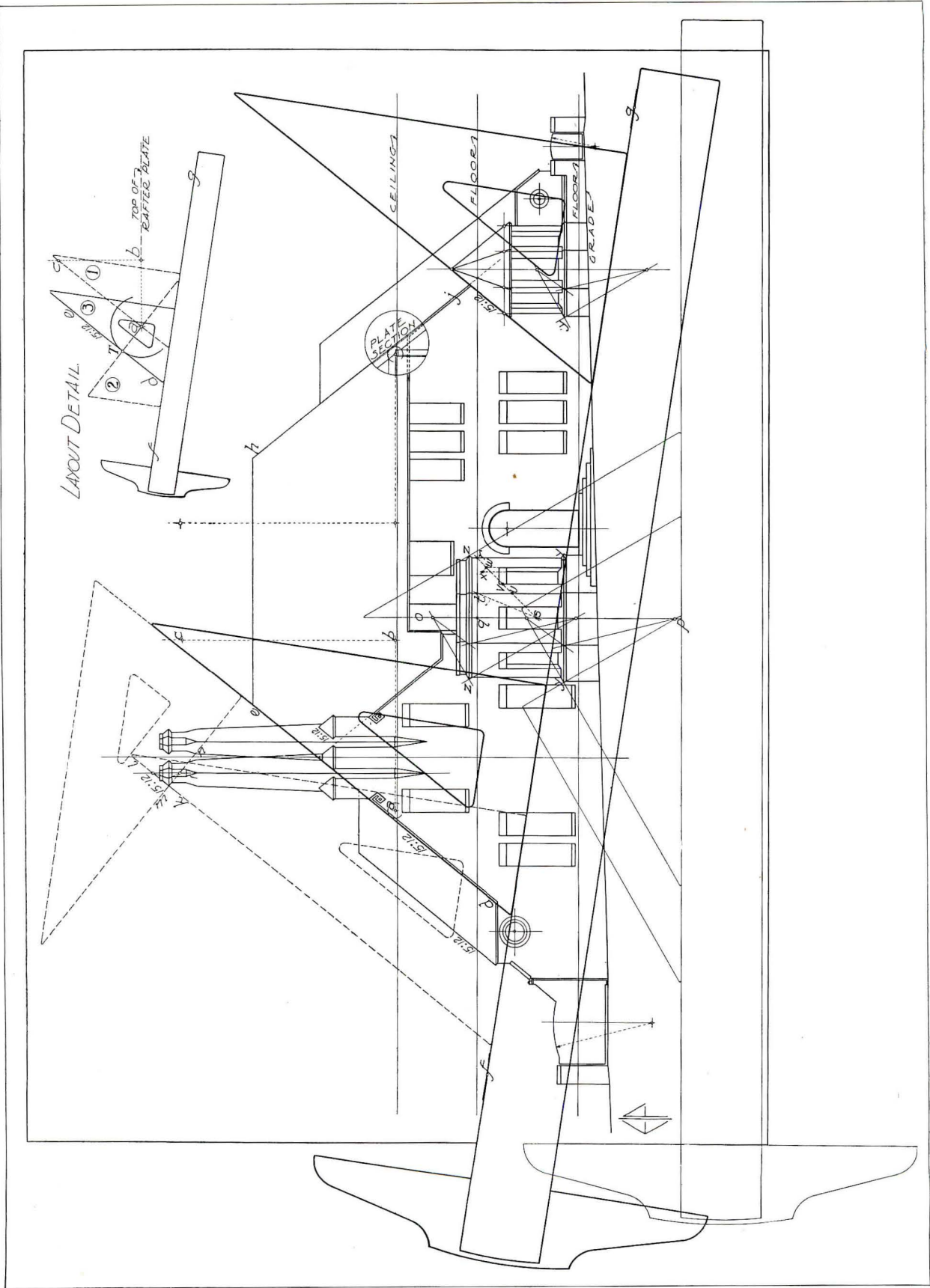


FIGURE 17



the extraneous system which, by virtue of the said shift, *becomes inherent*.

Now consider the elevation presented in Figure 17. The roof is "five-eighths pitch," which means that the rise is five-eighths of the span. Expressed in terms of the steel square, the roof pitch is therefore 15:12, or 15 inches vertical rise to 12 inches horizontal run. And the latter is the way in which it should always be noted on the working drawings. In this case, then, the roof lines are extraneous to any lines contained in the sliding instruments when operative in their normal working positions. Hence, to lay out these lines, proceed as follows:

Establish any convenient point, say the point *a*, where the under side of the rafter meets the plate, as indicated both in the "layout detail" given at the upper right-hand corner of the drawing and in the structural "plate section" given on the scale elevation at the correspondingly opposite portion of the roof. Set the bow compass to a radius equal to the depth of the rafter plus the thickness of the roof sheathing, or covering, as the case may be. With this radius, and with point *a* as center, draw part of a circle about this fixed point as shown. Horizontally, from point *a*, lay off the distance *ab*, at *any* scale as great as practicable within the confines of the drawing, making this distance equal to 12 units of the chosen scale. This represents the "run." Then lay off *bc*, vertically, making it equal to 15 units of the same scale. This is the corresponding "rise." Hence, the direction *ac* represents the required 15:12 "slope" of the roof. But, since this direction is not congruent with any normally-placed edge of the sliding instruments, it remains to establish an oblique position for the latter, so that the otherwise extraneous lines of the roof will become inherent and thereby allow of the succeeding parallels being gotten by direct manipulation rather than by a repetition of the time-consuming layout required to establish the first of the series. This is easy. Bring the short leg of, say, a 30-degree triangle into contact with the T-square and, manipulating the two instruments in solid sliding contact, move the hypotenuse of the triangle into alignment with the established points *a* and *c*, and the deed is done! Now, holding the T-square firm, slide the triangle therealong into tangency with the small circle previously drawn about the point *a*. If the drawing be at large enough scale to warrant or demand geometric exactitude, first locate the *point* of tangency in the precise and quick manner illustrated in the similarly-lettered "layout detail" given in the Figure. Instead of sliding the triangle into tangent touch by the well-known "eye-ball" method, shift this triangle from position "1" to position "2," thereby bringing its hypotenuse perpendicular to its former direction but still passing through the center, *a*, of the drawn circle. The thus-transposed hypotenuse will then cross this circle

at the point *T* which is the precise *point* of tangency required. Place the pencil at this precise point and shift the triangle into touch with same, which gives position "3" shown in the "layout detail." The extraneous combination of T-square and triangle is then as shown both in this detail and in the elevation. Now, holding the T-square and triangle in firm conjunction, draw the raking line *de*. What have you done? Described in *classroom language*, but executed in *drafting room manner*, you have "*drawn a tangent to a given circle, parallel with a given line.*" In other words, you have established one of the required roof lines, *de*. Any other required roof line that parallels the thus-determined one, can now be *directly* drawn by merely sliding the same triangle along the obliquely-held T-square to the predetermined point required; the T-square being in such a position that all roof lines sloping in one direction lie at an angle of 60 degrees to the blade. To facilitate the speedy replacement of the T-square in this position, in case it is again required, slightly indent any two points, *f* and *g*, at its opposite ends, and identify these points with a penciled ring. Or draw two short lines along the T-square at *f* and *g* as shown. Then, when a roof line is needed, the T-square can again be placed in the same oblique position and the required line drawn with the triangle that was first used in determining the T-square's position. Similarly, the position of the T-square can be determined in relation to the line *hj* sloping in the opposite direction or, as a general assertion, in relation to any series of extraneous lines in any direction. Moreover, if a perpendicular to any such sloping line is required, it will be found to lie along the hypotenuse of the same triangle, provided the triangle is shifted so as to bring its *other* leg in contact with the T-square. Or, as in the case of the upper slope, *kl*, of the chimney weathering, which here conforms to the roof pitch, the perpendicular, *mn*, to this slope can be drawn with a smaller triangle placed at 90 degrees to the other, as indicated in the drawing. Practice will develop many other ways of utilizing the principles here set forth.

Next, in the same Figure, assume that the center line, *op*, and half the width, *qr*, of the central octagonal bay has been laid out. The hypotenuse of a 45-degree triangle placed in line with *r*, will cross *op* at *s*, and the steep angle of a 22½-degree triangle will project *s* to *t* on the horizontal line *qr*, and a vertical through *t* will then be the front corner of that half of the bay. Then the 45-degree line, *ru*, will be the true width of the foreshortened side of the octagon, upon which the true width, *vw*, of the window opening can be laid out and the vertical corners of the jamb thus correctly placed in elevation. And the distance *wx*, laid off perpendicular to *ru*, and equal to the depth of reveal, will locate the vertical line of this reveal in elevation. All of which is of



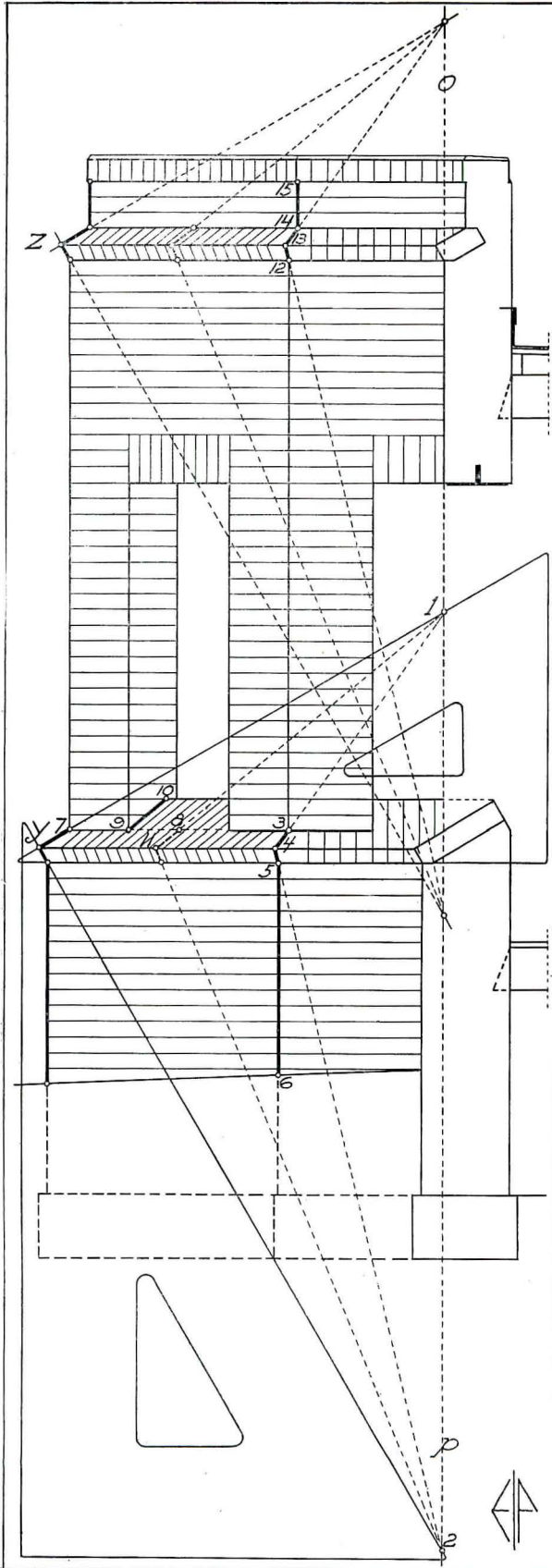


FIGURE 18

general application to any regular octagonal bay.

The brick sills of the two bays, and the brick weathering of the central bay, are on a 30-degree slope: hence, the outstanding true contours at  $y$  and  $z$  can be drawn directly with the 30-60-degree triangle, as indicated in Figure 17 and as clearly detailed in Figure 18. The latter Figure further illustrates a simple and precise procedure for determining the mitre lines of the sill at the front corners, as well as the placement of the front corner lines of the offset base and parapet wall. Regardless of the slope of the sill, project its true outstanding contour lines established at  $y$  to the points 1 and 2, respectively, on the center line  $op$ , as given. Then a straightedge placed in line with the points 1 and 3 will give the line 3-4. Shift the straightedge into line with points 2 and 4 and thus complete the line of the sill mitre with the line 4-5. A vertical now dropped from point 5 will be the vertical corner, 5-6, of the offset base, as shown. Now bisect 3-7 at point 8. Then the line 9-10, drawn parallel with 8-1, will be the line of intersection of the sill and jamb in oblique elevation. Wherefore, the lines of the brick joints of the upper face of this same sill will also run parallel with this line of intersection. Now project point 8 to 11, in line with point 1 and on the horizontal through 4. The header joints of the sill will then run parallel with the line 11-2. The mitre line 12-13-14-15, at the top of the bay, is procured in similar manner to the line 3-4-5-6 at the base. And the same methods can be applied to the octagonal top of the chimney in Figure 17. In none of the above cases is recourse or reference to the plan required.

In Figure 19, a vertical skyscraper accommodately assumes a prostrate attitude on the drafting-board. The long verticals, otherwise out of reach of the triangles, now become T-square horizontals, while the horizontals become verticals within the operating range of the triangles. In this manner, any line of the drawing can be made by one placement of the instrument used. Note also that the vertical dimensioning is done in conformity with the manner in which the finished drawing is to be bound into the eventual set—or so that the figures will not have to be read upside-down. In the segmental window arches of the upper stories, the spring line  $ab$  is fixed and the required radius is equal to the opening, that is, equal to the distance  $ab$  between the spring points. Center  $c$ , then, must lie at the vertex of the equilateral triangle  $abc$ , and can therefore be directly located by the 30-degree triangle, as shown. In the case of the entrance arch, however, the crown point  $d$  is fixed, and the radius, as before, is to equal the width of the opening. Project the crown point to either jamb line, thus locating  $e$ . A 45-degree line from  $e$  then meets the other jamb at  $f$ , and the required center  $g$  will lie on a perpendicular from  $f$ , as the illustration indicates. The required radius  $gd$



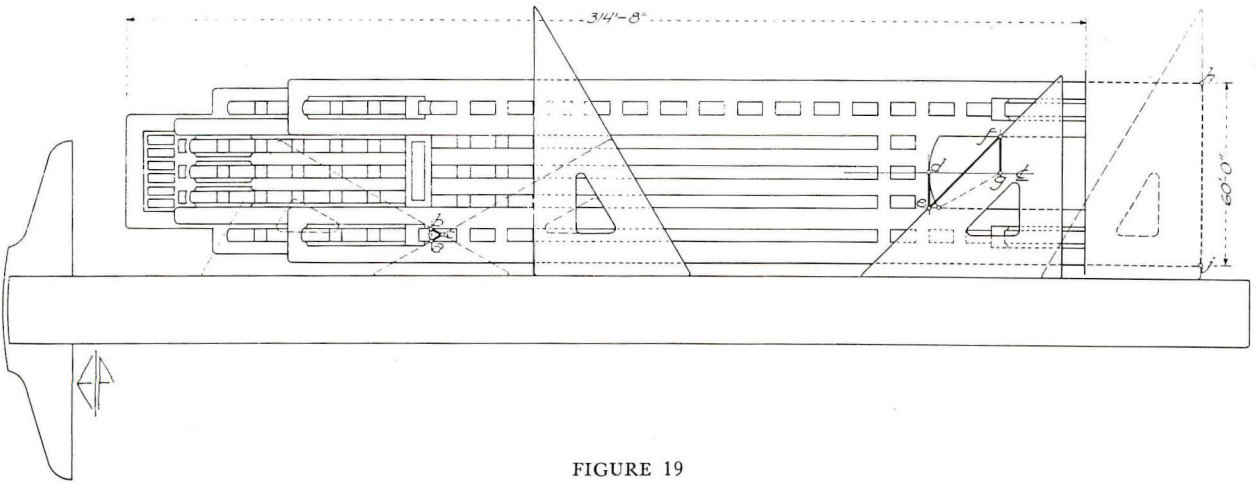


FIGURE 19

will then equal the width of the opening—thus maintaining the same proportion in this arch as in the others.

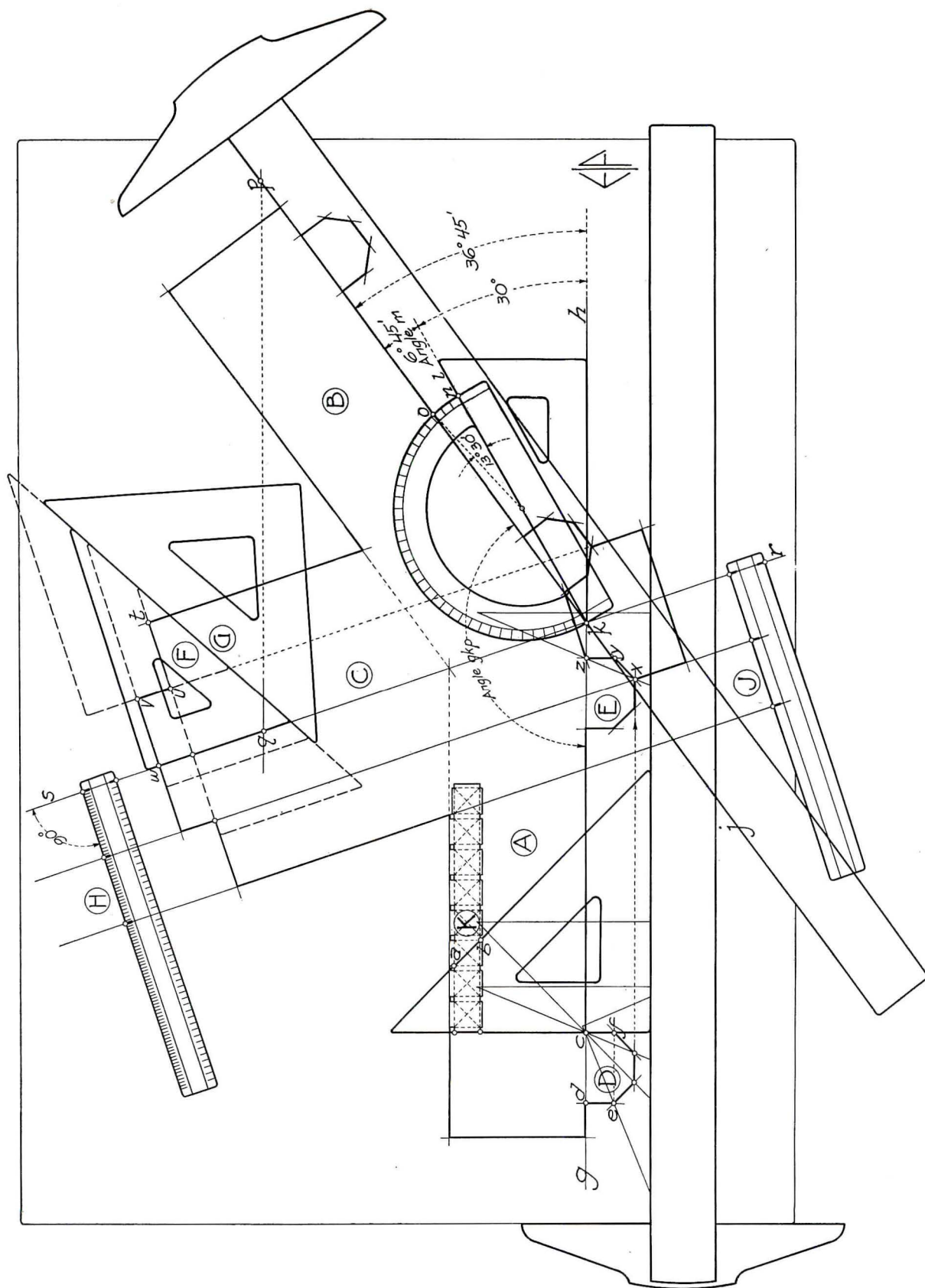
Occasionally a vertical must be drawn near, or beyond, the end of the T-square as, for instance, the footing line  $hj$  in Figure 19. In these rare cases the lines must be drawn along the unlighted edges of the reversed triangles, as the figure indicates, in order that the base of the triangles shall remain in contact with the T-square for establishing the perpendicular thereto.

Several interesting and practical problems of manipulation and layout are presented and "solved" in the next two illustrations, Figures 20 and 21. Wing "A," in Figure 20, can be laid out and drawn directly with the sliding instruments in their normal working positions as shown. In the vaulted arcade at "K," the hypotenuse of a 45-degree triangle gives the intersecting groin lines of the semicircular arches in plan, one of which is the line  $ab$ . In the bay at "D," an alternate method of laying out the five sides of a regular octagon, in plan, is indicated: the method here shown being a limited variation of the general method heretofore described and shown in Part 1, Figure 2; the difference being that, in this case, the construction yields only the exterior line of the bay wall which, on a plot plan, for instance, would be the only line needed. The known dimension is the given width  $cd$ . Lay this off in its proper place. Then, with the triangles indicated, draw lines radiating from  $c$  at angles of  $22\frac{1}{2}$ ,  $45$ ,  $67\frac{1}{2}$ , and  $90$  degrees, respectively. Then, always *starting* from the other corner  $d$ , run in the octagonal wall line, from  $d$  around to  $f$ , with the congruent edges of the 45-degree triangle and the T-square. The points  $e$  and  $f$  should now lie in exact horizontal alignment, which can readily be checked with the T-square.

Now, with the T-square, establish the long datum line  $gh$ , in this case coincident with the face of the front wall of wing "A." A similar datum line,  $jp$ , is next to be laid out for the wing "B," which latter here lies at an angle of 36 degrees and 45 minutes to

wing "A." This angle is not contained in any of the instruments, either singly or in combination. It must, therefore, be gotten by construction. Now, by utilizing a valuable property of the circle, any angle that can be exactly and fractionally expressed in *degrees and quarters of a degree*, can be laid out, without interpolation, on a protractor that reads only to *half degrees*. In the case here chosen, the angle is seen to be exactly  $36\frac{3}{4}$  degrees. The nearest instrument line to this is 30 degrees. So, from the given deviation point,  $k$ , draw the 30-degree line,  $kl$ , with the triangle. Subtracting this angle of 30 degrees from the required one of  $36\frac{3}{4}$  degrees, leaves the angle  $m$  of  $6\frac{3}{4}$  degrees to be laid out with the protractor, which instrument, by the way, should be of the largest size available. To lay out this  $6\frac{3}{4}$ -degree angle, the angle subtended from a point on the circumference is used instead of the central angle. It is done in the following manner: Place the protractor in the position shown, along the 30-degree line  $kl$ , with the *zero mark* at  $k$ , and the *180-degree mark* at  $n$ , on  $kl$ . Then, from  $n$  to  $o$ , lay off, *not*  $6\frac{3}{4}$  degrees, but *exactly twice this number* or  $13\frac{1}{2}$  degrees, which not only locates the point  $o$  on the required line, but locates it at nearly twice the distance from  $k$  that would result if the angle were laid out with the *center* of the protractor at  $k$  instead of the *zero mark*. This, then, not only results in a closer approach to precision of angle than would otherwise be possible, but it also yields a line,  $ko$ , of sufficient length to prolong with fair exactitude. So, using the T-square upside-down as a straightedge, bring it into exact alignment with the now established points  $k$  and  $o$ , and draw the long datum line  $jp$  which is the reference line of the coordinate system of extraneous lines of wing "B." The use of these long datum lines will presently be made plain. It is now required to determine the direction of wing "C" which lies midway between the other two. In other words, the "problem" arises of bisecting with exactitude the angle  $gkp$ , and still procure a bisecting line of enough length to assure of its accurate prolongation. This *could* be done with







the beam compass in the ancient Euclidean manner, but the method shown is more direct and just as precise—and just as general in application. Mark off any distance,  $kp$ , as great as can be contained on the board, but within normal reach of the T-square. Make  $pq$ , parallel with  $kg$ , equal to  $kp$ . The point  $q$  then lies on the bisector of the angle  $gkp$ . Place the working edge of the T-square in line with  $k$  and  $q$ . Draw the long datum line  $rs$ , which is the required bisector of the angle between the wings "A" and "B," and is also the center line of the wing "C," as shown.

Bring any two large triangles together, hypotenuse to hypotenuse, as at "F" and "G" in Figure 20. Sliding them as a unit, move an edge of one into alignment with the line  $rs$  just established. Then, the triangle "F," by sliding same on "G" in one direction or the other, will yield any coordinate lines belonging to the rectangular system of wing "C" that are within reach, as, for instance, the lines  $tu$ ,  $uv$ , and  $vw$ .

In the same drawing, Figure 20, the long lines of wing "C," paralleling  $rs$ , can, if there are but a few of them, be gotten expeditiously by using the scale, in the two far-apart positions "H" and "J," to establish their right-angular distances directly from the given datum or center line  $rs$ , as indicated: then by drawing the required lines with the T-square placed in line with the thus-found points. The only requisite to the procurement of accurate results by this method of drawing parallels, is, as pointed out in the text of Part 1 and in Figure 15 of Part 2 heretofore, that the opposite graduation marks used to establish the perpendicularity of the scale to the given line  $rs$ , be *squarely* opposite as shown. These marks, then, when made to coincide with the given line, will automatically place the scale at right angles thereto, and the placement can usually be made directly therefrom without the necessity of drawing a right-angular measuring line.

Now, since the front corner,  $x$ , of the bay at "E," is required to locate the plan position of this bay, project a horizontal from the extreme wall line of the other bay to meet the now established portico-line of wing "C" at  $x$ , which is the corner required. The point  $z$  is then speedily located by a  $67\frac{1}{2}$ -degree triangle line through  $x$ , and the two portico-sides of the bay,  $zy$  and  $xy$ , inhere in the lines of the 45-degree triangle. The remaining three sides can be completed in the manner already made plain in the laying out of the bay at "D."

Where much detail work or partition-subdivision

is to be done on, say, the oblique wings "B" and "C" of Figure 20, it will then, in view of the extensive layout, undoubtedly prove expeditious and convenient to shift the drawing bodily on the board so as to bring the otherwise awkwardly extraneous lines of either system into congruency with the inherent lines of the sliding instruments in their normal working positions. This, then, is the reason for first drawing the long-extended datum lines  $jp$  and  $rs$ , as has been done. They are the reference lines to which the working edge of the T-square should be fitted in shifting the position of the drawing on the drafting-board. And the long line  $gh$  exists for the purpose of again placing the drawing in its original position on the board, coordinate with the lines of the main wing "A."

Figure 21, at reduced scale, shows the actual drawing of Figure 20 shifted into such a position that the lines of wing "B" fall into line with the working edges of the T-square and triangles. The line  $jp$  here becomes a horizontal and, consequently, all lines perpendicular thereto become verticals. Hence, the wing "B" can now be completed with the same facility as that which obtained in the drawing of the main wing "A" in its original position on the board. Then, if desired, the drawing can be shifted again so as to revolve the remaining wing "C" into easy working position on the board by fitting the previously-fixed center line,  $rs$ , to the vertical edge of a large triangle operating on the T-square as a base. Finally, the drawing can be restored to its original position—for lettering, dimensioning, placing of border lines, or what not—by merely pulling the tacks and "squaring up" with the initial datum line  $gh$ .

As depicted in Figure 21, the shifting of the drawing on the board, if the drawing be nearly the size of the board as it here is, causes the corners to overhang the board; which condition, unless taken care of in the manner suggested in this illustration, or in some equally protective manner, will not only cause the draftsman much inconvenience, but may possibly result in injury to the drawing. The method here shown is simple and efficient. The upper corner is rolled on a large cardboard tube such as tracing-paper comes on, and this tube,  $a$ , is kept from unrolling by strips of adhesive linen tape,  $b$ , stuck to the board and to the inner surface of the tube at each end of the latter. Or short stiff pieces of cardboard can be used, instead, as clips to hold the tube in position—a thumb-tack holding the clip to the board. At the lower

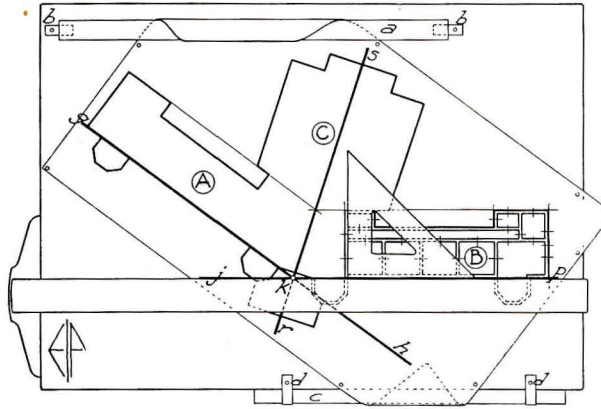


FIGURE 21



edge of the board, a similar tube, *c*, no greater in diameter than the thickness of the board, and not much less than that, is taped to the edge of the board at points *d*—the tape being stuck to the tube as well as to the upper and under sides of the board. This gives to the board an exceedingly rigid rolled edge which can be placed there “in a jiffy” and removed in less time than that. The paper is then, after being tacked to the board, rolled tightly around this edge and securely thumb-tacked to the under side of the overhung board. Instead of the tape clips, *d*, strips of heavy detail paper, or, better yet, a continuous sheath of same, thumb-tacked to the two surfaces of the board, may also suffice to hold the tube *c* firmly in place. Both of the devices shown are simple and effective. The entire drawing remains visible for cross reference, and can be worked on with scarcely any more requisite care than when in the original “square” position.

The “problem” presented in Figure 22 is one that constantly occurs in some form or another, and will most certainly have to be “solved” in some way or another, by some draftsman or another who professes to do architectural drafting. Just why this simple little problem proves such a stumbling-block to most draftsmen is beyond knowing. There is nothing about it that is either hard to do or hard to remember *how* to do. Yet I have known seasoned draftsmen to “give it up,” “guess at it,” or “solve it by trial.” Geometrically stated in the ancient and gotta-be-memorized classroom lingo, the main problem is:

*To draw a reverse circular curve between two fixed points that will be tangent to two given straight lines drawn through these points: the radius of one arc of the curve being given.*

The form in which the problem here occurs, involves the solution of another problem preliminary to the solution of the problem above stated; namely, *to draw a perpendicular to a given line from a point not on the line.* Neither of the above abstract linguistic statements mean anything unless accompanied by an illustration of their practical everyday application; which is the precise reason why you promptly forget most of the geometry of the classroom the minute you leave the classroom. But this is different. So let's get at it this time from the drafting-room standpoint. The conditions are as

shown in Figure 22. The oblique lot line, *ab*, is given, as well as the location, *c*, of the tree, and the starting-point, *d*, of the walk at the front entrance porch. The walk is to be, say, four feet wide, and must come no closer than three feet to the lot line, *ab*, to allow of ample planting-space therealong. The “problem” now appears as follows: *To plot the lines of the walk so as to swerve past the tree and, at the same time, to start square with the house line and finish parallel with the side lot line.*

This sounds quite different from the abstract geometric statements of the former two problems, yet it is the two of them combined. The “solution” is quickly accomplished by the combined manipulation and construction given in the drawing. Bring any two of your triangles, 1 and 2, into solid contact. Then, manipulating them as a unit, move the hypotenuse of 1 into contact with the given lot line *ab*. Now, holding 2 firm, reverse 1 as indicated by the dotted lines and slide it on 2 so as to

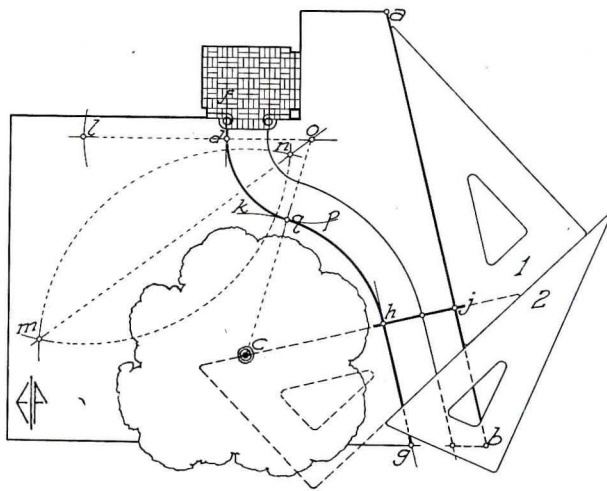


FIGURE 22

bring its hypotenuse in line with the center *c* of the tree. Draw the line *hj*, making the point *h* seven feet from the lot line as the given conditions require—three feet of planting plus four feet of walk. So, without recognizing it, and without drawing any construction lines at all, you have now “solved” the preliminary “problem” of drawing a perpendicular, *hj*, to a given line, *ab*, from a point *c* not on the line! Which goes to show that the classroom geometry, that you have forgotten, wouldn’t have done you any good if you had remembered it! For never, during the last two thousand years or so has *manual* geometry been taught in the classroom—but, during the next two thousand years or so, it may possibly come to be recognized—who knows? But let’s get back in the drafting-room, and finish this particular problem. With the sliding triangles, draw *hg* parallel with *ab*, which fixes *that* portion of the walk. From center *c* swing the arc *hk*. With the compass unchanged, mark off therewith the horizontal distance *dl*, which makes it the same as the radius *ch*. From center *c* and *l*, with a radius as large as convenient, cross arcs at the points *m* and *n*. Place the compass at the point *o* where *mn*, prolonged, crosses *ld*, prolonged. Draw the arc *dp*, which will then, of necessity, come tangent to the other arc *hk* at the point *q* on the line of centers *oc*. You have now “solved” the main “problem” and have, in geometric language, drawn the reverse



## THE GEOMETRY OF ARCHITECTURAL DRAFTING

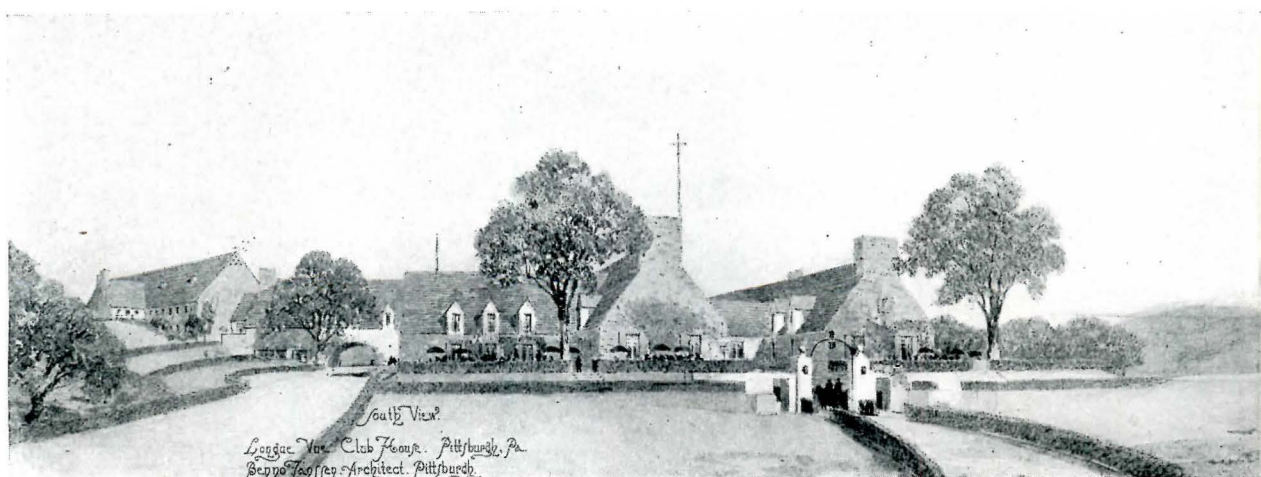
curve,  $hqd$ , between the two fixed points,  $h$  and  $d$ , and tangent to two given straight lines,  $gh$  and  $fd$ , drawn through the two fixed points: the radius,  $ch$ , of one arc of the curve being given. In other words, you have *drawn the curve of one side of the walk*. To draw the other boundary requires no further elucidation.

In constructions that call for the use of the compass, *both* legs of that instrument should be adjusted to come as nearly perpendicular to the paper as the eye of the draftsman can judge. Otherwise, in its revolution, the point will ream a hole in the paper instead of merely resting thereon in the slight indent required. Moreover, since the legs of this instrument lack a horizontal tie, a slight excess of vertical pressure thereupon while in revolution will cause it to spread and exhibit a tendency to draw spirals instead of circles. Precise rendering demands, then, that as little pressure as possible be used in the manipulation of this instrument, and that both the center point and the drawing point shall be perpendicular to the paper before making the swing. This condition of perpendicularity is not possible with the spring dividers, which is reason enough why this instrument should never be used for any purposes other than the stepping-off of slight distances or the transfer of *points*—never “picked off” *distances*—from the scale or protractor. As a matter of fact the spring dividers might just as well be relegated to the limbo of useless things: for the bow dividers fulfill the before-mentioned exceedingly limited demand for this type of instrument. The graphical division of straight lines and arcs is faster and more precise than “stepping-off,” by *trial and tribulation*, with the dividers. And, in subsequent Parts of this work, original and expeditious graphical methods of linear and angular division and subdivision will be made known that put the final stamp of uselessness upon that

supposedly-precise instrument—the spring dividers.

In any geometric construction or graphical layout, draw all lines with as little pressure as possible, yet enough to render them distinct. Continue, or start, all contributory construction lines somewhat beyond the required or given points, forming a cross at their intersections and thereby defining such points clearly. Draw such lines *from*, rather than *to*, the *given* point, except in situations where this would cause an unhandy placing of the instruments or an awkward handling or “pushing” of the pencil.

Endeavor, however, to make the entire constructive operation a series of steps *from* one point to another in the order of operation or solution. In involved construction, immediately circle each found point with a pencilled ring and, if the construction is not readily memorizable, further identify important points with a proper reference letter. Moreover, such important points as arc-centers, the tangent points of arcs or straight lines with arcs, points of inflection, or of reverse or compound curvature, and the intersection points of extremely acute or extremely obtuse concurrent lines, should be marked *permanently* and thus become a part of the working-drawing of the thing represented. For it is these things that a working-drawing should *show*—not obliterate and leave it up to the workman to determine all over again, once the draftsman has made the “picture.” Continually bear in mind that, in most cases, the process by which an essential point or line is located in the drawing must, of necessity, be repeated in the actual laying out of the work which the drawing calls for. This information should therefore be recorded in the same way that other essential detail is recorded. In other words, make your “pictures” *working-drawings*, in the full sense of that expressive and comprehensive term.

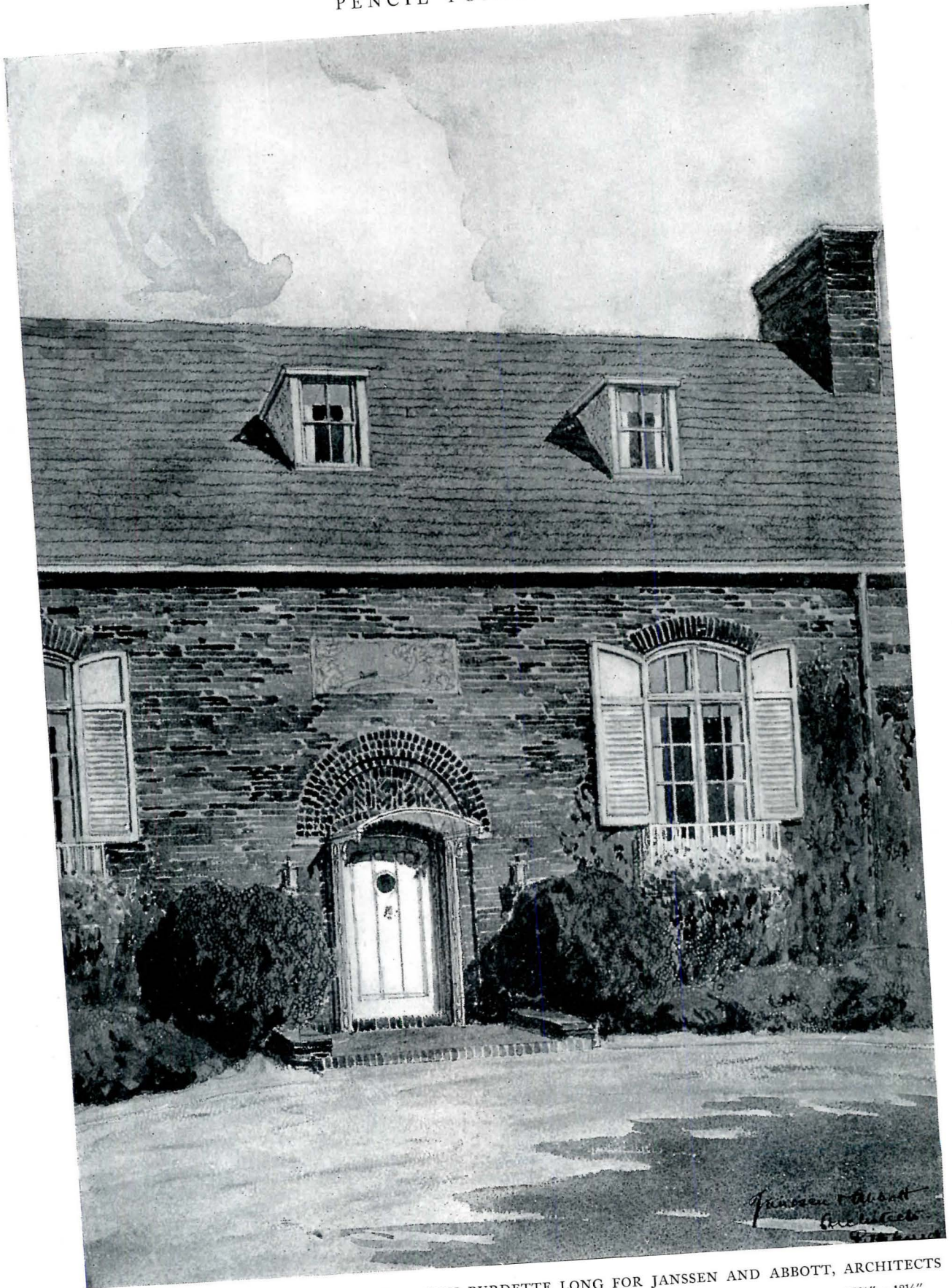


PENCIL AND WATER COLOR DRAWING BY BIRCH BURDETTE LONG

LONGUE VUE COUNTRY CLUB, PITTSBURGH, PENNSYLVANIA—BENNO JANSSEN, ARCHITECT



PENCIL POINTS



FROM A WATER COLOR DRAWING BY BIRCH BURDETTE LONG FOR JANSSEN AND ABBOTT, ARCHITECTS  
DETAIL OF RESIDENCE FOR H. W. CROFT, ESQ., GREENWICH, CONNECTICUT—SIZE OF ORIGINAL, 12¾" x 18¾"



# THE CALIFORNIA MISSIONS

## THEIR EARLY HISTORY AND THEIR ARCHITECTURE—PART II

By Natt Piper

ALTHOUGH IN CALIFORNIA but sixteen years, Junipero Serra with his wonderful vision and zeal together with the dauntless determination shown by him and his devoted followers Palou, Lasuen, Tapis and Senan, who took charge and carried forward the work after his death, succeeded in establishing twenty-one missions. Many *asistencias* were also founded. These were branch stations of the mission proper.

All this was done under trying circumstances, even in the face of decided opposition shown by various governors, and always with the limitations imposed by an undeveloped country.

It was done under a tremendous physical handicap, too, on the part of Serra. Before starting north with Portola he had sustained a severe injury when he stumbled over a jagged iron picket pin and tore the calf of one leg, a wound that eventually developed into a chronic ulcer. But in spite of this he walked again and again the entire length of the mission chain which extended from San Diego to the north side of San Francisco Bay, over five hundred miles, just as his beloved St. Francis would have done.

This road, or really trail, connecting the missions, which were placed approximately one day's journey apart, is still known as *El Camino Real*, the "Royal Road." It is now paved and clearly marked with unique mission bell guide posts, and winds in and around the hills and valleys in the same way it did when Serra painfully walked its length.

The foregoing gives but a brief outline of the

history of the missions in their establishment and during the period when they attained a real strength and power.

When the system, under the more or less infamous secularization edict of 1834, lost its buildings and equipment and its lands were literally confiscated by

the Spanish crown the whole fabric fell into decay—almost over night. The priests were deported in some instances and each group, without the patient *padres* in charge, surely faced its end.

The Indians were removed by this edict from the sympathetic care of the priests and to each one was given a parcel of land. Their inexperience in attending to any affairs of life led them either to abandon or to dispose of this ground for almost nothing, to the "gringo" pioneers who were beginning to come over the plains and mountains in ever increasing caravans, paving the way for the wonderful civilization of today.

In locating a mission several things had to be considered and uppermost in mind was Indian attacks. To guard against them, with their resulting

ambuscades, the site chosen had to be in an open space. Wood, water, and fairly level, easily cultivated fields had to be closely available and the location, to gain its purpose, must be in the center, or near the center, of a large friendly Indian population.

When the sites selected were some distance from the stream or water supply, canals had to be constructed to bring the water to the buildings. Later these canals were divided into irrigation ditches for



SAN LUIS REY DE FRANCIA

Natt Piper 1924

BLOCK PRINT BY NATT PIPER

SAN LUIS REY DE FRANCIA



PENCIL POINTS



OUTSIDE THE WALL

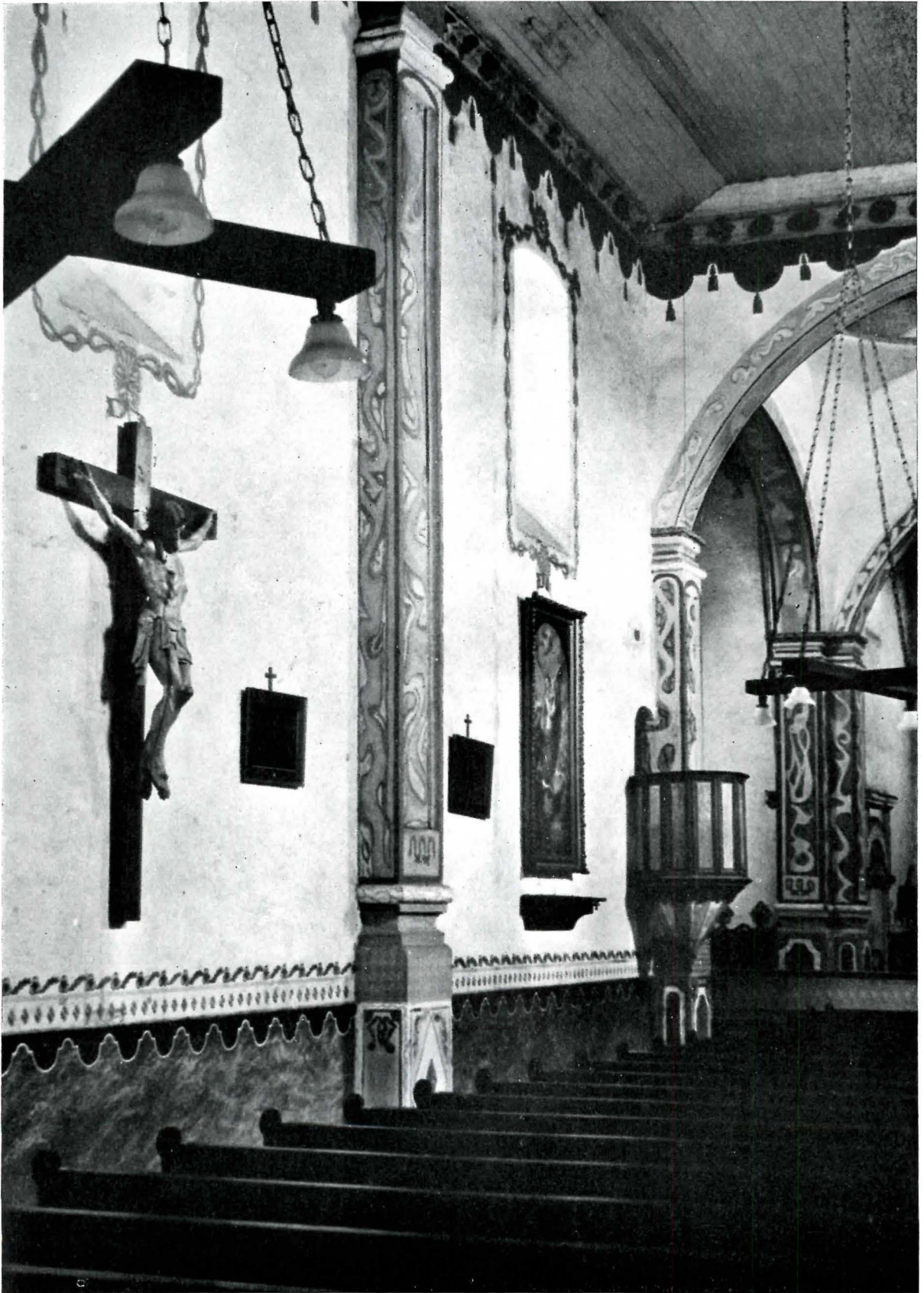


INSIDE THE WALL

GATE AND WALL TO CEMETERY—SAN LUIS REY DE FRANCIA



THE CALIFORNIA MISSIONS



INTERIOR—SAN LUIS REY DE FRANCIA





SOUTH PORCH—PATIO ARCADE, SAN JUAN CAPISTRANO



## THE CALIFORNIA MISSIONS



SAN JUAN CAPISTRANO

the fields and burned-clay pipe systems to bring water for domestic use. This was a problem easily solved by the *padres*, for many of them were Catalonians and irrigation was required in their home province just as it was in the new California. They were familiar enough with engineering principles to provide the proper head and grade and even yet some of these systems are partly in use. To provide a constant head, *barrancas* were dammed up. From this dam site many miles of ditches and pipe lines were laid.

Anticipating future expansion, after the first rude shelters would be outgrown, sufficient level building area was necessary to provide space for an impressive church, permanent shelter for the growing population, schoolrooms, workshops, quarters for the unmarried men and girls, as well as storerooms for grain, hides, wine, and farming implements.

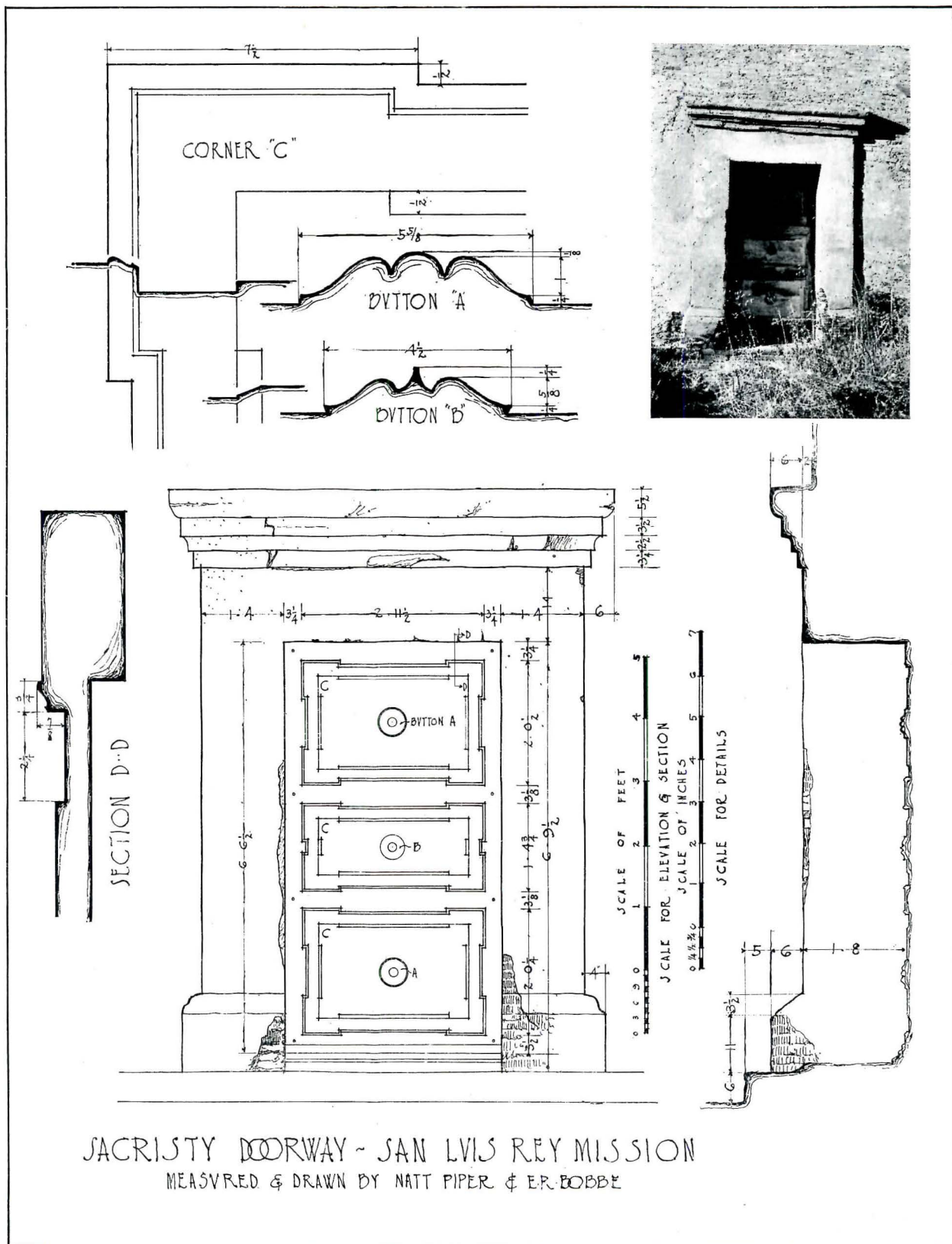
Those familiar with Moorish courtyards and the patios of Spain can immediately recognize the precedent upon which the patio plan of all mission groups was based. The *padres*, having been educated in groups of old-world buildings that had arcaded patios, and also recognizing that such a plan was virtually a fort, could devise no better scheme.

Plaza development, however, was quite a new thought. I am sure that it was a necessity because from the very beginning the *padres* had difficulty in keeping their idle soldier escorts from molesting the Indians, and it was better to segregate them.

After the Indians had married, they set up house-keeping in their own homes and it was obviously too great a problem to include these houses in the mission building group, although it was of great importance that they be kept under partial supervision. One other fact, that the *padres* expected to found a village at each mission site, and the plaza was thought of as a part of a civic center scheme, proves to me that the ultimate plan was, after grouping around the central mission patio all of the workshops and priests' quarters, to keep the soldiers' quarters and native houses distinctly apart from the main group fronting on and partially enclosing this plaza. Since the plaza was virtually a public square, on *fiesta* days the bullfights, barbecues, and dances were held there. These activities were not quite in keeping with the atmosphere that the mission buildings should be surrounded with, so the patio was reserved for the principal use of the *padres* as stated above. There is but one distinct plaza development left to us today,



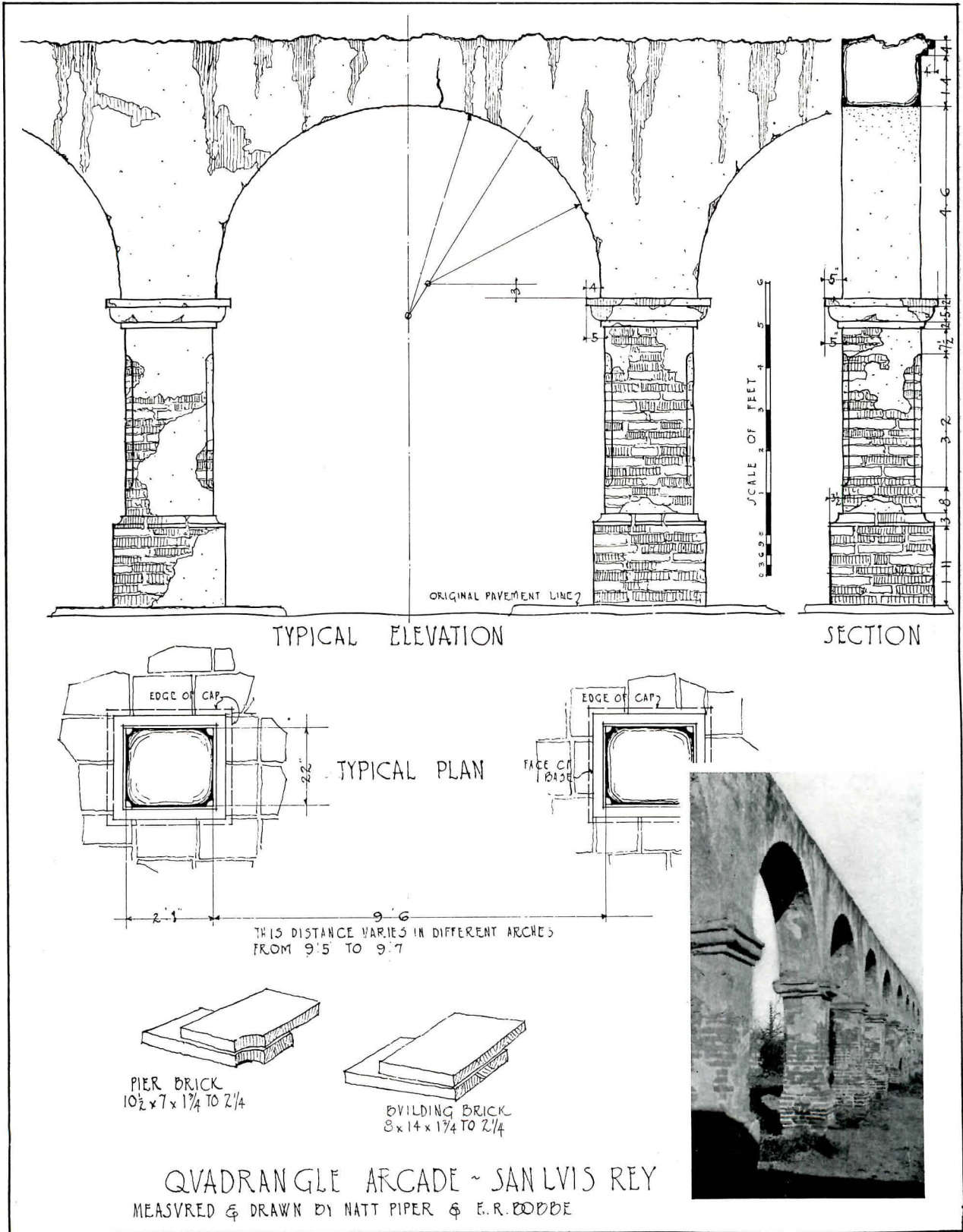
# PENCIL POINTS



SACRISTY DOORWAY—SAN LUIS REY MISSION  
 MEASURED AND DRAWN BY NATT PIPER AND E. R. BOBBE



# THE CALIFORNIA MISSIONS



QUADRANGLE ARCADE—SAN LUIS REY

MEASURED AND DRAWN BY NATT PIPER AND E. R. BOBBE



that carried out the original thought, that which is to be formed in front of the old church in Los Angeles.

The lanes and roadways about the plaza were bordered with trees and the patios were carefully planted with flowering shrubs, roses, and climbing vines; among them the colorful *bougain-villea*. There was oftentimes a fountain connected to flowing water, the arcaded porches had masonry platforms built out from the walls, seat high, and the patios must have presented a fine spectacle when the missions were in their glory.

The chapels and churches, in plan, all have very narrow, long naves, which are quite high in proportion to their width. Simple beams were the only means of spanning from wall to wall as it was difficult to get long timbers and still harder to instruct the native workmen in building trusses. In the other rooms we find the same limitations. The height of ceiling in the churches may have been an expression of vanity. The priests wanted the altar as high and as splendid in appointments as possible, and height was likewise necessary to provide proper headroom below and above the balconies at the opposite end of the nave.

Now as to the irregularity of plan, the difference in the span of the arches and the out-of-squareness of the rooms—isn't it a likely theory that when a group of hardworking natives had a pier or a wall well along and the *padre* came around on a tour of inspection and found it out of square that, rather than to dispel the enthusiasm of accomplishment, he would say, "Well done, my children."

In the building of the final group I am sure that enthusiasm was rampant; the Franciscans, actuated by zeal, pushed the hosts of Indian workmen by example, by persuasion, by praise, and by promoting rivalry among different groups. Such a period of activity, with untrained natives performing about all the work, could only result in a sort of confusion, with orientation, accurate measurements, and final effect nearly lost sight of. I believe that marks I have found on the lower side of floor and roof tiles were in reality tally marks. One can imagine how the workers would mark their output for the day, count them in the *padre's* presence, and listen to his words of commendation if their total exceeded that of a fellow worker.

*To be concluded in November*



BELFRY WALL, SAN JUAN CAPISTRANO—FROM A PHOTOGRAPH BY NATT PIPER



MAKE NO LITTLE PLANS; THEY HAVE  
NO MAGIC TO STIR MEN'S BLOOD AND  
PROBABLY THEMSELVES WILL NOT BE  
REALIZED.

MAKE BIG PLANS; AIM HIGH IN HOPE  
AND WORK, REMEMBERING THAT A  
NOBLE, LOGICAL DIAGRAM ONCE RE-  
CORDED WILL NEVER DIE, BUT LONG  
AFTER WE ARE GONE WILL BE A LIVING  
THING, ASSERTING ITSELF WITH EVER  
GROWING INSISTENCY.

REMEMBER THAT OUR SONS AND  
GRANDSONS ARE GOING TO DO THINGS  
THAT WOULD STAGGER US.

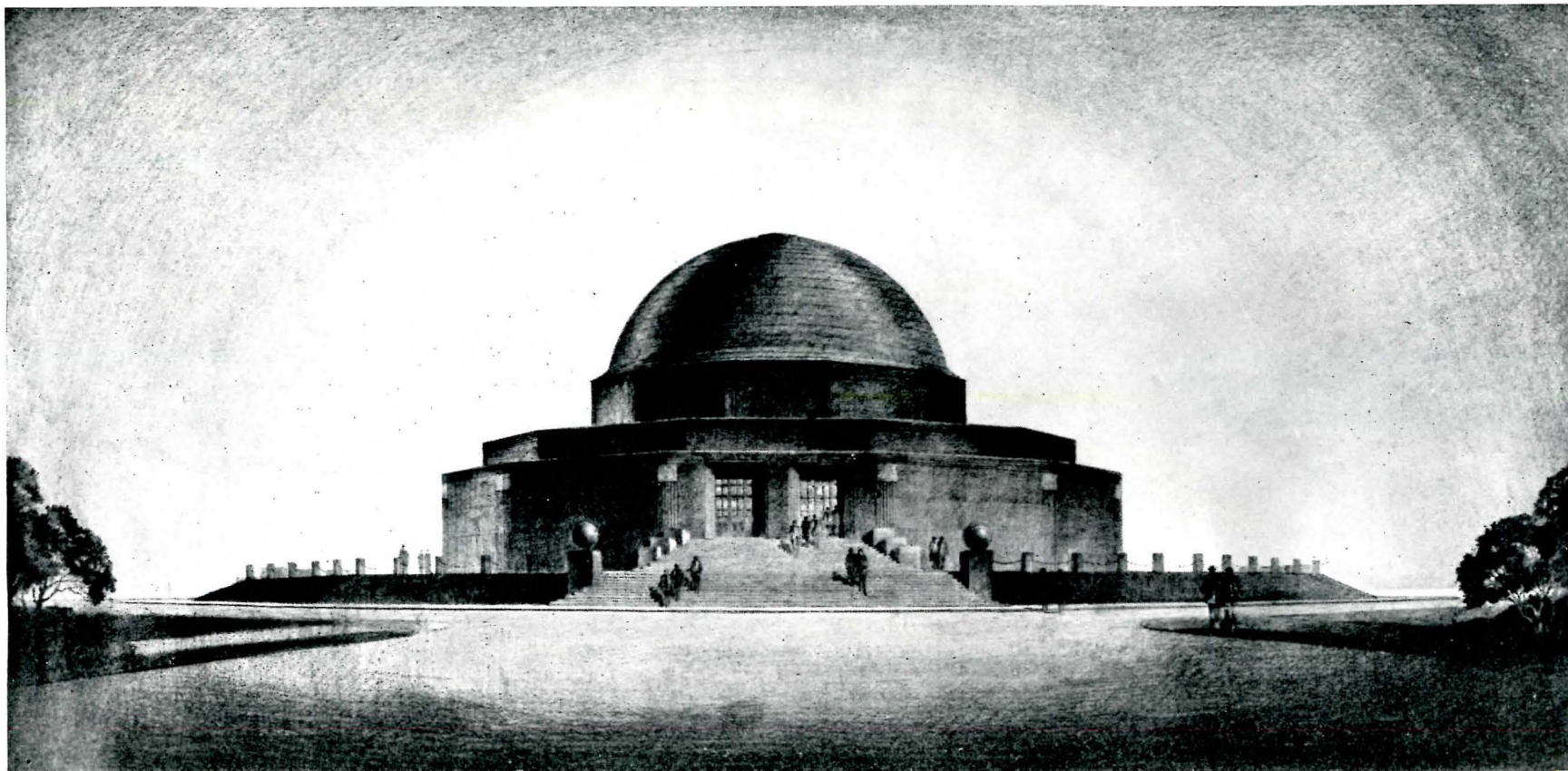
LET YOUR WATCHWORD BE ORDER  
AND YOUR BEACON BEAUTY.

DANIEL H. BURNHAM









RENDERING BY HUGH FERRISS  
ADLER PLANETARIUM—ERNEST A. GRUNSFELD, JR., ARCHITECT

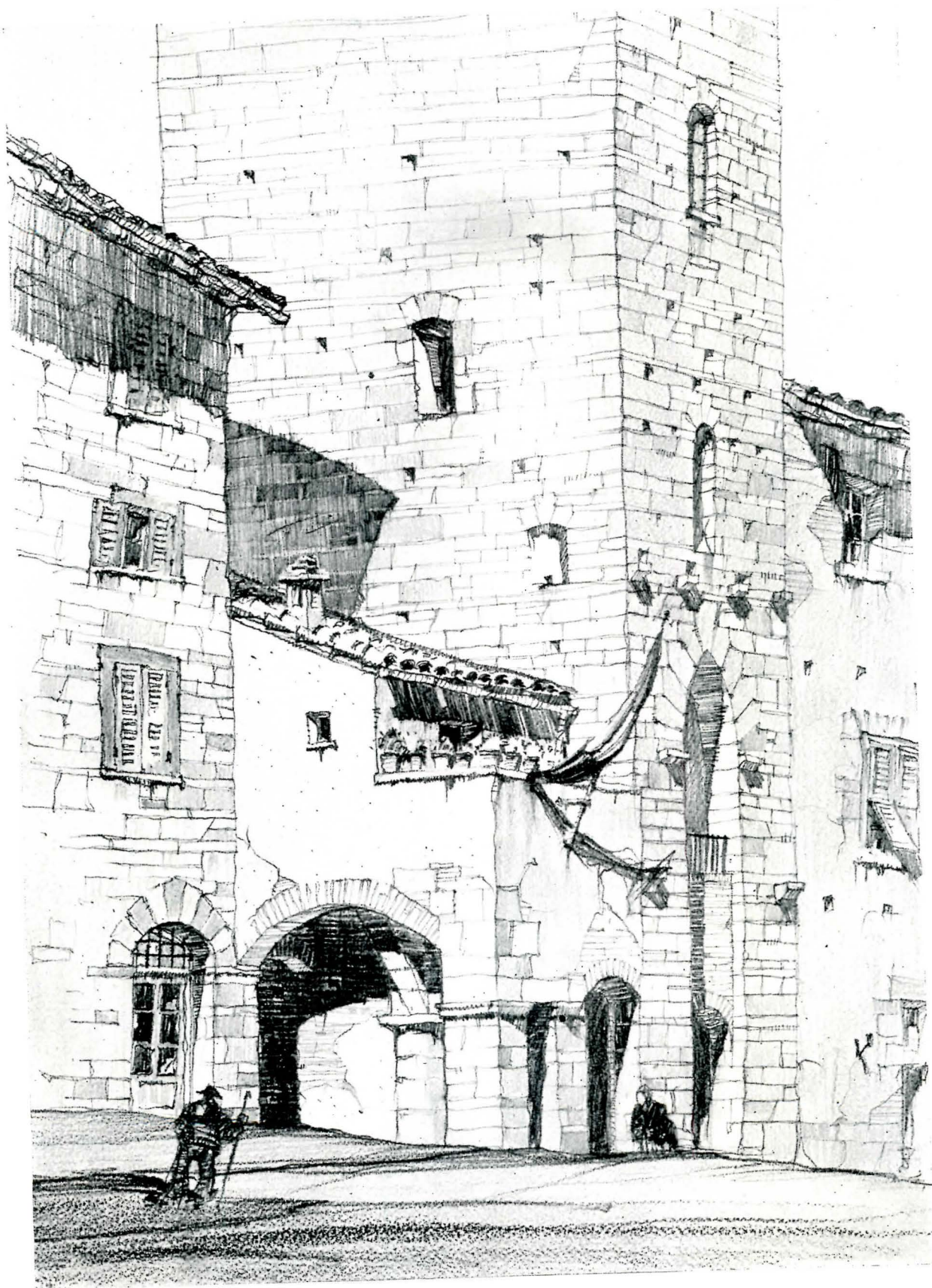


PLATE XXXVII

VOLUME X

NUMBER 10

*This drawing by Hugh Ferriss is of the design for the Adler Planetarium to be erected in the City of Chicago. Details of construction of the building will be found elsewhere in this issue.*



PENCIL DRAWING BY LOUIS SKIDMORE  
SAN GIMIGNANO



PLATE XXXVIII

VOLUME X

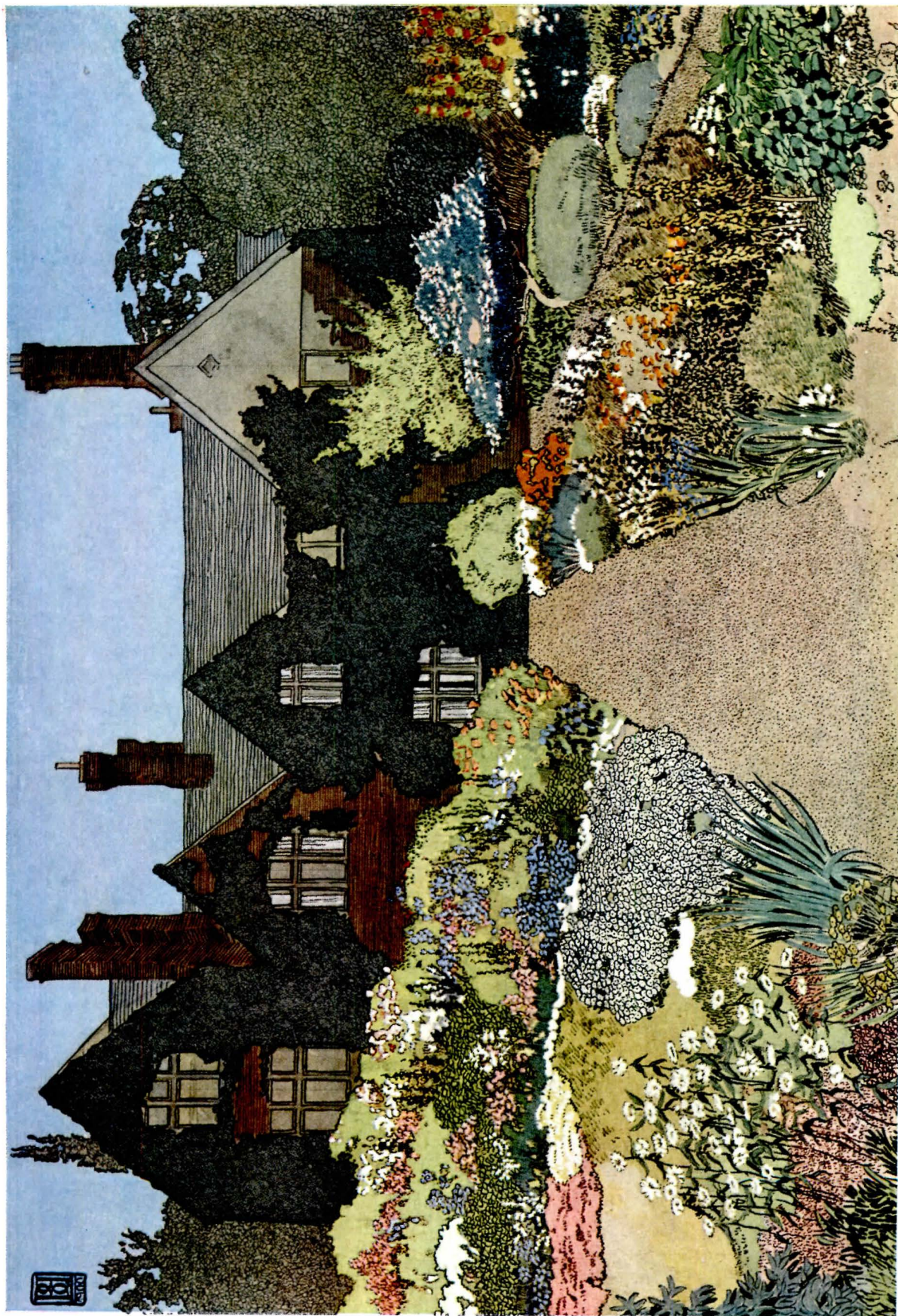
NUMBER 10

*This sketch was made during Mr. Skidmore's travels as holder of the Rotch Traveling Fellowship which he won in 1926. It was drawn on a medium rough, white, cold-pressed paper with graphite pencil and measured  $8\frac{1}{2}'' \times 12''$  in the original. The artist recently returned to this country after an absence of almost three years spent in Europe and the Near East. He intends to enter the practice of architecture in Chicago.*

## PENCIL POINTS SERIES of COLOR PLATES

*This drawing, which shows an unusual combination of pen and ink with water color, was done by Birch Long in 1900 and is typical of a technique he was using extensively at that time. This particular example was done from a photograph of an English house. As near as can be determined from the drawing by inspection, most of the pen and ink work was done first, the color was then applied with transparent washes and spots of opaque on the flowers, and finally the pen and ink was again used to accent certain spots in the shrubbery and flowers. The reproduction is about three-quarters the size of the original.*

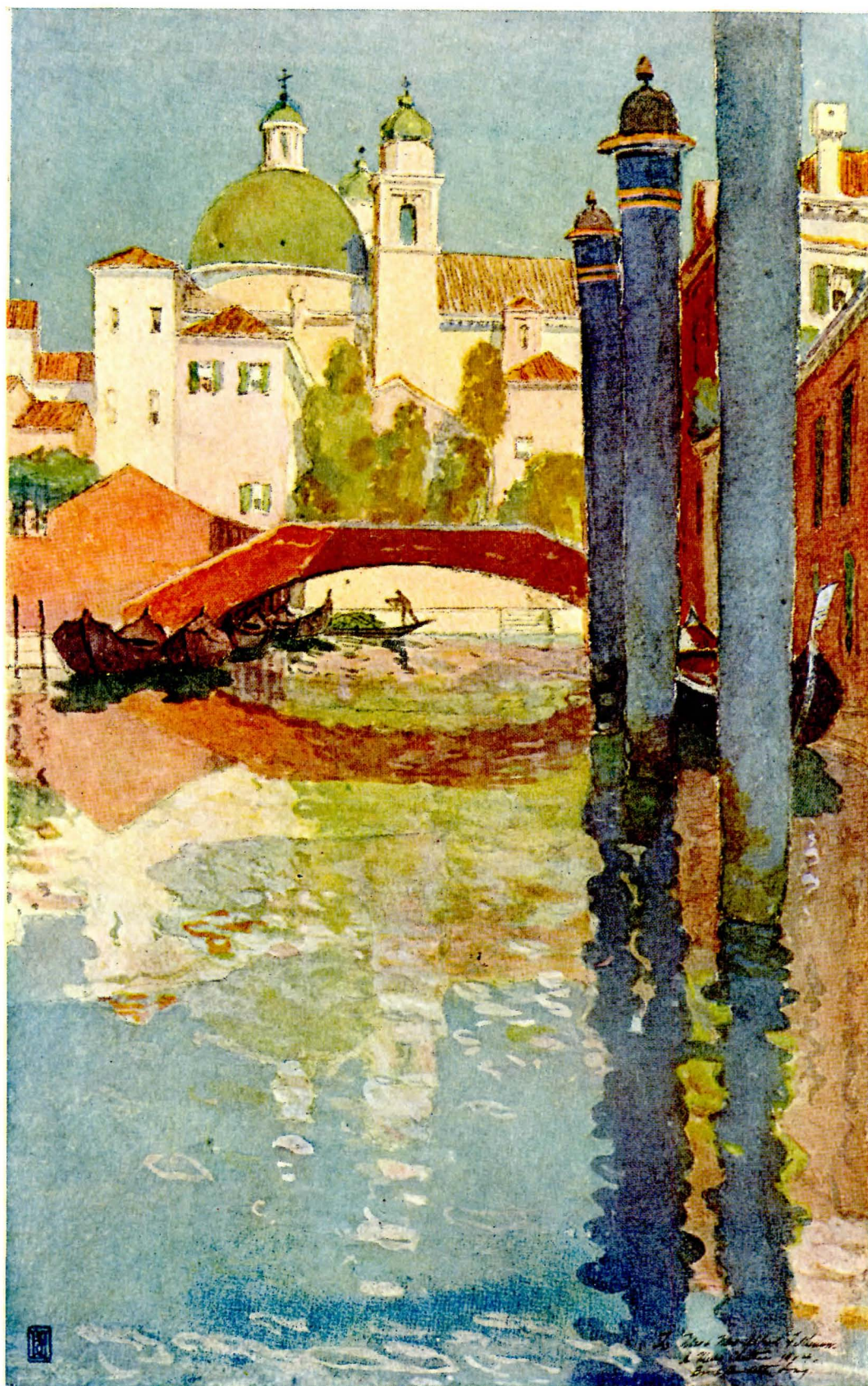




AN ENGLISH HOUSE

FROM A DRAWING IN PEN AND INK AND WATER COLOR BY BIRCH BURDETTE LONG





A VISTA IN VENICE  
FROM A WATER COLOR SKETCH BY BIRCH BURDETTE LONG



PENCIL POINTS SERIES  
of  
COLOR PLATES

*This water color sketch was made by Birch Long during his travels abroad and was presented by him to Mr. and Mrs. Alfred Fellheimer, through whose courtesy we are enabled to reproduce it here. The original measured  $12\frac{1}{2}$ " x  $20\frac{1}{2}$ " and was drawn on medium water color paper with colors apparently slightly opaqued with Chinese white. The sketch is fairly representative of the many hundreds of informal drawings made during the lifetime of the famous architectural delineator and possesses something of the simple charm of the artist's personality which endeared him to his friends.*



LOUIS LOZOWICK '28

LITHOGRAPH BY LOUIS LOZOWICK  
"THE CRANE"

PENCIL POINTS



PLATE XXXIX

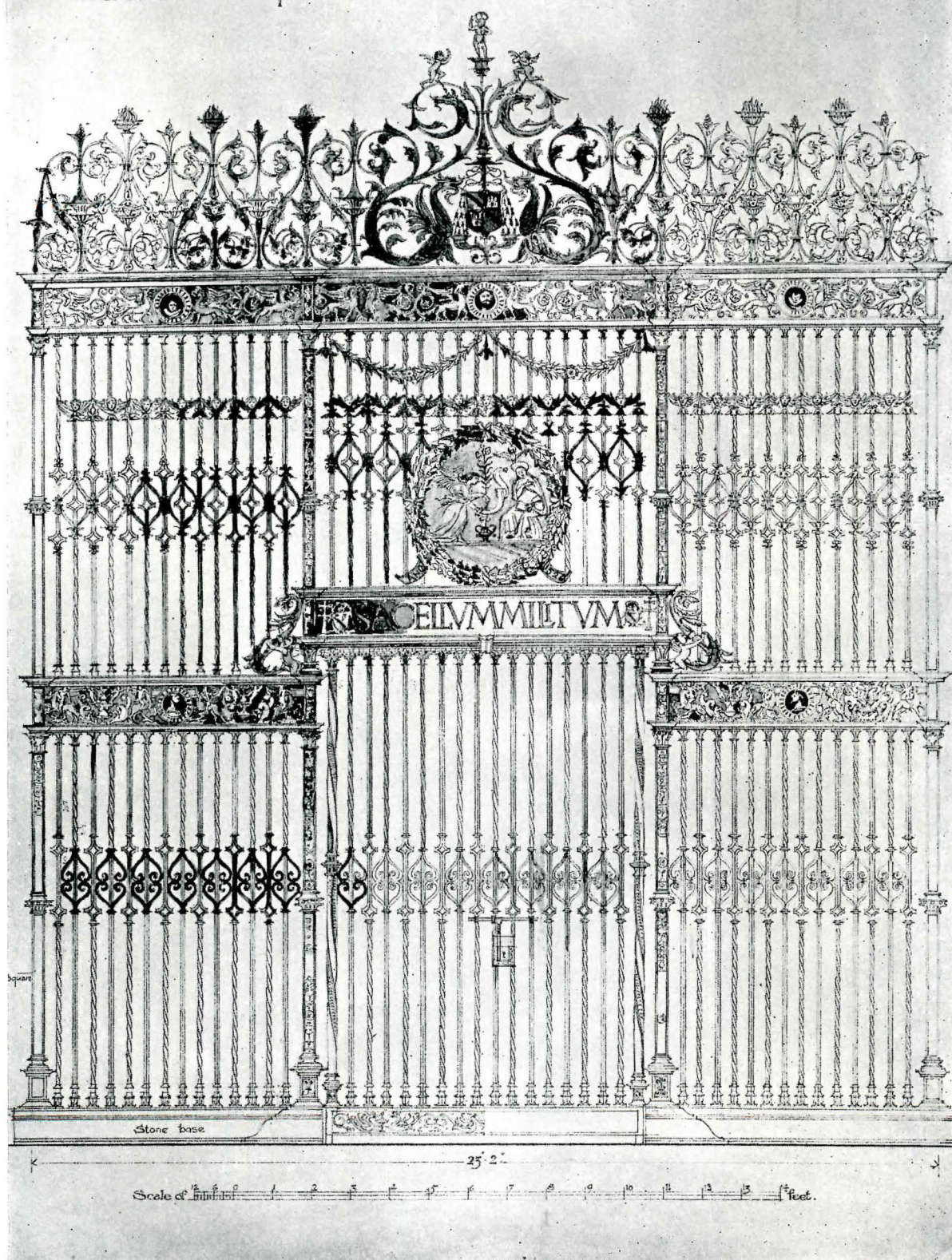
VOLUME X

NUMBER 10

*We present on this plate another lithograph by Louis Lozowick, one of whose prints was shown last month. This particular subject was chosen for its interest as a bold composition in black and white. The original measured  $8\frac{1}{2}'' \times 12\frac{1}{4}''$  and was printed on white hand made paper.*

CUENCA · CATHEDRAL ·

Iron Screen to Capilla de los Caballeros.



RENAISSANCE ARCHITECTURE AND ORNAMENT IN SPAIN

A PLATE FROM THE WORK BY ANDREW N. PRENTICE

PENCIL POINTS



PLATE XL

VOLUME X

NUMBER 10

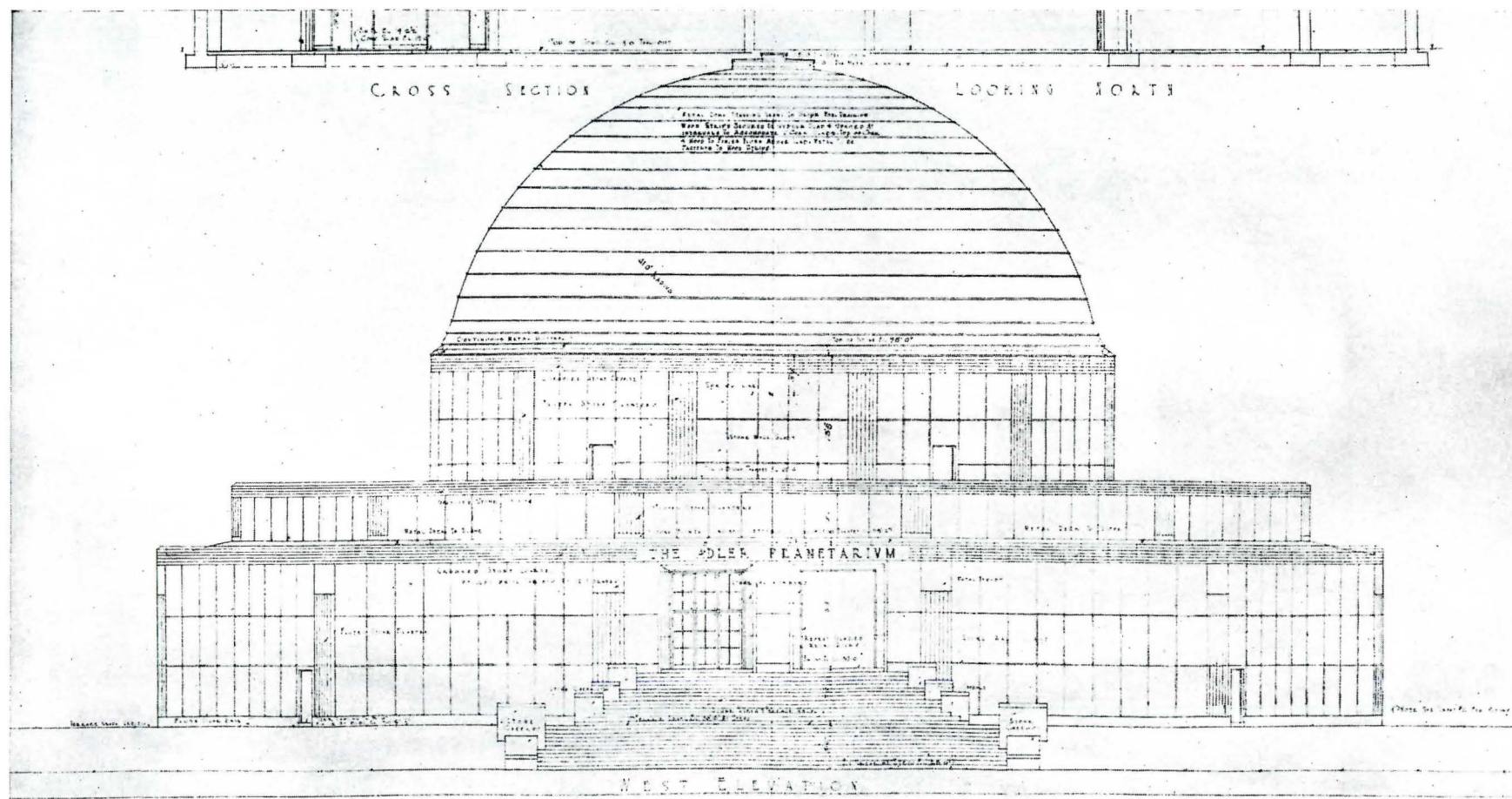
*"This screen is possibly even finer in design than those given in plates XXXIII, and XXXIV (Screen to the Chapel and Screen to the Capilla Mayor). It is at the entrance to the Chapel of the Caballeros, and its original colour is well preserved, the prevailing tone being a dark blue-green. The top cresting is gilded; the circular panel in the centre, representing the Annunciation, is also gilded, with the exception of the enamelled white lily and scroll, surrounded by a green floral wreath. The hammered iron friezes are picked out with white and red, and form backgrounds to small circular plaques ornamented with studies of heads."*

A. N. PRENTICE.

[illegible]

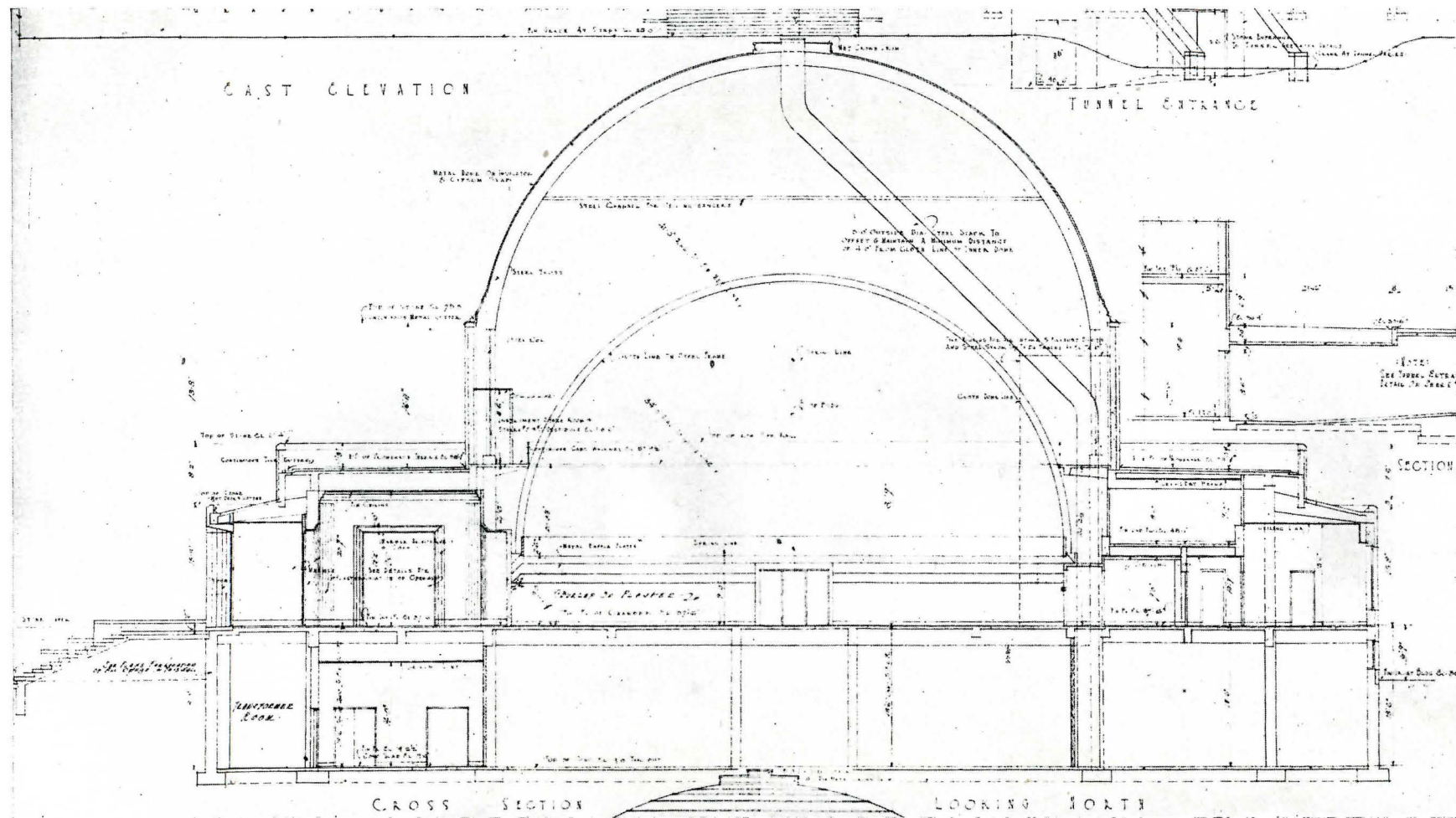
SEE OTHER DRAWINGS ON PAGES 708, 709, AND 710 AND PLATE XXXVII, THIS ISSUE





WEST ELEVATION, THE ADLER PLANETARIUM, CHICAGO—ERNEST A. GRUNSFELD, JR., ARCHITECT

SEE OTHER DRAWINGS ON PAGES 707, 709, AND 710 AND PLATE XXXVII, THIS ISSUE

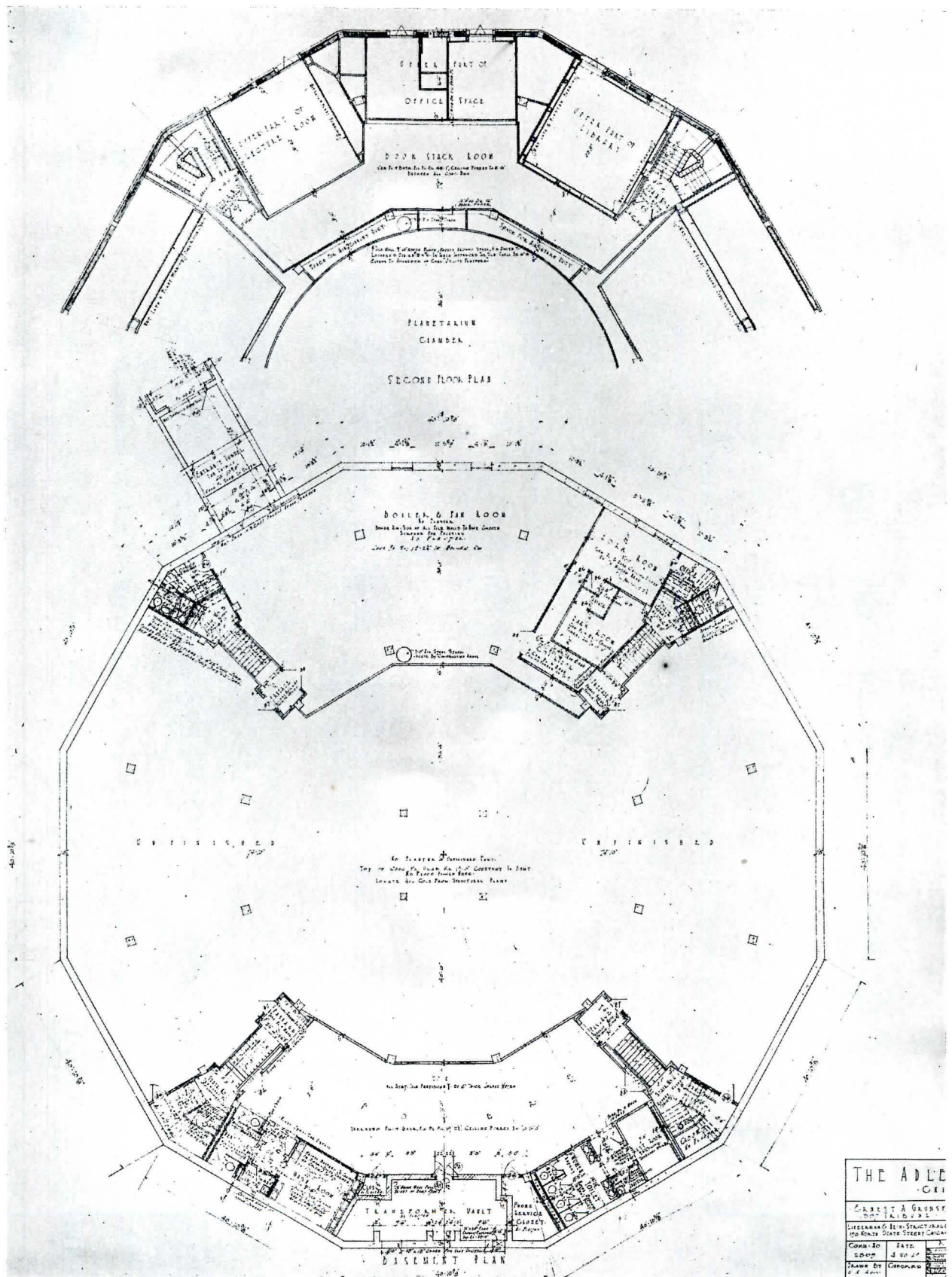


CROSS SECTION LOOKING NORTH, THE ADLER PLANETARIUM, CHICAGO—ERNEST A. GRUNSFELD, JR., ARCHITECT

SEE OTHER DRAWINGS ON PAGES 707, 708, AND 710 AND PLATE XXXVII, THIS ISSUE



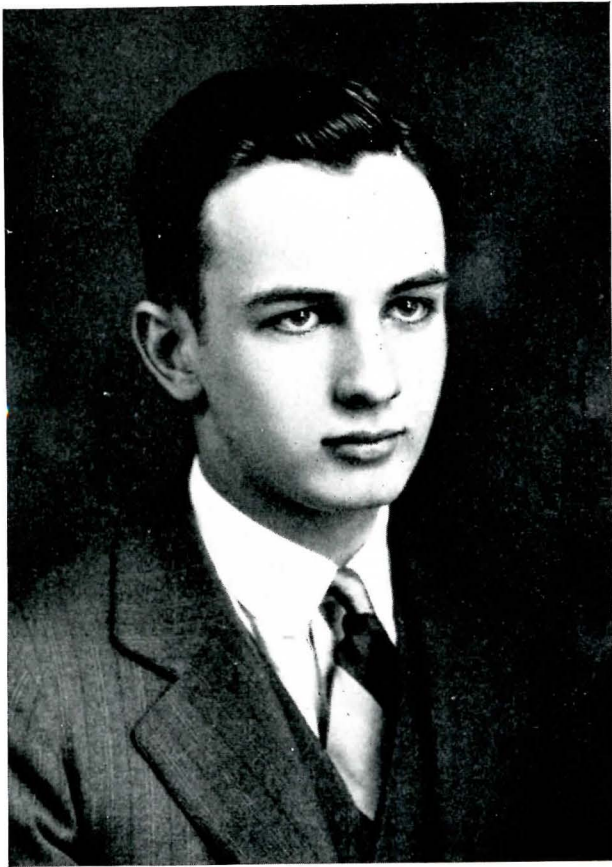
# PENCIL POINTS



BASEMENT AND SECOND FLOOR PLANS, THE ADLER PLANETARIUM, CHICAGO

ERNEST A. GRUNSFELD, JR., ARCHITECT—SEE OTHER DRAWINGS ON PAGES 707, 708, AND 709 AND PLATE XXXVII, THIS ISSUE





JOSEPH D. MURPHY

JOSEPH D. MURPHY, winner of the Twenty-second Paris Prize Scholarship, was born in Kansas City, Mo., in 1907.

Mr. Murphy is a postgraduate student of the Massachusetts Institute of Technology and of the Ecole des Beaux-Arts of Fontainebleau. Before entering M. I. T. he studied at Rockhurst High School and in Rockhurst College, Kansas City, where he began his architectural training. During his college course he worked in the offices of Boillot and Lauck, Architects, of Kansas City. Mr. Murphy feels deeply indebted to Mr. J. F. Lauck for his interest and able guidance, when after presenting himself as the logical office boy he was given a job, first studying the Orders. He was employed in this office during the afternoons and summer vacations from his second year high school until entering Technology. In his more recent studies he is most sincerely appreciative of the unfailing help and criticism of his patron, Jacques Carlu, and of the encouragement of Professor Emerson, head of the Architectural Department of M.I.T.

#### PARIS PRIZE AWARDED

THE TWENTY-SECOND PARIS PRIZE of the Society of Beaux-Arts Architects has been awarded to Joseph D. Murphy, Massachusetts Institute of Technology, who received First Place, First Medal. Second Place, First Medal, went to I. W. Silverman, J. J. Haffner, Patron; Second Medal was won by F. T. Ahlson of Yale.

The Jury of Award consisted of: Robert Peabody Bellows, Henry Richardson Shepley, of Boston; Abram Garfield, of Cleveland; George Howe, Paul A. Davis, 3rd, of Philadelphia; Archibald M. Brown, Wm. Adams Delano, Arthur Loomis Harmon, Edward S. Hewitt, Raymond M. Hood, Clinton Mackenzie, H. Oothout Milliken, Benjamin Wistar Morris, Julian L. Peabody,

Arthur Ware, Whitney Warren, of New York; Philip A. Cusachs, *Chairman*.

The subject of the program, which this year was the same for the final competition as for the preliminary sketch follows:

#### *Memorial to the Spirit of the West*

It is the spirit of the frontiersman—restless, roving through an uncharted country, preparing the way for the covered wagon.

It is the spirit of the men and women who followed the covered wagon, who withstood the hardships of the winters and the droughts of the summers, while preparing the land for the advance of Civilization.

*Site:* The site provided for the Exposition Park borders the Metropolis and spreads itself along the edge of a large commercially navigable lake. The background to the Metropolis is rolling, with residence districts among the outlying hills and valleys.

The ground for this program is within the Exposition Park and from the site will start a great Mall or Parkway, passing through the business district and leading eventually to the outlying residential districts. This site thus provides a point of interest as a terminal to the Mall, and the Memorial will stand forth prominently from the approaches, both by water and by land.

Water, impounded among the hills, can readily be brought to the ground in considerable quantities.

The available ground for the Memorial, excluding steps, ramps, drives, parking space, etc., is 350 feet by 700 feet.

*Requirements:* The Memorial will be divided into three parts:—(a) The Monument; (b) The Court or Courts of Fame; (c) The Open Air Theatre.

(a) Monument—The monument is primarily inspirational in value and through its beauty of form and charm of detail will memorialize the sacrifices of the past, and become an inspiration for the future. Three departments in Research Work will be recalled with bas-reliefs and sculptural composition:—Research in Medicine; Research in Plant Life; Research in Animal Life.

The broad and charming vistas of town and bay from the monument platform will make a gathering point for populace and visitors.

(b) Court of Fame—The Court or Courts of Fame, with their paved spaces or pools open to the sky and surrounded by colonnades, peristyles or covered walks and passages, will form an Open Air Museum for bronzes, marbles and tablets recording the lives and deeds of those proclaimed worthy.

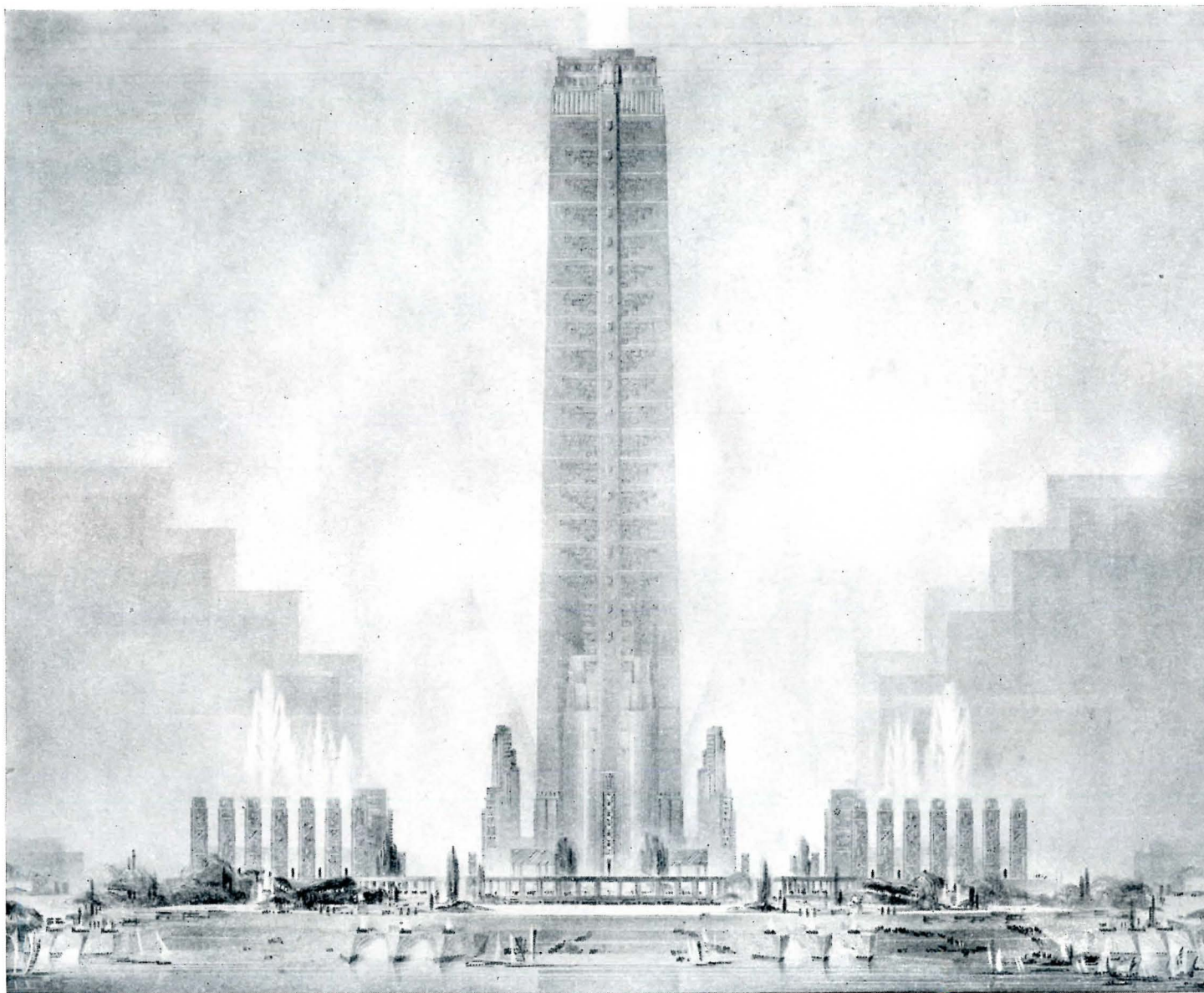
(c) Open Air Theatre—The theatre will include a stage, dressing rooms, storage rooms and will seat approximately 3,000. It is to be used on the occasions of awards for meritorious achievements, for pageants recording the anniversaries of great moments in History, and for the accommodation of a music-loving community.

At times, many more than can be seated in the theatre will congregate. Sloping open spaces about the theatre should be provided, with ample approaches for automobiles and their parking spaces.

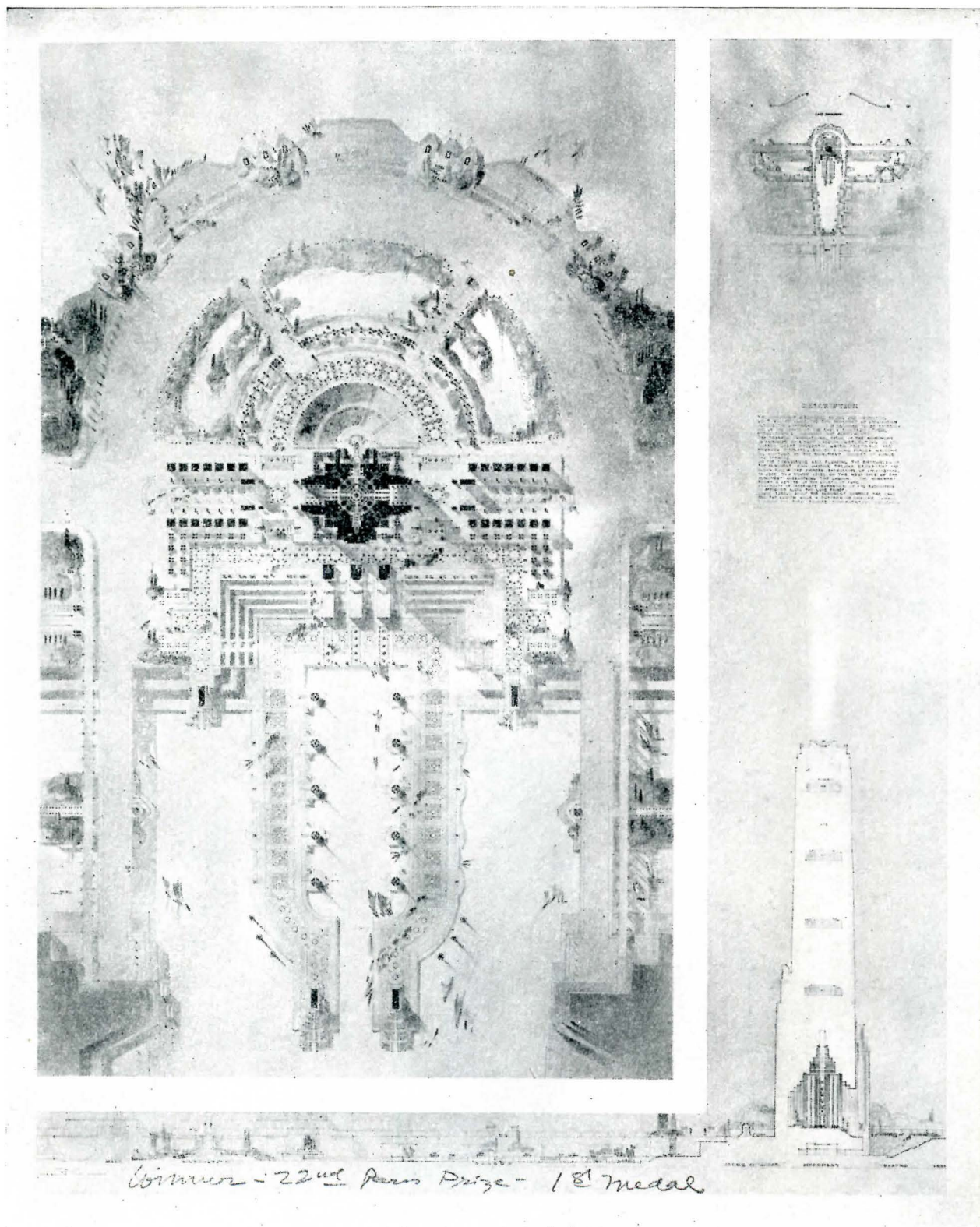
Upon the termination of the exposition, the entire Memorial will be preserved in a transformed setting of a beautiful Public Park, as an inspiration for future accomplishments, as also of a City's appreciation for the efforts in the interest of mankind.

The winning design and those placed second and third are shown on the following pages.



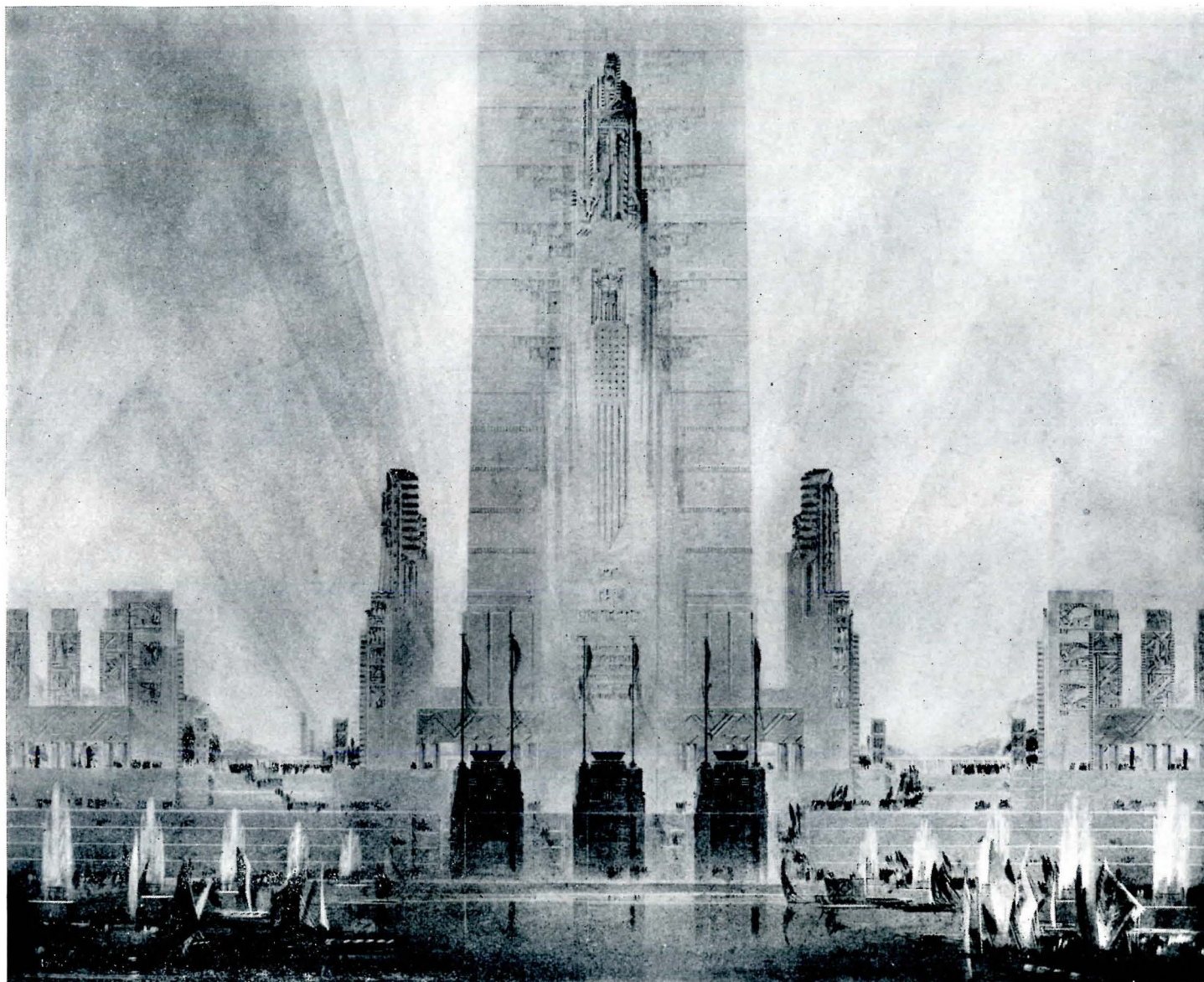


ELEVATION OF WINNING DESIGN FOR "A MEMORIAL TO THE SPIRIT OF THE WEST," BY JOSEPH D. MURPHY  
COMPETITION FOR THE 22ND PARIS PRIZE OF THE SOCIETY OF BEAUX-ARTS ARCHITECTS, 1929



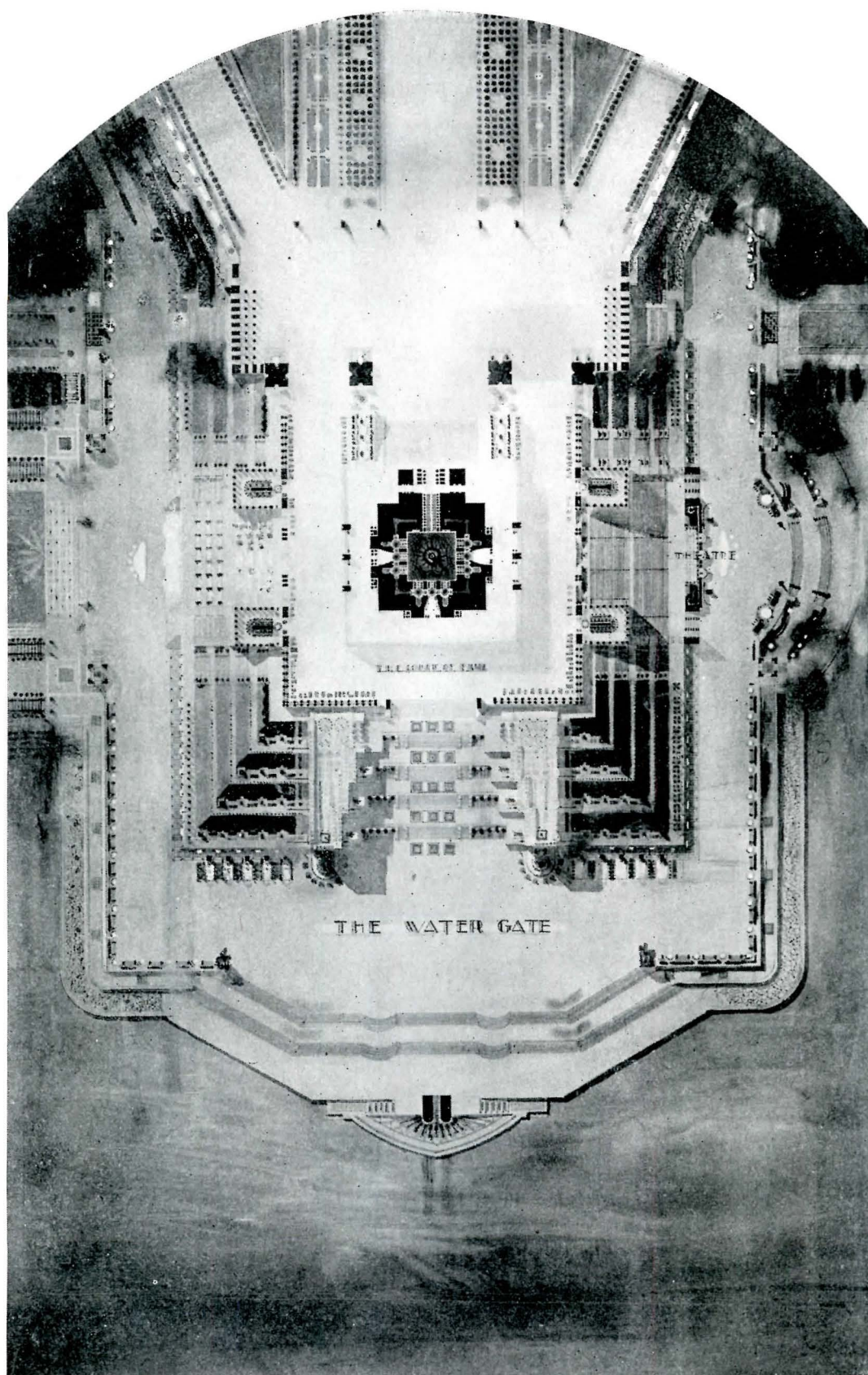
PLAN OF WINNING DESIGN FOR "A MEMORIAL TO THE SPIRIT OF THE WEST," BY JOSEPH D. MURPHY  
COMPETITION FOR THE 22ND PARIS PRIZE OF THE SOCIETY OF BEAUX-ARTS ARCHITECTS, 1929





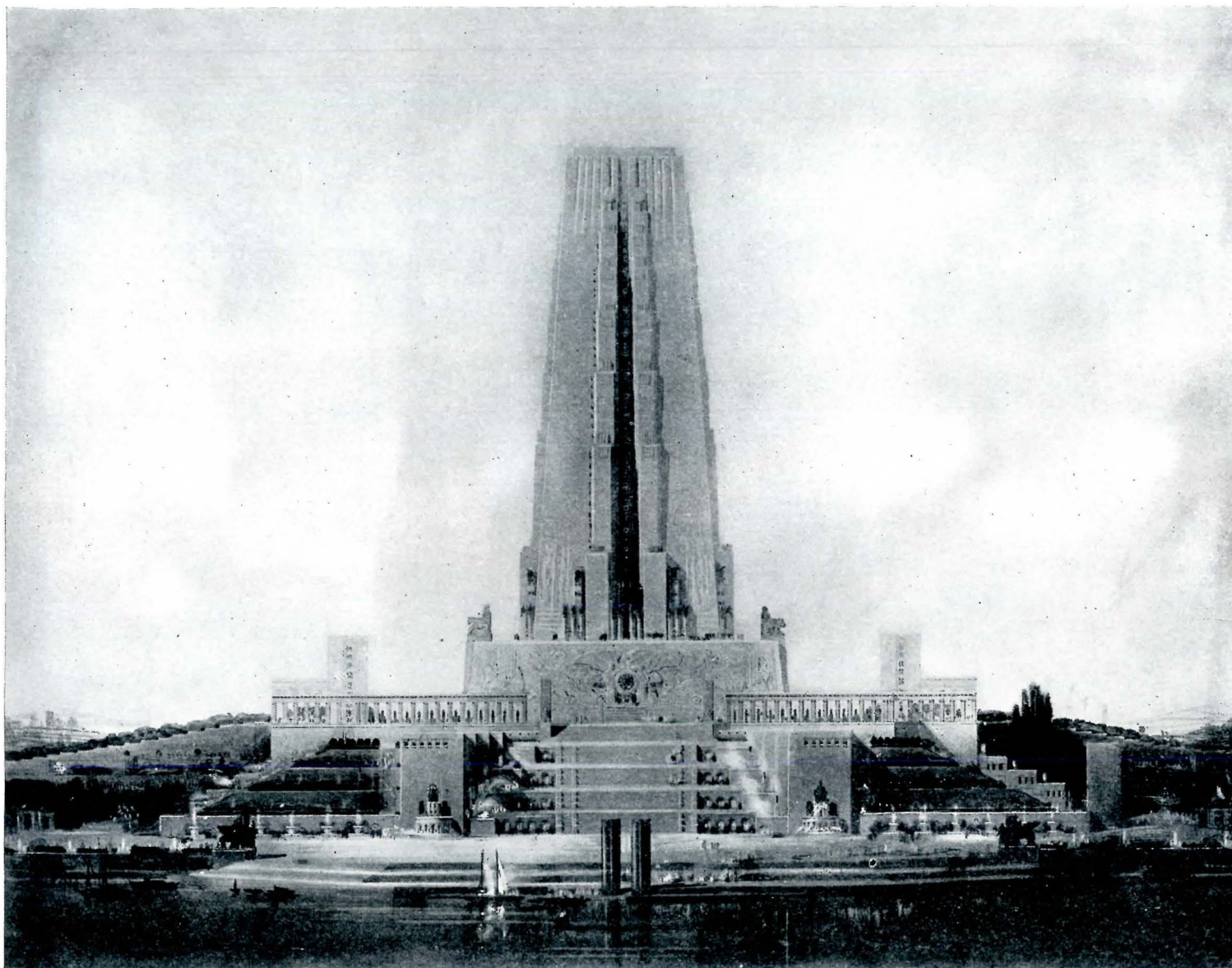
DETAIL OF WINNING DESIGN FOR "A MEMORIAL TO THE SPIRIT OF THE WEST," BY JOSEPH D. MURPHY  
COMPETITION FOR THE 22ND PARIS PRIZE OF THE SOCIETY OF BEAUX-ARTS ARCHITECTS, 1929



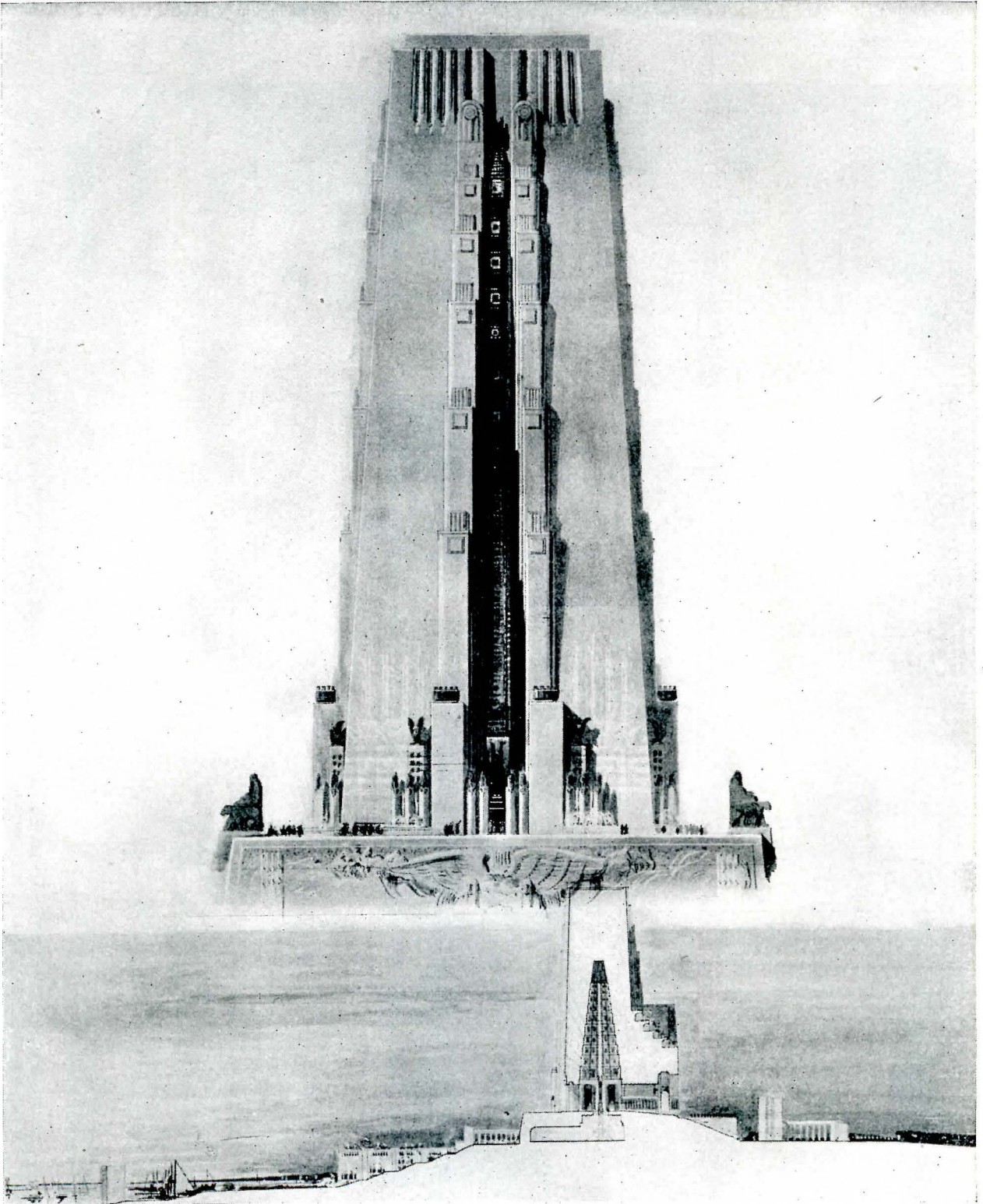


PLAN OF DESIGN FOR "A MEMORIAL TO THE SPIRIT OF THE WEST," BY I. W. SILVERMAN  
PLACED SECOND, COMPETITION FOR THE 22ND PARIS PRIZE OF THE SOCIETY OF BEAUX-ARTS ARCHITECTS



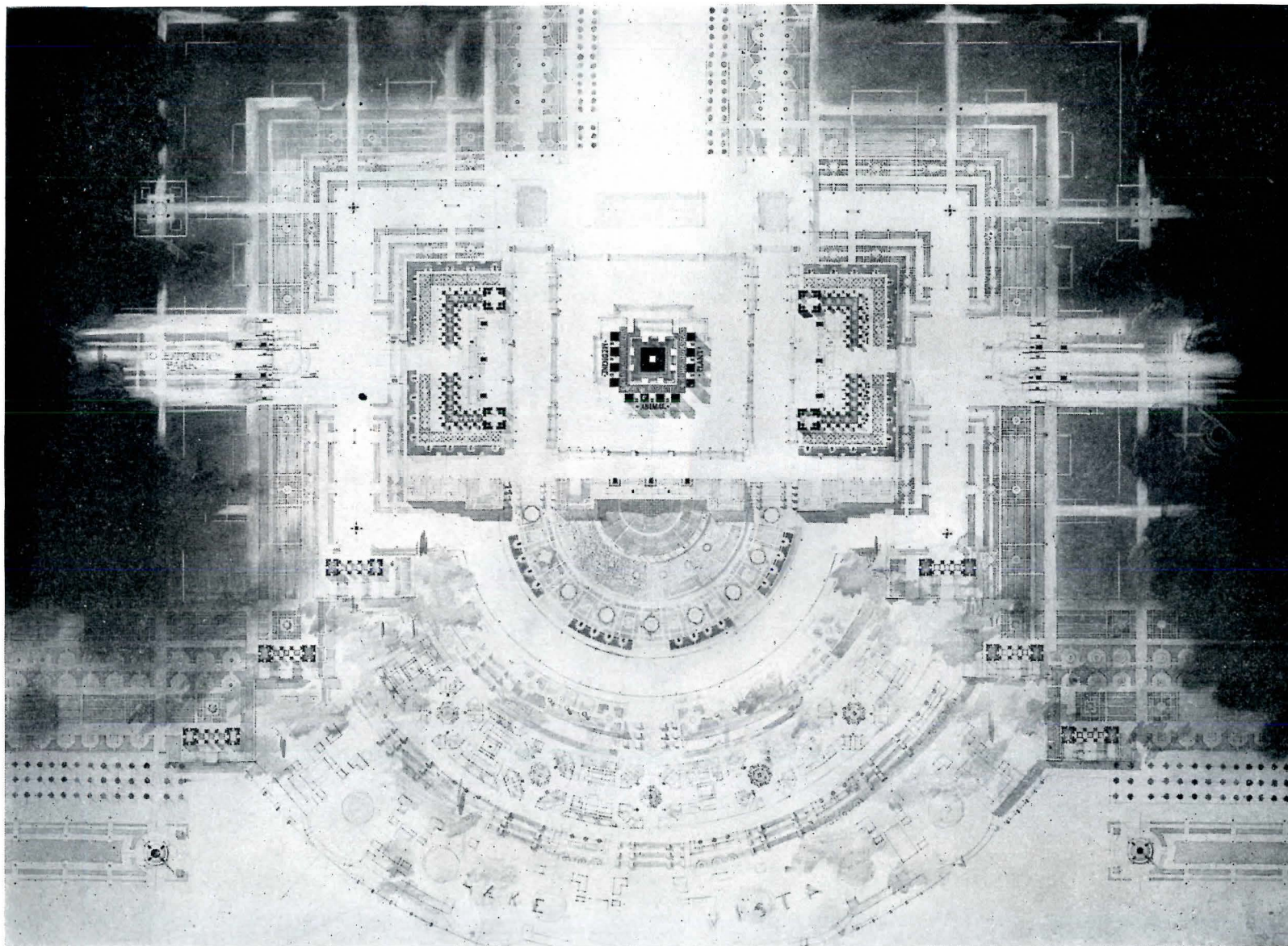


ELEVATION OF DESIGN FOR "A MEMORIAL TO THE SPIRIT OF THE WEST," BY I. W. SILVERMAN  
PLACED SECOND, COMPETITION FOR THE 22ND PARIS PRIZE OF THE SOCIETY OF BEAUX-ARTS ARCHITECTS, 1929



DETAIL OF DESIGN FOR "A MEMORIAL TO THE SPIRIT OF THE WEST," BY I. W. SILVERMAN  
PLACED SECOND, COMPETITION FOR THE 22ND PARIS PRIZE OF THE SOCIETY OF BEAUX-ARTS ARCHITECTS, 1929





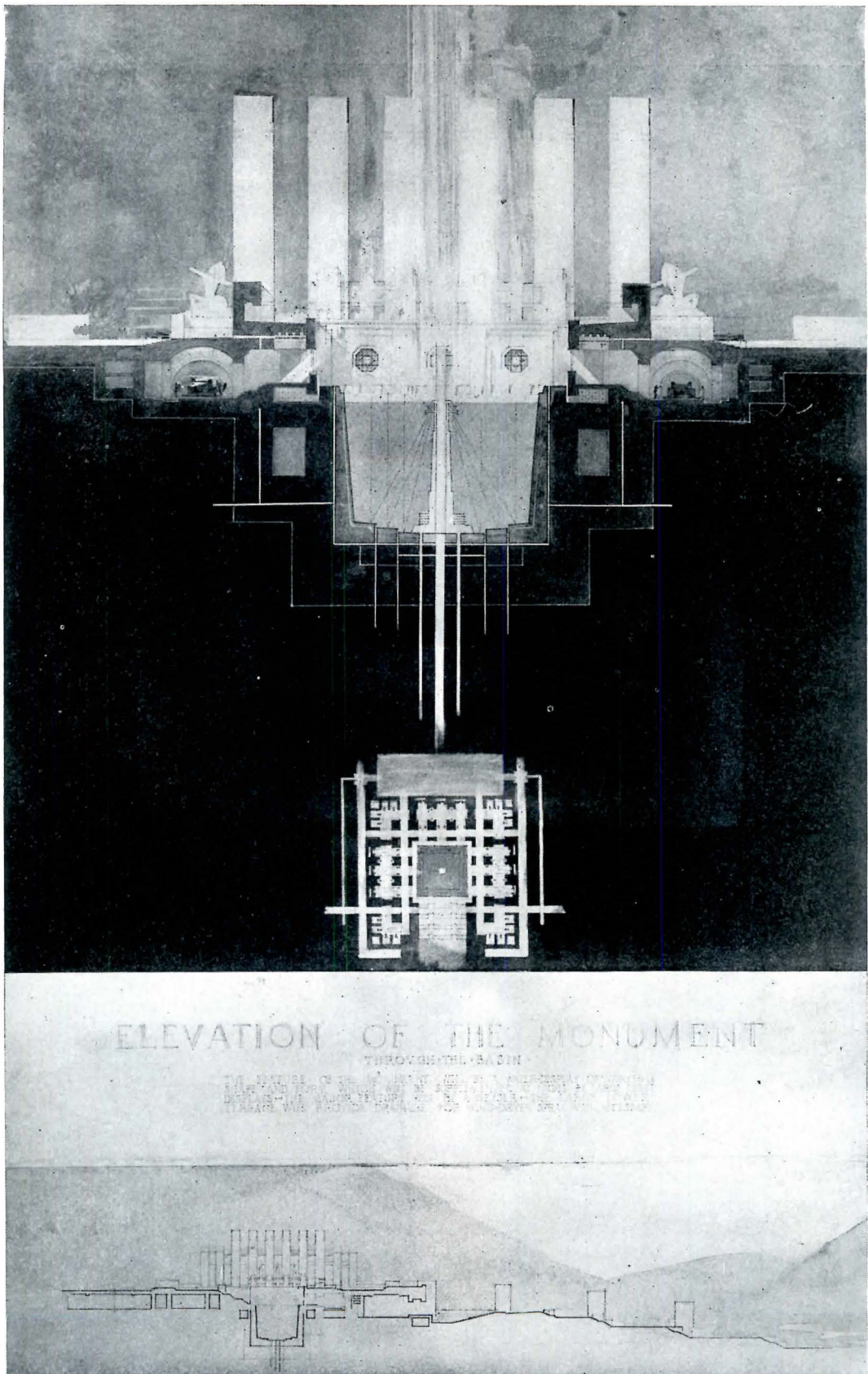
PLAN OF DESIGN FOR "A MEMORIAL TO THE SPIRIT OF THE WEST," BY F. T. AHLSON  
 PLACED THIRD, COMPETITION FOR THE 22ND PARIS PRIZE OF THE SOCIETY OF BEAUX-ARTS ARCHITECTS, 1929





ELEVATION OF DESIGN FOR "A MEMORIAL TO THE SPIRIT OF THE WEST," BY F. T. AHLSON  
PLACED THIRD, COMPETITION FOR THE 22ND PARIS PRIZE OF THE SOCIETY OF BEAUX-ARTS ARCHITECTS, 1929





DETAIL OF DESIGN FOR "A MEMORIAL TO THE SPIRIT OF THE WEST," BY F. T. AHLSON  
PLACED THIRD, COMPETITION FOR THE 22ND PARIS PRIZE OF THE SOCIETY OF BEAUX-ARTS ARCHITECTS



## THE SAN FRANCISCO ARCHITECTURAL CLUB

THE ATELIER DINNER, held recently, marked the close of a very successful season for the Club Atelier. It was well attended and the members were so enthusiastic it was decided to hold similar dinners in the future at the end of each Charrette. New Massier Mario Ciampi and Sous-Massier Jim Gillen were elected for the coming season. The retiring Massier presented gifts from the boys to their patrons, Mr. Weihe and Mr. Frick, in appreciation of their excellent instruction and guidance. The coming season promises to be the most successful in years, many new Class A and B men having signified their intention of taking up the work.

Class work has already begun. Mr. Sly is conducting his classes in Engineering and Mr. Williams' class in Architectural Details began September 17th. The class in pencil sketching under Mr. Dinwiddie is drawing to a close and there is some talk of starting a life class if the boys are not kept too busy with other work.

The members have been unusually fortunate in the number of interesting excursions they have enjoyed during the past year. The most ambitious one planned for the future is a trip to the Yosemite Portland Cement Company, taking in Yosemite National Park on the way.

COMPETITION FOR A WAR MEMORIAL,  
CITY OF CHICAGO.

## FINAL ANNOUNCEMENT

TO ALL ARCHITECTS residing in the United States:

The Chicago War Memorial Committee, a group of leading citizens, offers a first prize of \$20,000 and a second prize of \$5,000 to designers of a War Memorial to be located on the shore of Lake Michigan at the extension of Congress Street.

The Jury of Award will be Mr. Abbott, Col. McCormick, Col. Savage, Mr. Simpson, and Col. Sprague as lay members, and Harvey W. Corbett, Ernest R. Graham, John Mead Howells, and Dean Everett V. Meeks as professional members.

The War Memorial Committee of the City of Chicago proposes to erect a memorial dedicated to those who served in the great World War. It will occupy a most important position on the shore of Lake Michigan and at the termination of Congress Street, the principal axis of the city of the future.

It is the desire of the committee to obtain a design which, when built, will adequately memorialize the sacrifices of all who served in the war and in a manner relating not inharmoniously to the adjacent architectural and landscape elements of Grant Park and the Yacht Harbor.

The competition is to be nation-wide and is open to qualified architects residing in the United States. Eleven architectural firms are especially invited to submit designs and they will receive compensation of \$1,000 but other competing architects will receive no compensation other than the opportunity to win one of the prizes. Those invited to compete are:

Raymond M. Hood, Voorhees, Gmelin & Walker, Paul Cret, H. Van Buren Magonigle, James Gamble Rogers, Eliel Saarinen, Burnham Brothers, Nimmons, Carr & Wright, Holabird & Root, Bennett, Parsons & Frost, and Benjamin H. Marshall.

The committee has appointed Earl H. Reed, Jr., 435 North Michigan Avenue, as its professional adviser in the conduct of the competition. Those wishing to participate are instructed to file application with Mr. Reed. Drawings are to be sent to him and must be received not later than 12 o'clock noon on November 25, 1929.

## BOOK NOTES

*American Church Building of Today*, by Ralph Adams Cram; 283 plate pages, 9½" x 12½"; price \$16.50; published by the Architectural Book Publishing Company, New York.

Supplementing our own recent publication of *The Work of Cram and Ferguson* comes this book by Ralph Adams Cram showing the work of other American church architects. Mr. Cram says in his preface, "Where, thirty years ago, there were no more than five or six men who did good work along this line, there are now thirty or forty." He then proceeds to show, by means of photographs, the evidence to support his statement. It is indeed surprising and encouraging to look over this collection of churches representing the work of forty-odd firms in all parts of the country, for it brings the realization that good design has been steadily and quietly making headway in this special field as well as in the more boisterous regions of commercial architecture. Churches in all styles and for all denominations are shown—Lombard, French Romanesque, Norman, Gothic, Spanish Baroque, Mission, English Georgian, American Colonial—Episcopal, Roman Catholic, Unitarian, Universalist, Congregationalist, Presbyterian, Lutheran, Methodist, Swedenborgian, Baptist, and a few synagogues. As a record of what has been done in the way of good churches in this country the book cannot fail to be of great interest and assistance to architects working in this field.

## WILLIAM BURNET TUTHILL

WILLIAM BURNET TUTHILL, the architect of Carnegie Hall, died on August 25th, 1929. Mr. Tuthill had maintained an office for the practice of architecture in New York for over fifty years. He was a pupil of the late Richard Morris Hunt and designed many important buildings besides Carnegie Hall, among which are the original building of the Post Graduate Hospital, the Medical School and Hospital for Women, the Home for the Friendless, the Princeton Inn, the Columbia Yacht Club, and the Schinasi residence at 107th Street and Riverside Drive, New York.

Mr. Tuthill was one of the founders of the Architectural League; he was a lecturer on architectural subjects and acoustics, on which latter he was an authority, and was also the author of several books on architectural drafting, and *The Cathedral Church of England*.

## A CORRECTION

IN THE ADVERTISEMENT of the Dahlstrom Metallic Door Company which appeared on page 103 of the September, 1929, issue of PENCIL POINTS credit was erroneously given to Franklin O. Adams, Jr., of Tampa, Florida, as architect, and to G. A. Miller of Tampa, Florida, as contractor. The only portion of the building for which they were responsible was the elevator furthest to the rear in the small illustration. The architects for the building, with the exception of this elevator, were Holmes & Winslow of New York, and the builder was the Southern Ferro Concrete Company of Atlanta, Georgia.

## A CORRECTION

IN AN ADVERTISEMENT of the Southern Cypress Manufacturers' Association appearing on page 25 of our August issue the name of the firm which executed the woodwork for the room illustrated was incorrectly stated. This work was done by Irving & Casson—A. H. Davenport Co.





This department conducts four competitions each month. A prize of \$10.00 is awarded in each class as follows: Class 1, sketches or drawings in any medium; Class 2, poetry; Class 3, cartoons; Class 4, miscellaneous items not coming under the above headings. Everyone is eligible to enter material in any of these four divisions. Competitions close the fifteenth of each month so that contributions for a forthcoming issue must be received by the twelfth of the month preceding the publication date in order to be eligible for that month's competition. Material received after the closing date is entered in the following month's competition.

PRIZES IN OUR regular monthly competitions have been awarded as follows:

Class I—Max Feldman of New York

Class II—Teresa Donnelly of Chicago

Class III—No Award

Class IV—Leon H. Hoag of New York

We wish the contributors of Class III would send in some stuff. We hate to have the ten dollars go begging this way.

The cartoon by Guy E. Hecklinger, shown on the opposite page, was received several months ago and therefore is not eligible for the prize in this month's competition.

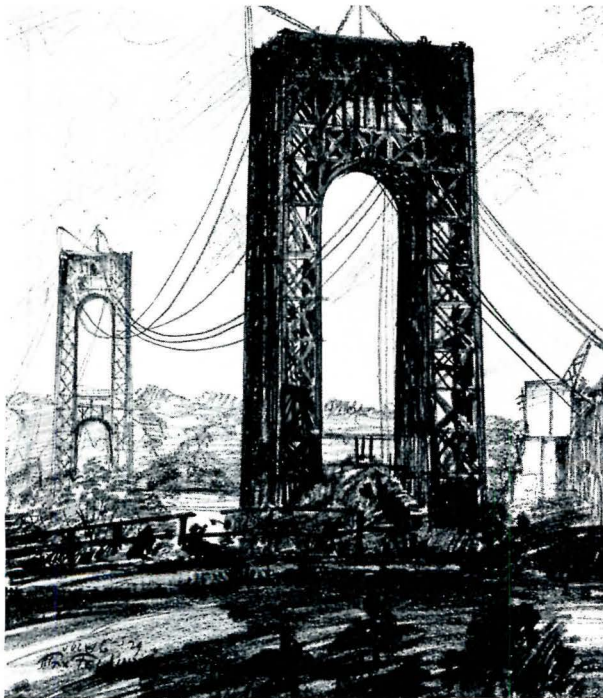
### BUILDERS

*(Dedicated to the Host of Pen-Pushers who help to put many Big Things across.)*

*By Teresa Donnelly*

*(PRIZE—Class Two—September Competition)*

Here's to the Pencil Pushers' Brigade—,  
Long may they last and hard may they slave,  
Drawing the plans of mice and of men,  
Erasing them out to draw again.



LITHOGRAPH PENCIL DRAWING OF THE NEW HUDSON RIVER BRIDGE, BY MAX FELDMAN  
*(PRIZE—Class One—September Competition)*

Here's to the Crew of Triangle and Square  
Bringing in dreams from out of the air,  
Plotting and pushing a mean wicked pen,  
Furnishing plans for thankless men.

Here's to the Plotters working today  
Pushing pens in a furious way;  
Building a City from out of the plain,  
Planning and plotting with no thought of gain.

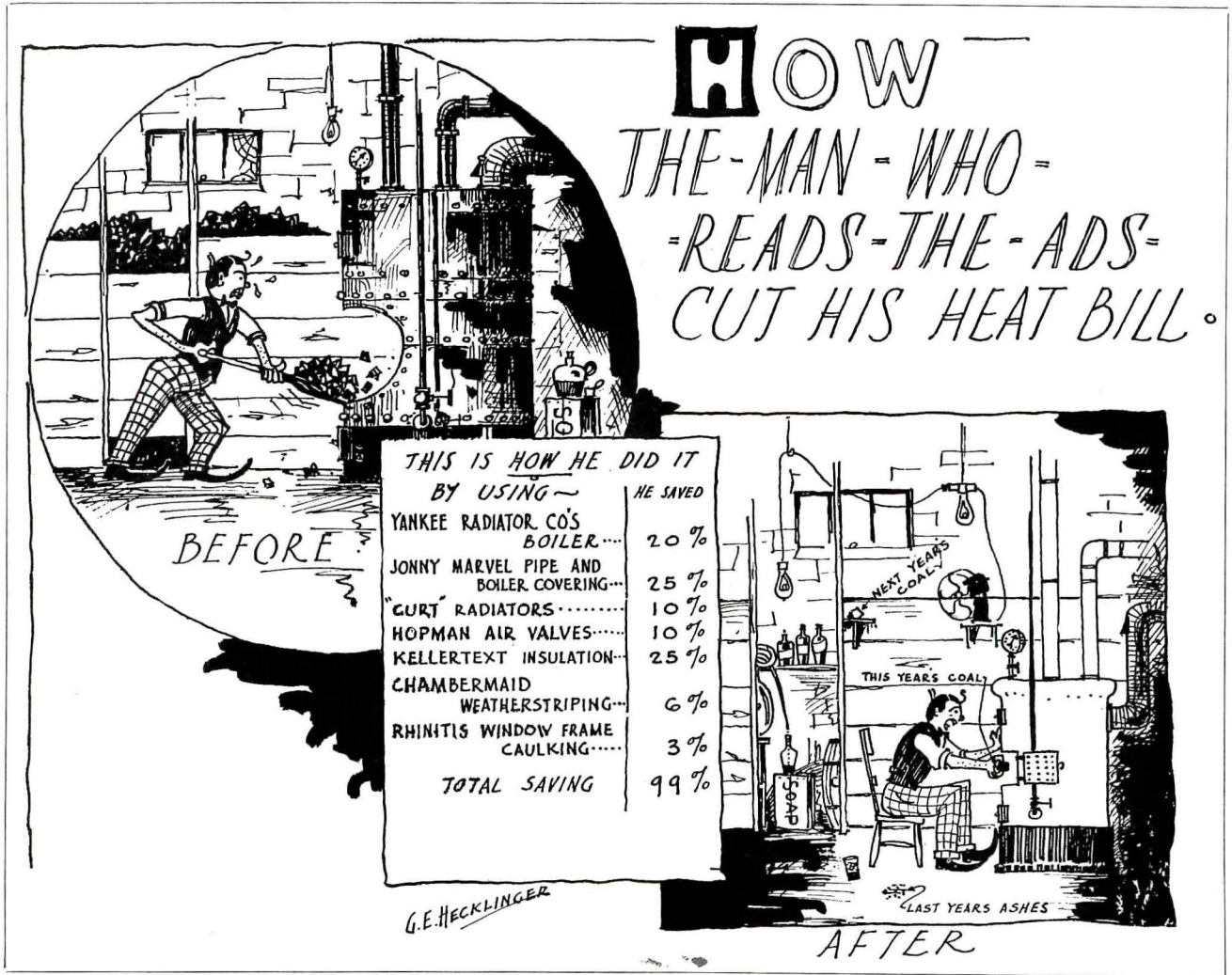
Satisfied only in doing the best,  
Giving good service and all the rest,  
Helping the builder to see things through,  
These are the Men who build cities for you!

### ALPHABET FOR ARCHITECTURAL ADVANCE AGENTS

*As Compiled by Leon H. Hoag of the Office of Robert D. Kohn, Charles Butler and Associates, upon the occasion of Mr. Butler's departure for Europe.*

*(PRIZE—Class Four—September Competition)*

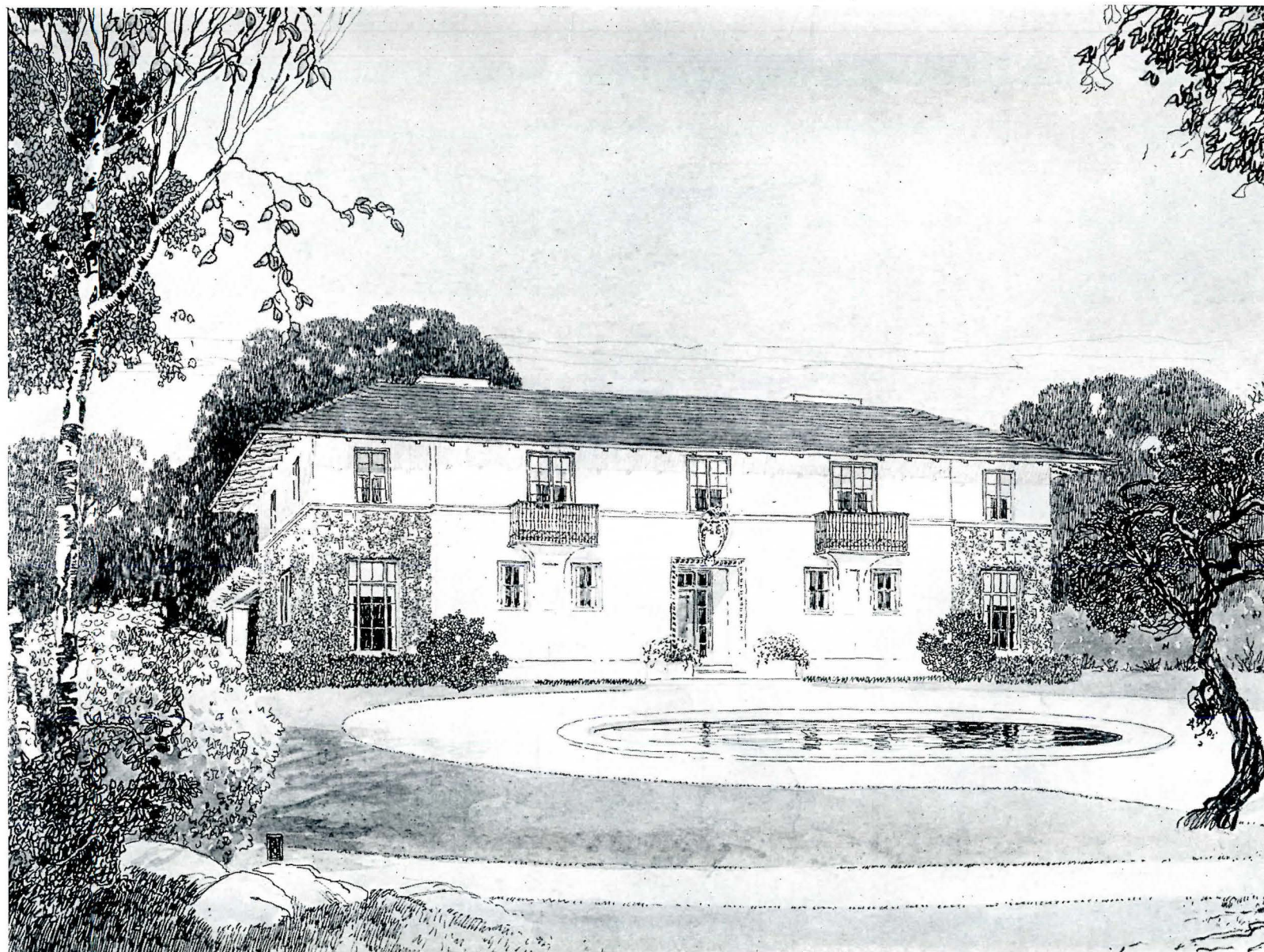
- A** is for Art. Work it in if you can,  
For remember a client cannot read a plan.  
(But explain every detail nevertheless.)
- B** is the building, as planned it's okay.  
When the contract is signed it will change every day.  
(Get paid for changes, *if possible*.)
- C** is the contract. Be sure it holds water  
So when we are through we've at least made a quarter.  
(Try for more.)
- D** is for dumb-bells, the clients and subs,  
But let them keep thinking that we are the dubs.  
(Perhaps we are.)
- E** Engineer, remember his name  
For when things are wrong he is always to blame.  
(A necessary evil.)
- F** the façade, be it brick, be it stone,  
Whatever we do it always has tone.  
(At least *we* think so.)
- G** generalities used if you must  
To smother unanswerable questions with dust.  
(Nothing personal meant.)
- H** for the Hell the architects get  
When the roof is quite tight but the walls are all wet.  
(Watch back up tile.)
- I** the ideas every architect has  
To design any structure—from classic to jazz.  
(This includes Moderne.)



GUY E. HECKLINGER, OF BALTIMORE, MARYLAND, SHOWS A SIMPLE WAY OF SAVING MONEY

- J** for the jobs we've already put through,  
Which proves to the client we can do his (him) too.  
(Promise anything.)
- K** is for Kohn, then there's Butler and Stein,  
And all the Associates right down the line.  
(See the door for other names.)
- L** for the letters you must keep on file  
For you'll find they are valuable after awhile.  
(If we can find them.)
- M** is the magic we often require  
To do a real job when the cost can't go higher.  
(Get a rich client.)
- N** for the notes which the client should sign.  
You will find them quite useful to keep him in line.  
(Especially on lettering of tablets.)
- O** is the owner, be he short, be he tall,  
Just make up your mind he will sure know it all.  
(So be very humble.)
- P** for the profit we should always make good,  
For though art may be fine it isn't fine food.  
(Or drink either.)
- Q** for the queer things that some people crave,  
A house like a temple, museum or cave.  
(Give them what they want.)
- R** for the rules of the great A.I.A.  
Which must be obeyed in a literal way.  
(Especially competitions.)
- S** for the stairs with headroom and such;  
May look good on the sketches, but get you in  
"Dutch."  
(Watch your steps.)
- T** for the trip, the cause of this rhyme.  
We hope there'll be others from time unto time.  
(Bon Voyage.)
- U** for the universe, our scope's only limit.  
We already have France, and now Belgium's in it.  
(Not forgetting the U. S. from coast to coast.)
- V** for the victory; the client is won.  
Then we have to work until the job's done.  
(We can do it, too; and how?)
- W** the wine for the toast you can shout  
To the bunch over here with their tongues hanging  
out.  
(Hail Prohibition.)
- X Y Z** always unknowns will be  
For the things that may happen we cannot  
foresee.  
(Au Revoir.)





FROM A DRAWING IN PEN AND INK AND WATER COLOR BY BIRCH BURDETTE LONG  
STUDY FOR A PROPOSED RESIDENCE IN SCARSDALE, NEW YORK—ALFRED FELLHEIMER, ARCHITECT



# LETTERS CONCERNING THE ARCHITECTS' SMALL HOUSE SERVICE BUREAU

*From William Stanley Parker, Architect, of Boston*

To the Editor of PENCIL POINTS

DEAR SIR:—

"I have been interested in the correspondence recently published in PENCIL POINTS about small house plans, with special regard to the references to The Architects' Small House Service Bureau as I am a Director of the New England Division.

"Any program of such scope makes inevitable some differences of individual opinions. It is therefore not surprising to read expressions of opposition to the Bureau's operations.

"The opposite minority is always more vociferous than the functioning majority, but it is well to ascertain their relative weights in giving consideration to such statements.

"For instance, you publish a letter from Mr. Gordon Allen of Boston. Mr. Allen's opposition to the Bureau is respected as a sincere opinion. It was fully stated at the time the Boston Chapter of the Institute officially approved the continuation of Institute endorsement of the Bureau in 1926. Thereafter the New England Division of the Bureau was organized and now has thirty of the Architectural firms in Boston as voting Stockholders.

"The weight of official and individual opinion in Boston is unmistakably in support of the Bureau. Many, in opposing the Bureau, seem to miss the point.

"The prospective home builder that has initiative enough to select a design and build his own house is a small percentage of the problem. It is safe to say that he does not represent much, if any, more than ten per cent. of this situation. The speculative builder, in his various manifestations, is the crux of the matter. But back of him stands the money-lending power of the Building and Loan Associations and Cooperative Banks.

"These banks are inclined, with some justice, to boast of their service to their communities in promoting home ownership, but it can truthfully be said that they are at the same time doing serious injury to their communities by making possible the construction of many small houses that never ought to be built.

"They control the money value. Anything that they will lend money on will be built. With this power they cannot escape the responsibility for the character of the houses that they are willing to finance. Some of their officers hold the opinion that they have no such responsibility, moral or otherwise. Nevertheless, others of them take an opposite viewpoint and are cooperating with the Bureau in an effort to improve conditions.

"Many houses ranging up to \$100,000 are now being speculatively built, but these larger types are a special problem. The more usual type involving stock plans is the small house of five or six rooms. It is with this type alone that the Bureau concerns itself, its plans being limited to houses of not more than six rooms, or 30,000 cu. ft.

"It is in this field particularly that the poorer type of speculative house builder is creating undesirable environments and destroying many sections of our communities. And this operator will continue to do his work as long as he can get the funds from his bank.

"All the written words in the world will never reach him. But constructive help will; and active organized contact with the lending agencies can bring about the

gradual adoption of minimum standards, both of design and construction, below which money will not be lent, because they can be shown that it is unsound financial policy to lend money on a poor design, poorly built and destined to rapid depreciation.

"The service of an architect for supervision is far more important to this type of house than individuality of design. The right placing of the house on the lot, the selection of the right design for the outlook and in relation to adjacent houses, and the right use of materials in the field, are vital matters to the man of small income who buys such a house. Members of the Bureau stand ready to serve and are serving clients of the Bureau in the adjustment of their plans to the client's particular problem, thus developing individuality in the result.

"Increasing opportunity for the development of the Bureau's influence on lending agencies, speculative builders and subdividers is evident to those familiar with its activity and the cooperation of all architects interested in its aims will be welcomed by the Bureau.

"Use of Bureau plans by architects developing a problem can permit adequate and more economical service of clients of very limited means and can permit service of many clients who otherwise would seek unwisely to secure a structure through other means.

"All architects interested in improving the character of the small American house should be interested to help the Bureau as it is the organized representative of the profession functioning for this sole purpose."

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*From Edwin H. Brown, President, New England Division, Architects' Small House Service Bureau.*

Mr. Russell F. Whitehead, Editor

DEAR MR. WHITEHEAD:

"Members of the various divisions of The Architects' Small House Service Bureau cannot fail to be interested in the letters printed in your August issue regarding stock plans.

"We are heartily in accord with the main complaint of your correspondents; namely, that small houses should be designed by architects. That is why the Small House Service Bureau was formed.

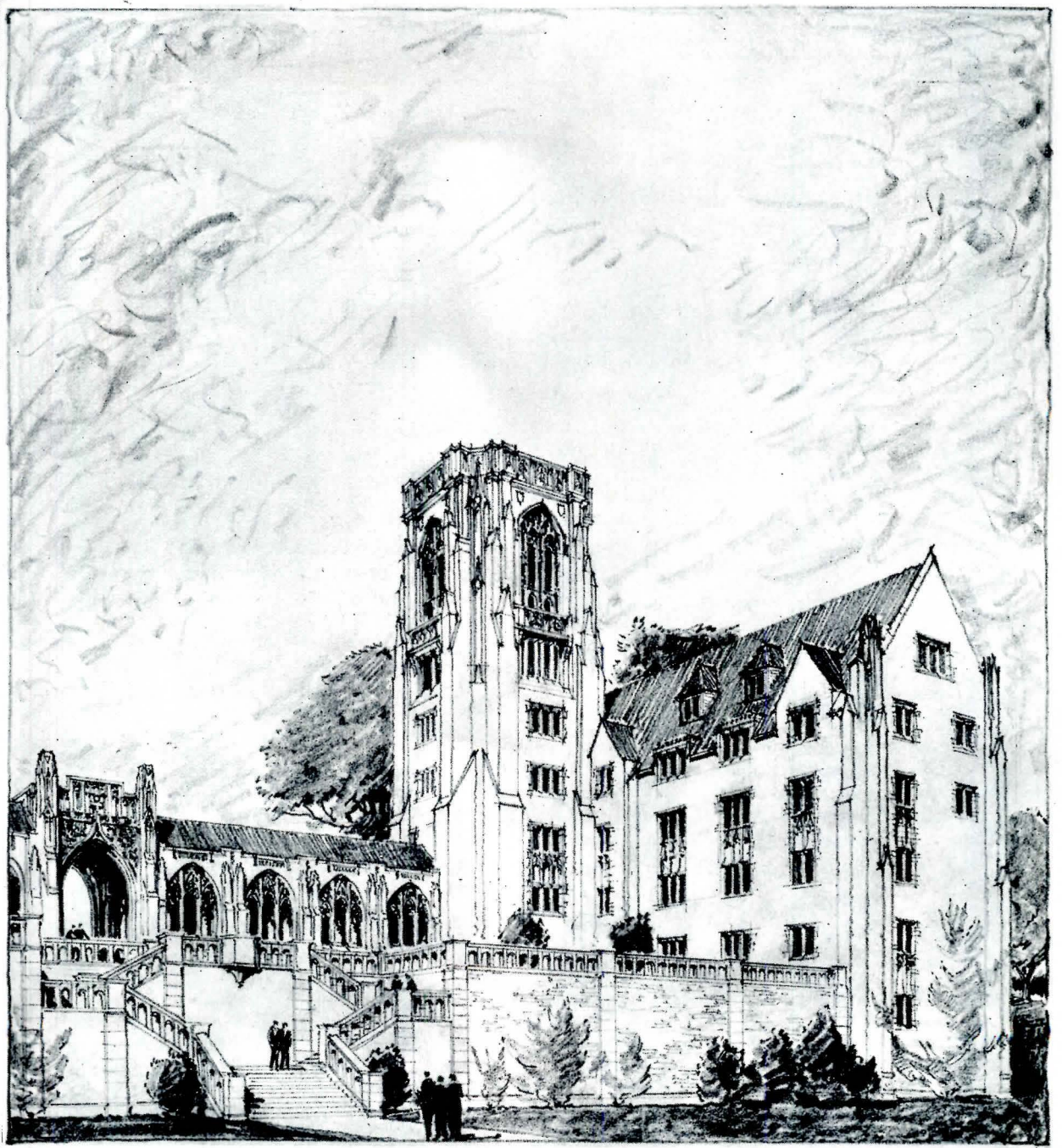
"We heartily endorse your editorial urge to all architects and groups of architects to emphasize, persistently, the fact that 'It pays to hire an architect.' The Bureau is a group of architects organized and functioning for the purpose of improving architecture, but architects have got to do much more than talk.

"It is manifestly impossible, outside of those centers of population that are large enough to make it possible for architects to exist therein, for any one to get a competent architect to design and supervise the construction of a small home.

"Long before the Small House Service Bureau appeared upon the scene stock plans were issued by magazines, by manufacturers of material, by national organizations of material men, and in many cases by architects; and the Bureau is merely a means to an end whereby such architectural service can be furnished by architects.

"The Bureau is the national effort of the architectural profession to urge the need of architectural service. Every document it issues emphasizes this, and its plans, an essen-





DRAWING BY CHARLES Z. KLAUDER SHOWING A VIEW OF THE WAR MEMORIAL GROUP AT CORNELL UNIVERSITY

*The original of the above will be in the joint exhibition of the Philadelphia Chapter, A.I.A., and the T Square Club, to be held next month in Philadelphia.*



tial construction weapon in the campaign, are made by architects.

"Material dealers are, we believe, coming to realize that their proper function is to sell materials, and that they should leave to the architectural profession the function of making their designs and the other elements of architectural service available to the public. In developing this tendency the Bureau has played no small part. So more power to your correspondents' pens, but let them look deeper into the subject than some seem to have done.

"Plans are but the instruments of service. Professional service for the small house builder, particularly for the speculative builder, is what is needed. To this end contacts must be established actively, not passively. He won't come to the architect unless the architect, singly or jointly, first comes to him and shows him how he can serve him.

"Individual architects cannot possibly do this. It involves a national educational program which can be carried on only by an organization designed and financed for the purpose.

"The Bureau has been doing this job for eight years, and has brought thousands of clients into contact with the profession who would not otherwise have made any such contact.

"The Bureau is a professional organization. It is not a profit-making organization, and furthermore, because of its organization and its relationship to The American Institute of Architects, it can never enter into the enlarged architectural commercial schemes which are apparently feared by some of your correspondents.

"In closing I would call your attention to the fact that the statement in the letter from the New Jersey Society of Architects, that there has been a 'partial withdrawal of The American Institute of Architects from its connection with The Architects' Small House Service Bureau' is incorrect. No change of relationship has occurred. You will appreciate that the circulation of such a misstatement is against the national interests of the Bureau, and I trust you will take steps to correct the impression such misstatement may have created in the minds of your readers.

"For your information the following is the authorized statement of The American Institute of Architects covering its relationship to 'The Architects' Small House Service Bureau:

"The Architects' Small House Service Bureau idea originated in and is approved by The American Institute of Architects, and in order that the development of the idea may retain the character of a professional service and be prevented from assuming the character of a purely commercial undertaking, the organization of the Bureau involves a certain control of its policies by the Institute.

"This control exists solely through the right of the Institute to appoint a majority of the Directors of the Bureau, such appointees being able thereby to impose policies consistent with the expressed wishes of the Institute.

"The approval of such policies does not carry with it any interest in or approval of any specific acts of the Bureau in the development of its operation, nor any financial interest or control whatever.

"The approval of the Bureau by the Institute means:

"(a) That it approves the idea only.

"(b) That it assumes no responsibility for the designs, plans, specifications or other service of the Bureau any more than it assumes responsibility for the service of individual members of the Institute.

"(c) That it assumes no responsibility for nor does it in any way presume to indorse any organization with which the Bureau may do business, nor any type or types of building construction or materials involved in houses designed by the Bureau.

"The Board looks upon an architect's work in a Bureau as primarily a contribution to the improvement of the small house architecture of this country, involving houses of not more than six primary rooms."

*From The American Institute of Architects; G. Herrick Hammond, President, Franklin Baldwin, Secretary.*

"The Executive Committee of The American Institute of Architects has been considering the discussion that has been raised in your pages regarding stock plans. It wishes to call to your attention an error in the statement in the August issue, made in the resolution submitted by the New Jersey Society of Architects, which states that there has been 'a partial withdrawal of The American Institute of Architects from its connection with The Architects' Small House Service Bureau.'

"This statement is incorrect and there has been no change in the relationship between The American Institute of Architects and The Architects' Small House Service Bureau. The last action taken by the Convention of the Institute was in May, 1927, which reads as follows:

"The organization and purpose of the Bureau have been explained to the Institute at six consecutive conventions. The Board of the Institute has carefully considered all phases of the Bureau and its relation to the Institute and to the profession, and believes that the plan of the Bureau, as operated, is such that it can bring no responsibility to the Institute other than the nomination of Directors to the Bureau Board who exercise a control of the policies of the Bureau.

"The Board of Directors reaffirms its endorsement of the Bureau and in so doing it is not overlooking the objections which have been stated in opposition to the Bureau, but firmly believes that the good the Bureau is doing in its contribution to a better type of small house far outweighs the objections.'

"The Executive Committee trusts that you will take steps to correct the false impression that such a misstatement may have created in the minds of your readers, and that you will make this matter clear to them. A copy of this letter has been sent to the New Jersey Society of Architects."

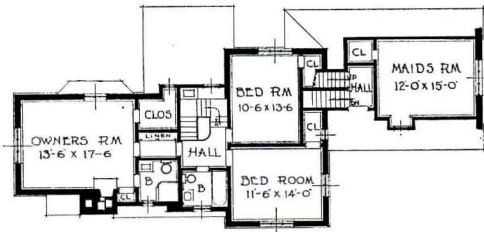


PEN AND INK SKETCH BY IVAN NATCHUK  
OLD PRISON AT WILLIAMSBURG, VA.





*First Floor Plan*



*Second Floor Plan*

RESIDENCE FOR MR. DWIGHT T. HERSEY  
ROYAL BARRY WILLS, ARCHITECT



# THE SPECIFICATION DESK

## *A Department for the Specification Writer*

### THE SPECIFYING OF HARDWARE

By David B. Emerson

IN THE WRITING of specifications one meets with various perplexing situations, and one of the most perplexing ones is the specifying of hardware. Of course the matter of specifying rough hardware is very quickly settled by saying "The Contractor shall furnish all rough hardware, such as nails, screws, bolts, etc., including all sash pulleys, weights and chains." All very good as far as it goes, but there will be less likelihood of a come-back if sash pulleys, weights and chains are more specifically described. Specify that pulleys shall have cast iron cases, either roller-bearing or ball-bearing, cast brass or cast bronze, turned wheels, grooved for chain or for cord as may be desired, and bronze metal faces, and you can then feel assured that you will get about as good as the market offers. If a cheaper grade of pulley is desired, turned cast iron wheels can be specified and, in a large building, quite a saving can be effected.

A very important item to remember in specifying sash pulleys is to call for a large enough wheel, so that the chain or cord will hang over the center of the weight, thereby avoiding the unpleasant dragging of the weight on the back of the pulley stile; two and one-half inches is the proper size for an inch and one-eighth pulley stile. If there chances to be any narrow mullions or other unusual window conditions on the job, call for overhead pulleys, and select the types needed from the manufacturer's catalogue. It is the general practice to specify sash weights merely as cast iron, but for better class work it is well to specify sectional cast iron weights, and you will get much better results, and in all cases put in a provision "that where extra heavy sash occur, compressed lead weights shall be used."

Chain should be specified to be of "phosphor bronze," if the best is desired, "red bronze" if a high grade chain is desired but where some economy has to be practiced, and "galvanized" or "coppered" for a cheaper grade of work.

The question of rough hardware has been practically covered, except to caution the reader that when writing specifications for buildings to be built at the seashore or very near to the sea, call for all nails and spikes to be galvanized, except those used on interior finish, where it will not be necessary.

The real problem in the specifying of hardware is that of specifying the finishing hardware. There are several methods of doing this; each method has its advocates, and all have their merits. The most general method of specifying hardware is by a cash allowance, usually based on an estimate made by a hardware dealer, and sometimes made by taking the allowance for a similar building, and either adding on a little to cover possible contingencies, or taking off a little on the assumption that a little cheaper hardware than was used on the other building will do for the building for which the allowance is being made.

This method works very well, except that the ultimate selection of the hardware is up to the architect, the specification writer, or some one else in the office, and the lists have to be checked and compared with the manufacturer's catalogues, so that the final result is practically the same as if the hardware had been completely specified in the beginning. Another method frequently used is to get a hardware dealer to prepare a complete list of all the hardware in the building, drawn up in regular trade terminology, and then have that list copied into the specification. Still another method which I have encountered is to list each and every door in the building and describe the hardware on each door, and then add all the odd hardware such as windows, cabinets, etc., to this.

Now both of these two methods are all right in their way, but they both savor of quantity surveying, and unless he is to be remunerated for that particular service an architect should not be expected to schedule the quantities of any materials to be used on the building, the onus should be with the contractor. The method of specifying hardware which I regard as the most logical, is that of specifying the various items of hardware to be used in the different parts of the building, calling for locks, butts, bolts and all other hardware by type, and letting the contractor make up his own quantities from that specification.

Now let me say for the benefit of the reader, that I may appear to be overzealous on the question of specifying hardware, and to any one whose entire experience has been in offices which do nothing but private work in a large city and which have nothing but hand picked bidders, my contentions may appear to be quite ridiculous. Very true, but in those offices where public work—either city, county, state or national—is being done, and any contractor who can make bond may bid, and no careful selection of sub-contractors is possible, or in an office which is located in one city and is doing work a thousand and more miles away and has as a matter of policy to patronize the local industries, those contentions will be recognized as being more or less correct.

I will now explain more fully the method of specifying hardware which I have just described. The first item to be called for in the specifications is *Metals and Finishes*. For high class work nothing but cast and wrought bronze, or brass, should be used, except for special painted finishes where wrought steel or malleable iron may be used. If a certain amount of economy is desired plated wrought steel butts may be used on interior doors, but under no condition should anything but solid bronze or brass hardware be used on exterior doors, as plated hardware will rust and stain the woodwork. There are many finishes both on solid and plated metals listed by the hardware manufacturers, from which selections may be made, but it must always be remembered that all of them are surface treatments, and will wear off in time.



For very high class work gold plated hardware is frequently used. For bathrooms and toilet rooms all hardware should be nickel plated or chromium plated, chromium plate being much the better of the two as it never tarnishes nor corrodes and because of its hardness the plating will last as long as the metal itself. After specifying the various metals and finishes, the locks, butts, bolts and all other hardware should be specified, taking up each article separately and describing all the various types required throughout the building. The best way to specify hardware by type is to begin with the most important item, which is locks, and to start with the entrance doors, then the more important interior doors; finish up with the various odd items which have locks of different types, and therefore must be noted in the specifications.

In specifying locks, begin by calling for either mortise or rim locks, then either for cylinder or bit key, the number of bolts and their operation. Except where a particular artistic effect is desired, rim locks are never used except on very cheap work, when the very cheapest type are used. For entrance doors cylinder locks are almost universally used, being very hard to tamper with and the key taking up much less room in a person's pocket than a bit key. The description of a typical cylinder lock which is frequently used for entrance doors on residential work is as follows, and will illustrate fairly well how a lock should be specified. It is a mortise cylinder, knob lock, with japanned cast iron case 6" x 3 $\frac{3}{4}$ " x 13/16", with two bronze bolts; the latch bolt is operated by knobs or lever handles from both sides, the outer knob may be set by stop in face, when the outer knob is stopped, the latch bolt is operated by key from the outside; dead bolt is operated by key from the outside and thumb-turn from the inside. In addition to the above, front should be specified to be flat, rabbetted or armored as may be desired, the rabbetted front is used only with double doors with rabbetted meeting stiles, and the armored front prevents tampering with the latch bolt from the outside when stop is set. The backset, that is the distance from the face of lock to the center of the knob shank, should be called for, the lock just described has three, 2", 2 $\frac{1}{4}$ ", and 2 $\frac{1}{2}$ ", and the width of the stile should determine whether the longest or the shortest backset is wanted. It is generally regarded as good practice to have the knob center on the stile when the door is closed.

In specifying locks, the knobs, roses and escutcheons should be called for, but unless plate escutcheons, on which the knob and cylinder are mounted, are to be used, no escutcheons will be required for cylinder locks, but a cylinder ring should be called for if plate escutcheons are not used. In specifying locks of any kind, unless every cent that can be saved on the job must be saved, special spindles such as the "Simplex" should be specified. This type has the knobs fastened to a threaded spindle by means of side knob screws, and when the knobs are screwed up in position, the screws are set in groove in spindle, and the shanks rest on turned thimbles preventing the looseness common with regular spindles. Another type is the "Screwless" which has the outside knob fastened to the spindle with a pin which is held in place and concealed by the thimble when in use, and the inside knob has an adjustable shank which is set up by means of a special wrench giving it an accurate adjustment; the knobs rest on turned thimbles and are so made that there is no lost play in them. The use of either of these types of spindle reduces to a minimum the liability of the knobs rattling or becoming loose.

Bit key locks should be specified to have japanned

cast iron cases and three tumblers. For interior doors in residences and apartments, bit key locks are almost universally used, and they are the standard lock for all purposes where the question of cost makes the cylinder lock prohibitive. For very cheap work a one-tumbler lock, with pressed steel case may be used, but it is a poor form of economy; better use a good grade of hardware and save on something else which has no moving parts to get out of order. In addition to the foregoing general requirements for locks, there are numerous special conditions that have to be considered, chief among which is that of master keying.

In all large buildings this is absolutely necessary. In an office building of the usual type all that is required is the "individual" key which controls the lock on one door only, and is used by the tenant; the "floor master" keys which control the locks on one floor only, and are used by the cleaners; and the "grand master" key which is used by the superintendent of the building, and controls the locks in the entire building.

One of the most complicated systems of master keying is the typical hotel system which has the "guest" key which only controls the lock to which it is fitted, and is used by the guest; the "master or maid's" key which controls the locks on one group of rooms or on an entire floor, and is used by the chambermaids; the "grand master" key which controls a group of master key locks and is used by the housekeeper or the assistant housekeepers, depending upon the size of the hotel; the "display" key which is a special guests' key used in commercial hotels, where valuable samples are kept in the rooms by travelling salesmen or on regular sample rooms in commercial hotels, this key renders inoperative all keys, except the "emergency" key which will operate any lock in the entire system even if the dead bolt is thrown from the inside or the guests' key remains in the lock, this key is generally kept in the office, and is used in cases of serious illness or death of a guest or in case of an accidental lock-in which sometimes occurs.

Another special condition which has to be met is the locks on the fire stairway doors in large buildings which should be set to operate at all times by the knob from the room side, but be inoperative from the stair side except by key; and the stop work should be set by key, so that any unauthorized person going out through the door could not set the stops so as to return the same way. All locks for fire doors should be specified to have three-quarter inch throw, to comply with the underwriters' regulations.

Doors with very narrow stiles such as the so-called "French doors" should have special locks with short backsets, not more than one inch and a two-inch case. Always specify that such doors shall have lever handles, because if knobs are used, a person is very liable to bruise his or her knuckles in opening the door, due to the insufficient clearance between the door and the jamb. Where lever handles are used the locks should be equipped with a special spring on the latch bolt, called a "gun spring" by some manufacturers, and a "French spring" by others. This spring keeps the lever handles in proper position. Bathroom doors should have locks with latch bolt operated by knobs from both sides at all times, and a dead bolt operated by thumb turn from the inside. In hotels the lock should have an emergency key to operate the dead bolt from the outside in case of death of or accident to the occupant. The emergency key is sometimes useful in private house bathrooms, as young children frequently lock themselves in the bathroom by turning the thumb knob, and are unable to unlock the door. The result is that *paterfamilias* has to get a ladder, climb up to the bathroom window, get in and unlock the door, all of which could



have been avoided if the lock with an emergency key had been installed when the house was built.

In addition to the more or less regular types of locks a number of extra special types of locks are on the market, each of which has its use and fills some place in the varied needs of a building. Secret doors located in panelling, wainscots and similar locations should have concealed locks, so that no hardware will be visible on the outside of the door. There are several varieties of locks of that type on the market. The method of application and operation of two of the makes are practically the same; in both makes the lock is mounted on the inside of the jamb and the strike is on the door, the door is pushed to, the latch automatically engages the strike and the door is locked; a push on the locked door unlocks it, and a spring in the lock pushes the door open and clear of the jamb, so that it will not relock. One of these two manufacturers makes a concealed lock which has a flat key which is pushed in between the door and the jamb and locks the door so that it can not be opened without the key. Another type of secret door lock is applied to the jamb and latches in the same manner as any spring latch. It is released by pressing a push button made flush with the woodwork and a push out spring throws the door out and clear of the jamb the same as with the other two locks.

A new type of cylinder lock has come on the market of late years and has had quite a vogue, due to the crime wave which has been sweeping over the country for the past few years. It is the so-called "jimmy proof" lock. There are two types of this lock: one has an interlocking front and strike, and vertical acting bolts, and the other has tee ended bolts which revolve in the strike and engage with the slot; this lock also has hardened bolt cores which make it impossible to saw the bolts. Both of the locks are quite impossible to jimmy, but we must always remember that no lock is stronger than the door it is mounted on. The main advantage of both these locks is that they are absolutely proof against the sneak thief and the amateur cracksman. In writing the specifications for locks to be used in first class work, one should always call for box strikes, for by their use all raw wood which is exposed by cutting out for the strikes is covered, making a much more finished-looking job. It is also good practice to call for protected strikes as the lip on the strike prevents the retracting of the latch bolt. As a final injunction on the specifying of locks, never call for "Yale locks"; that means nothing, but infers that you wish a cylinder lock. The Yale and Towne Company manufacture all kinds and varieties of locks from the cheapest to the highest priced, and at least ten different companies manufacture pin tumbler cylinder locks. Therefore call for cylinder locks which are what you want.

After locks the next most important item to specify is butts, and the same sequence as was suggested for specifying locks should be followed.

The first consideration in specifying butts is to determine the proper size butt for the various types of doors. This is quite simple; take the thickness of the door, subtract one-quarter of an inch, add the thickness of the trim and the result is one-half the size butt, or very nearly—for example a  $1\frac{3}{4}$  inch door with a  $1\frac{3}{8}$  trim will require a 5" x 5" butt. For all except the very lightest doors, three butts, or one and one-half pairs as it is usually called, to a door should be specified. For entrance doors and large interior doors in public or semipublic buildings, ball bearing butts should be specified as they operate easier and do not wear down as quickly as the plain butts. For heavy entrance doors, top and bottom pivots are in most cases better than butts, as the load is applied more

directly and they also have an up and down adjustment to take up any sag in the door.

If it is desired that the entrance doors in public or semipublic buildings shall be self closing, it is best to specify floor checks, either single or double acting as may be required. For interior doors in dwellings and apartment houses, loose pin butts should generally be specified, and, also, the pins should be specified to be either ball tipped, steeple tipped, or button tipped, as may be desired.

If the butts are to be painted in with the woodwork, they should be specified to have cut-outs for painting so that the paint will not be scraped off the knuckles when the doors are opened and closed. Primed butts ready for the finished painting may be had at a slight advance in price over the unpainted and hold the paint much better. Where something more distinctive looking than the usual loose pin butt is desired, an olive knuckle butt may be specified. This is a very attractive looking butt, and can be obtained in bronze or brass, plain or plated or in malleable iron for painting in with the woodwork.

For patients' rooms and wards in hospitals and for bedrooms in high class hotels, friction hinges should be specified. These hinges will control the swing of the doors and positively prevent slamming. Doors hung on these hinges may be opened to any angle and will remain so in spite of drafts, and may be closed or opened with very little effort. Kalamein doors should always be hung on special type butts, where the jambs are of Kalamein or hollow steel a half surface butt should be specified, and where structural steel channel bucks are used full surface butts should be called for. The butts should be secured to the doors with machine screws with grommet nuts. These half surface and surface butts can be had in wrought bronze or wrought steel, but where it is necessary to comply with the Underwriters' rules steel butts must be used, as bronze butts have no rating.

Butts for hollow metal doors, iron gates, structural steel and hollow metal bucks and jambs should be specified to be made to template.

Secret doors require, in addition to the secret locks, invisible hinges, and there is at least one excellent type of invisible hinge on the market, which is mortised into the jamb and into the door, is absolutely concealed when the door is closed and has sufficient throw to clear any ordinary trim or panel moulding. These hinges can be had in various sizes, small enough for a door  $\frac{7}{8}$ " thick and large enough for the heaviest door which would be used on any ordinary building.

In specifying butts for hinged transoms always call for fast joint butts, as the pins in loose pin butts set in a horizontal position are liable to work out and allow the transom to fall.

Having specified locks and butts the next item in specifying hardware for doors is bolts. Double doors, either entrance or interior, require top and bottom bolts on the fixed leaf. The two most common types of top and bottom bolts are "flush bolts" and "surface bolts." Flush bolts are applied to the edge of the door, and have a flush faceplate with the bolt and its operating mechanism behind the plate and a sunken handle on the face of plate. Surface bolts are mounted on the face of the door stile. The only advantage that I know of the flush bolt over the surface bolt is that when the fixed leaf of the door is bolted, and the active leaf is deadlocked from the inside, a person can not throw the bolts on the fixed leaf and open the doors.

Top bolts are made in various lengths to suit the height of doors, and in specifying them, they should always be



FIRST FLOOR PLAN OF BATH HOUSE NO. 1, JONES BEACH, LONG ISLAND  
W. EARLE ANDREWS, ARCHITECT AND ENGINEER  
(See elevations on page 662, September issue)



specified long enough so that the handle will be in easy reach from the floor by persons of medium height, that is not over six feet to six feet and two inches. A very good type of surface bolt which can be used on doors and is the accepted standard for wood casements is the Cremorne bolt, which is a continuous flush bolt with the operating gear located at convenient hand height and controlled by a knob, tee handle, or lever handle. For double doors in warehouses, garages and buildings of a similar character, a heavy wrought steel Cremorne bolt is now being made. Espagnolettes are also used for fastening casements, more particularly in France. They differ from the Cremorne bolt in that they have a cam-like hook on the top and bottom of the bolt which engages the strikes on the floor and head of casement and draw it tight, which prevents rattling and renders it more weather-tight.

The exit doors in all places of public assemblage, school houses, and the main exit doors at the foot of all fire stair towers in all buildings, should be specified to have panic exit bolts. There are several different types on the market, all of which work thoroughly well, but in my opinion the most efficient ones are those which have the bar extending across the entire width of the door. For fire exits, and doors not to be used for entrance purposes at all, it is best to have no hardware on the outside of the door, and to depend entirely upon the panic bolt to lock the door from the inside. It is well where panic exit bolts are to be used for the specification writer to keep in touch with the drafting room and to see that the exit doors are drawn with a rail at the proper height for the bar to come on it, and not, as I discovered once on a school house, that a high grade designer had drawn a door with a glass panel coming within about sixteen inches of the floor. He had never seen nor heard of a panic exit bolt, that was all.

In private house work, especially country houses, it is a very good practice to specify mortise bolts with thumb turns on entrance doors and all bedroom doors, as it gives the householder a feeling of extra security. This is particularly true in the case of bedroom doors, as a burglar may get in on the ground floor, or he may climb a porch, but if the bedroom doors are bolted from the inside he cannot get in without breaking in the door, which is not very likely to happen.

In specifying top and bottom bolts or Cremorne bolts on doors or French casements, always call for dustproof strikes at the floor; they look better when the door is open and they do not get filled up with dirt.

After considering the main items of door hardware we will now take up the minor items, which should never be omitted from the specifications, that is door stops, door closers, door holders and push bars, all of which are necessary to the comfort and satisfaction of the occupants of the building.

Door stops are made in two general types, floor stops and base stops. The former are screwed to the floor at any desired point, and have a rubber bumper to prevent marring the surface of the door; one pattern has a hold-back hook which fastens to the door, and makes it not only a stop but a holder. Base stops are screwed to the base board and have rubber bumpers the same as the floor stop; there is also one pattern which has a hold-back hook. As a general rule I think it best never to specify a floor stop when a base stop will serve the purpose, but in some cases the floor stop is necessary due to the location of plumbing fixtures, radiators, wardrobes or other fittings. Door stops are made in wood, cast iron, and plated and cast bronze. Wood door stops should never be used except in the very

cheapest class of work; they belong in about the same category as the lava knob with the iron shank. In specifying cast iron or cast bronze stops always call for screw pattern for wood base and expansion shields for cement or terrazzo base. A special type of stop and holder is made for exterior doors which are equipped with panic exit bolts, and should always be included in writing the specification.

Door closers, also called door checks by some manufacturers, should be liberally specified for all public and semipublic buildings. Every office door and toilet room door in an office building should have one and they are indispensable for doors to fire exits. The most common type is the liquid closer which has been on the market for upwards of fifty years, and is "still going strong." They are manufactured by at least a half dozen companies. They are usually screwed to the top of the door, and the end of the closing arm is screwed to the casing. For outside doors which swing out it is always best to specify a corner bracket to which the closer is screwed and the closing arm is then screwed to the door. This serves to protect the closer from the weather. Where for any reason, such as the bringing in of merchandise, cleaning, or ventilation, is desired, specify holder arms with the closers, and for automatic fire doors a fusible link holder arm should be specified.

A comparatively new type of door closer is at present on the market and it has given satisfaction where it has been used. This closer is mortised into the jamb and into the hinge stile of the door, and is absolutely concealed when the door is closed, and only a cable, a chain and two flush plates, one on the door and one on the jamb, show when the door is opened. A little judgment must be used in specifying this closer as it is not rugged enough to use on heavy exterior doors and, as the Underwriters give it no rating, it can not be used on fire doors. However, for light interior doors it is an excellent attachment.

There are two different and distinct types of door holders. One for entrance doors to public and semipublic buildings is attached to the top rail of the door, and to the head of the door frame, and works with an elbow action, and has curved spring arms which absorb the shock when the door is opened; it holds the door open automatically and is released with a slight pull. The other holder is the foot bolt type and is attached to the bottom rail of the door and is fitted with a rubber pad on the bottom of the foot bolt, which has a spring action and can be pushed down with the foot and released in the same manner. This type of holder should be specified for interior doors in public and semipublic buildings.

Push bars should always be specified for doors in public and semipublic buildings which have large glazed panels, and double swing doors should be specified to have them on both sides of the door.

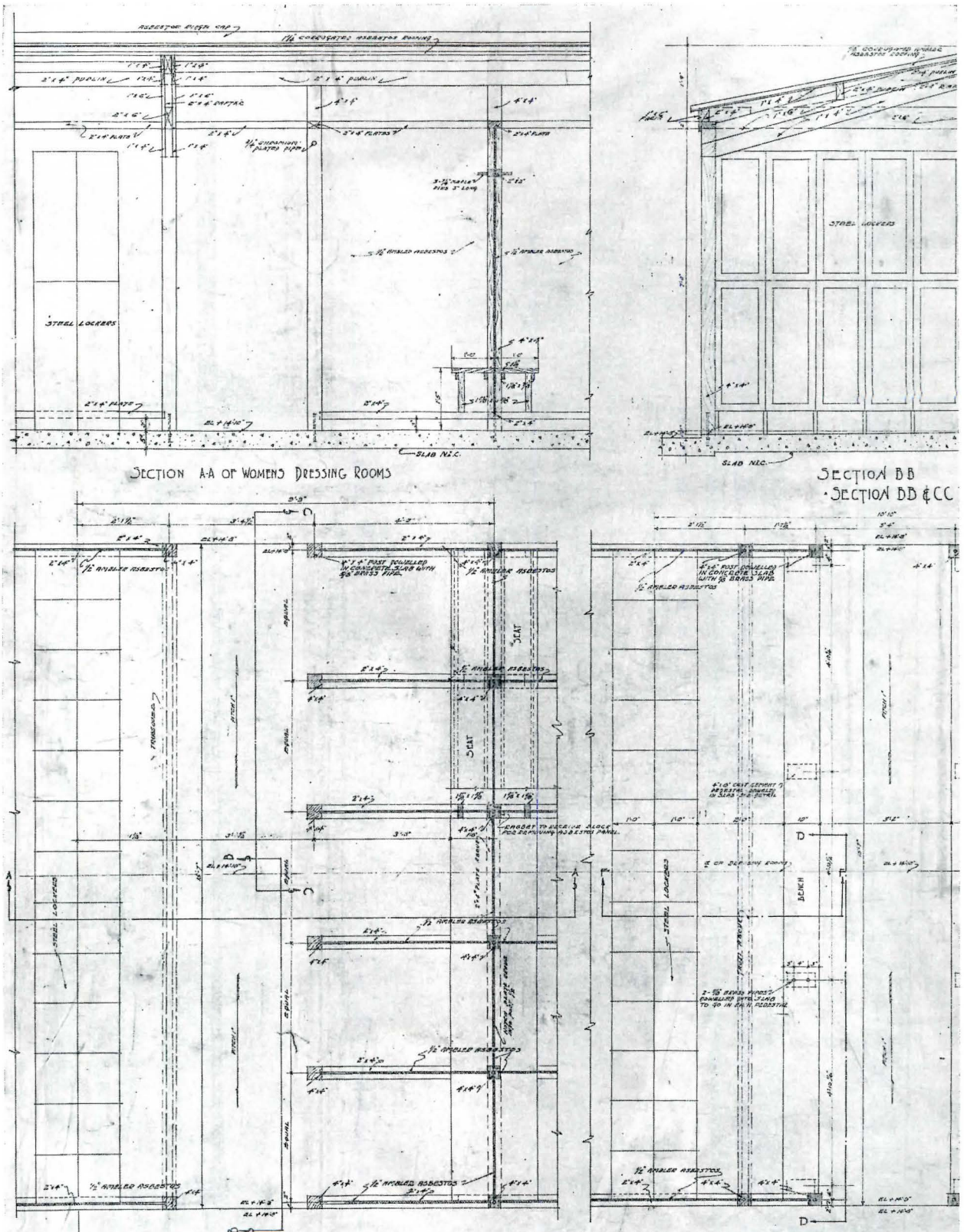
After door hardware the next item to specify is window hardware, which is a rather simple matter. In the average building we only have double hung, casement and pivoted windows—at the most—which require hardware. All hardware for steel windows is furnished and applied by the manufacturers.

Double hung sash should be specified to have sash fasts, sash lifts, pulls and pole sockets. One of the best types of sash fasts is the so-called "Fitch" fastener, which is now made by all the large hardware manufacturers; this fastener works with a cam action and draws the meeting rails together and positively can not be unlocked except from the inside. About the only point to be considered is to select a fastener which is large enough; for 1 3/4" sash they should be at least 1 1/4" x 3 1/4". Each sash should

*(Continued on page 90, Advertising Section)*

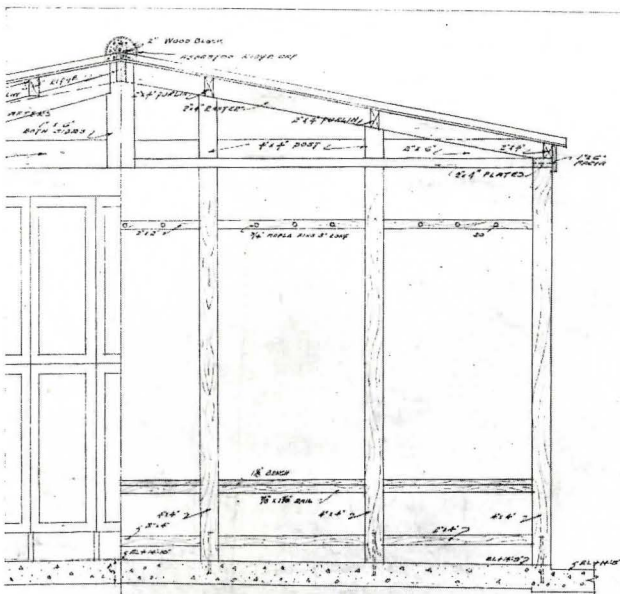


# PENCIL POINTS

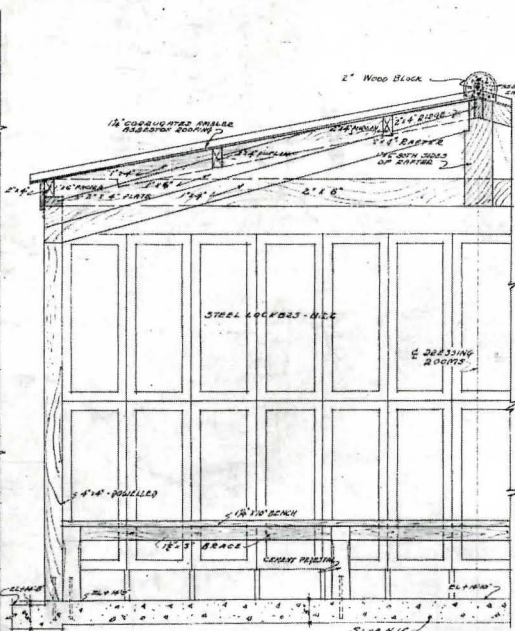
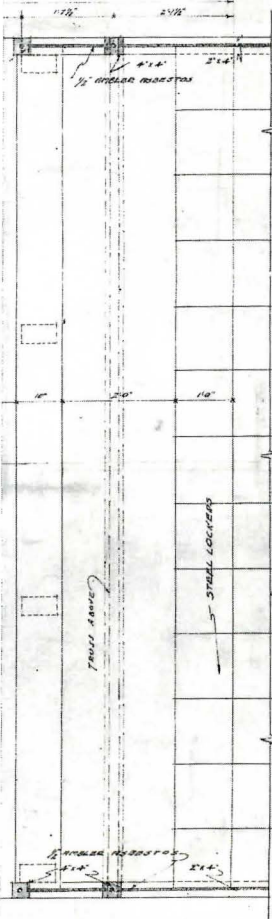


DETAILS OF CONSTRUCTION—DRESSING ROOMS FOR BATH HOUSE NO. 1, JONES BEACH, LONG ISLAND  
W. EARLE ANDREWS, ARCHITECT AND ENGINEER

# PENCIL POINTS

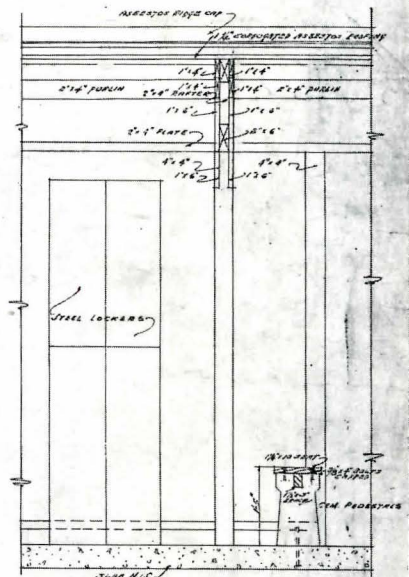


SECTION CC  
C THRU WOMENS DRESSING ROOMS.



HALF SECTION DD MEAS DRESSING ROOMS.

NOTE  
PARTITION LOCKERS & DOWELS NOT INCLUDED IN  
THIS CONTRACT  
DOWELS INDICATED ON THIS DRAWING  
NOT INCLUDED IN CONTRACT #1  
CONTRACT #1 INCLUDED ALL  
CONCRETE SHOWN ON THIS SHEET



HALF SECTION FF MEAS DRESSING ROOMS

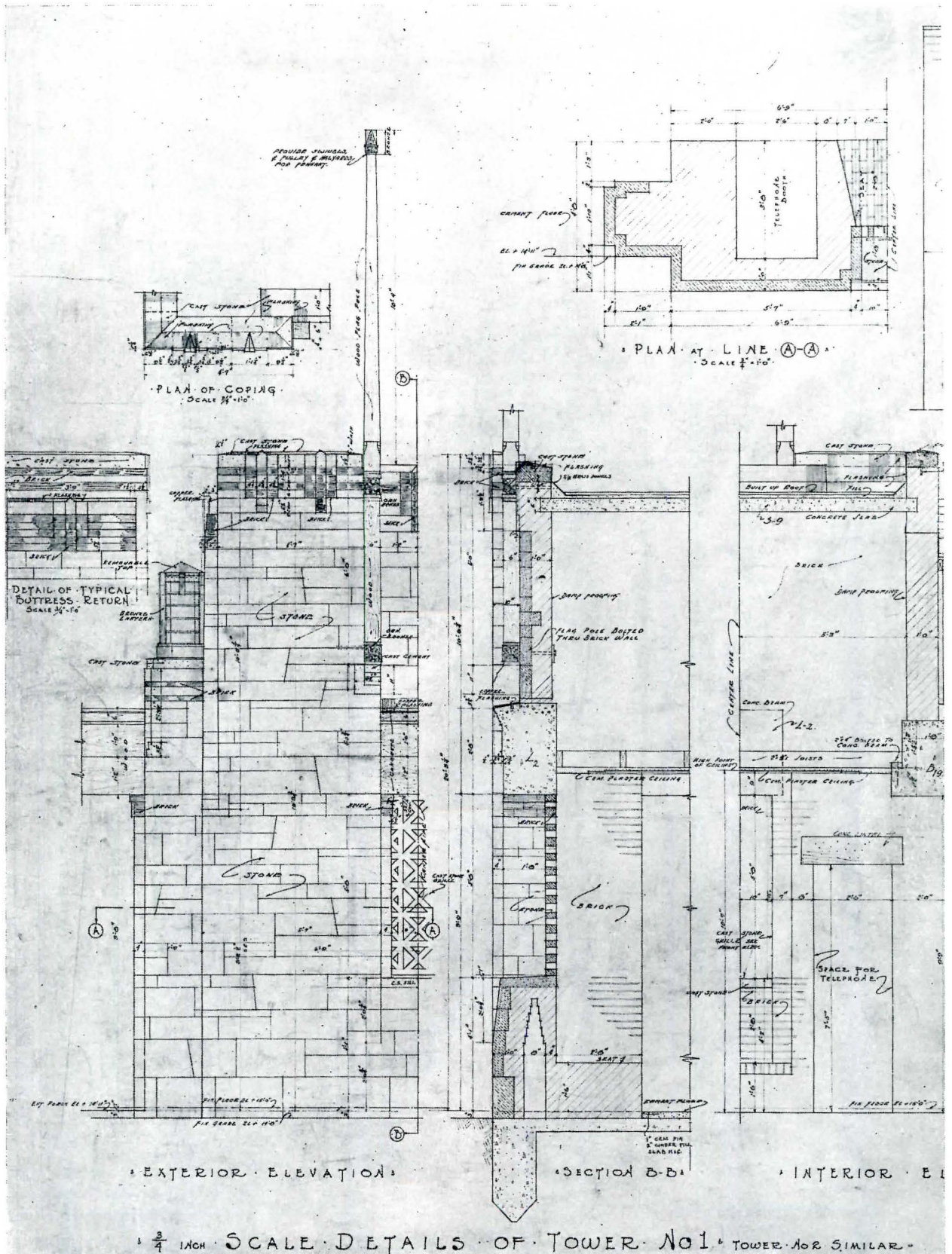
KEY TO MATERIAL	
CONCRETE	
ANGLER, ANGLE, ANGLE	
WOOD	

BATH HOUSE NO. 1	
JONES BEACH	CONTRACT NO. 1
LONG ISLAND	
DESIGNED BY H. C. MCGRAW	TITLE TYPICAL PLANS SECTIONS AND DETAILS OF MEN
DRAWN BY C. F. SMITH	DRAWING NO. 5

DETAILS OF CONSTRUCTION—DRESSING ROOMS FOR BATH HOUSE NO. 1, JONES BEACH, LONG ISLAND  
W. EARLE ANDREWS, ARCHITECT AND ENGINEER



# PENCIL POINTS



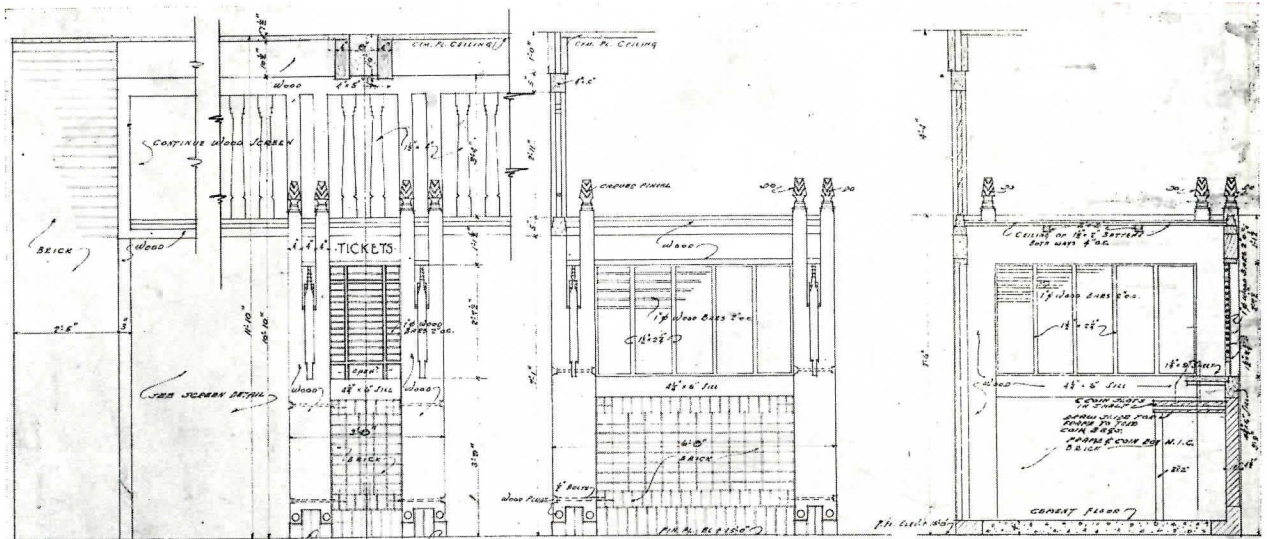
DETAILS OF CONSTRUCTION—TOWER OF BATH HOUSE NO. 1, JONES BEACH, LONG ISLAND

W. EARLE ANDREWS, ARCHITECT AND ENGINEER

(See page 662, September issue, for elevations)

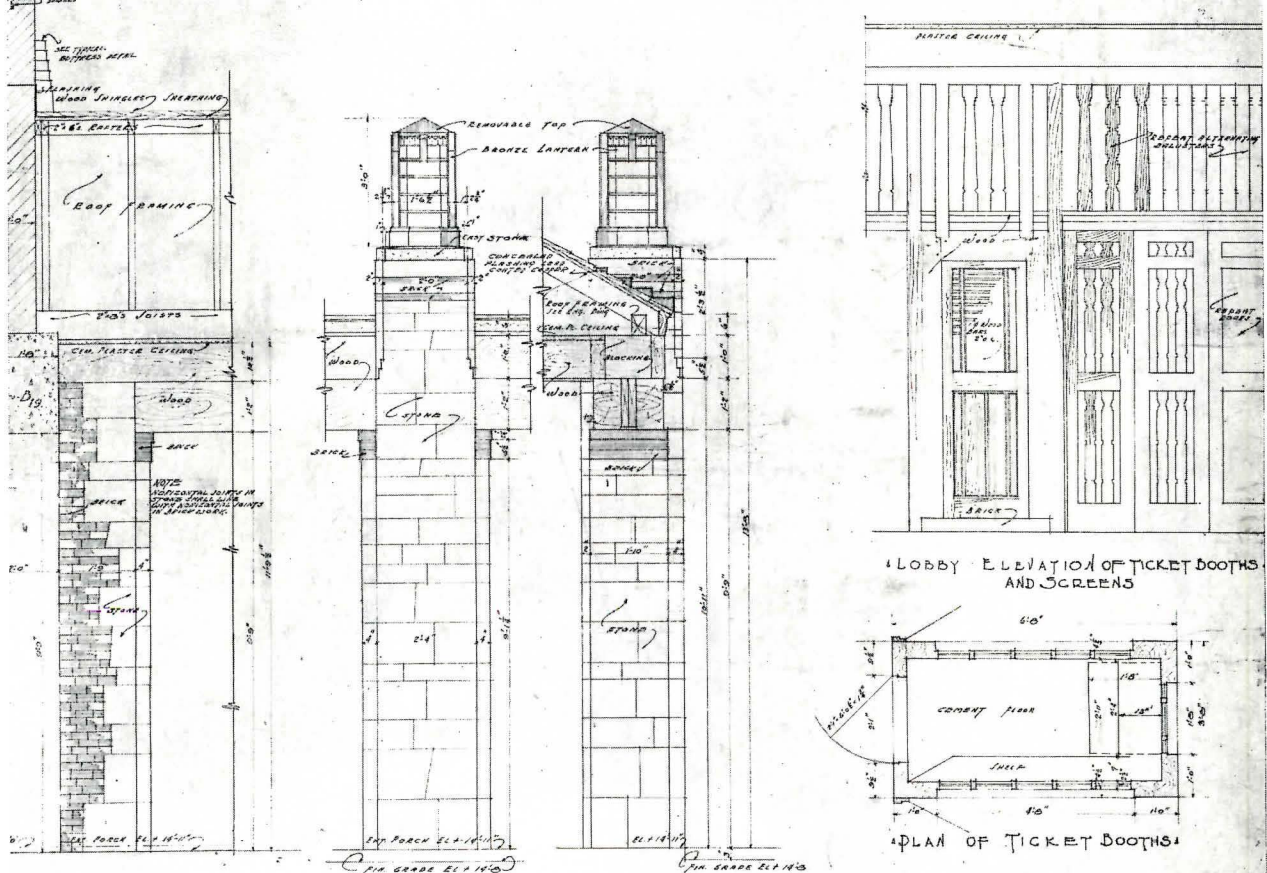


# PENCIL POINTS



ELEVATION SIDE ELEVATION SECTION

3/4 INCH SCALE DETAILS OF TYPICAL TICKET BOOTHS.



ELEVATION SECTION  
3/4 INCH DETAIL OF TYPICAL ENTRANCE PORCH PIER & BRONZE LANTERN

BATH HOUSE	No 1
JONES BEACH	CONTRACT NO 1
DESIGNED BY	LONG ISLAND
TITLE	TOWER
DRAWING NO.	

ENTRANCE PORCH PIER AND TYPICAL TICKET BOOTHS, BATH HOUSE NO. 1, JONES BEACH, LONG ISLAND  
W. EARLE ANDREWS, ARCHITECT AND ENGINEER





# SERVICE DEPARTMENTS

**THE MART.** In this department we will print, free of charge, notices from readers (dealers excepted) having for sale, or desiring to purchase books, drawing instruments and other property pertaining directly to the profession or business in which most of us are engaged. Such notices will be inserted in one issue only, but there is no limit to the number of different notices pertaining to different things which any subscriber may insert.

**PERSONAL NOTICES.** Announcements concerning the opening of new offices for the practice of architecture, changes in architectural firms, changes of address and items of personal interest will be printed under this heading free of charge.

**QUERIES AND ANSWERS.** In this department we shall undertake to answer to the best of our ability all questions from our subscribers concerning the problems of the drafting room, broadly considered. Questions of design, construction, or anything else which may arise in the daily work of an architect or a draftsman, are solicited. Where such questions are of broad interest, the answers will be published in the paper. Others will be answered promptly by letter.

**FREE EMPLOYMENT SERVICE.** In this department we shall continue to print, free of charge, notices from architects or others requiring designers, draftsmen, specification writers, or superintendents, as well as from those seeking similar positions. Such notices will also be posted on the job bulletin board at our main office, which is accessible to all.

**SPECIAL NOTICE TO ARCHITECTS LOCATED OUTSIDE OF THE UNITED STATES:** Should you be interested in any building material or equipment manufactured in America, we will gladly procure and send, without charge, any information you may desire concerning it.

*Notices submitted for publication in these Service Departments must reach us before the tenth of each month if they are to be inserted in the next issue. Address all communications to 419 Fourth Avenue, New York, N. Y.*

## THE MART

Joseph Schumann, 284 Lincoln Avenue, Brooklyn, New York, has a copy of *An Introduction to the Study of Landscape Design*, by Henry V. Hubbard and Theodore Kimball, which is new; and four volumes of Audel's *Plumbers' and Steamfitters' Guide*, slightly used. He will exchange these for Knobloch's *Good Practice in Construction*, Parts I and II, new or used.

H. T. Little, Wauchula, Florida, wishes to sell the following: *White Pine Series*, Nos. 4 and 5, Vol. IV; all of Vols. VI, VII, VIII, IX and X; No. 1 of Vol. XI; No. 6 of Vol. XIV—all at 25¢ each. Also two years' *American Architect*, two years' *The Nation's Schools*, four years' *Southern Architect*, at 15¢ each copy, in unbroken lots, f. o. b. carrier.

H. L. Holman, Jr., 700 Protective Life Bldg., Birmingham, Ala., would like to secure the following issues of *The Architectural Record*: December, 1925; February, May, June, and July, 1926. Please quote prices.

Oman & Lilienthal, 1410 Tribune Tower, Chicago, Ill., would like to have one copy each of the July, August, September, and October, 1928, issues of PENCIL POINTS.

Robert B. Bloomgarten, 307 Philtower Bldg., Tulsa, Oklahoma, wishes to purchase the August and December, 1927, numbers of *The Architect*.

Goldwin Goldsmith, University of Texas, Austin, Texas, will exchange June, October, and December, 1920, PENCIL POINTS, for September and November, 1920, or will buy copies.

Office and equipment for sale: due to a business offer elsewhere that cannot be denied an architectural office established more than 20 years and doing good volume of business can be secured for price of equipment, including tracings and records of past work. Illinois location, 90 miles from Chicago, only office in thriving city of 20,000. Address I. LaC, Statistical Dept., PENCIL POINTS PRESS, 419 Fourth Avenue, New York, N. Y.

Mr. Archie T. Butts, c/o Y. M. C. A., Davis Park, Charleston, W. Va., would like to have the February and August, 1928, issues of PENCIL POINTS.

Mr. Leonard Anderson, 306 Sixth Street, Devils Lake, N. D., wishes to purchase a copy of May and February, 1928, PENCIL POINTS. He will pay 75 cents each if in perfect condition.

Karl J. Belser, 600 E. Washington, Ann Arbor, Michigan, would like to purchase a copy of the July, 1928, PENCIL POINTS.

Sidney Walsh, Jr., 3015½ Fanita Street, Los Angeles, Calif., wishes to secure the June, July, August and September, 1920, copies of PENCIL POINTS. He has for sale or exchange the following issues: October, 1920; May, 1921; August, 1922; January, 1923; June and November, 1924; January, 1926, and November, 1928.

## PERSONALS

JAMES A. BRITTON, ARCHITECT, has moved from 652 Huntington Avenue, Boston, Mass., to 344 Clyde Street, Chestnut Hill, Mass.

HORATIO W. BISHOP, ARCHITECT, has moved his office from Carrier 799, Station S, Los Angeles, California, to 6316½ San Vicente Boulevard, at Carthay Center, Los Angeles, California.

BOGNER & BILLINGS have dissolved partnership. Walter F. Bogner is continuing his practice of architecture under his own name at 80 Boylston Street, Boston, Mass.

## FREE EMPLOYMENT SERVICE

*(Continued on pages 164 and 166, Advertising Section)*

**WANTED:** A number of immediate positions open for architectural designers and draftsmen in State Architect's office, 353 Broadway, Albany, New York. Write, stating education, experience and salary desired, or call at above address or 949 Broadway, New York, N. Y. No Civil Service examination required.

**WANTED:** Permanent position to offer a university graduate either in architectural engineering or mechanical engineering as assistant to our mechanical engineer. Warren S. Holmes Company, Lansing, Michigan.



## The ELDORADO PAGE

Sketching with "ELDORADO" the Master drawing pencil

THE student of landscape rendering should get out into the woods or parks during these lovely autumn days when the branches are nearly stripped of leaves and the anatomy of tree structure can be studied to best advantage. Make careful drawings of different types of trees. After doing a certain number of such studies you will begin to get the "feel" of growth. There is nothing intricate about it at all. Take home tiny fragments of branches and make sketches of them. These specimens of course exhibit the same characteristics of structure and growth as the trees themselves. In fact, if you are patient, you are sure to discover fragments which are like entire trees.

This is one of a series of Pencil Lessons prepared by Ernest W. Watson. Write on your letterhead for sample of Dixon's Eldorado, "The Master Drawing Pencil." Joseph Dixon Crucible Co., Pencil Dept. 167-J, Jersey City, N. J.

Ernest W. Watson



## THE DRAFTSMAN, THE ARCHITECT AND STOCK PLANS

*By Thomas Liang of Tientsin, China*

I AM ALWAYS interested in those discussions that appear at regular intervals in the PENCIL POINTS. In the June issue of this year, the short article entitled "The Draftsman, the Architect and Stock Plans" together with the Editor's note saying that the columns are open to a discussion of this matter and inviting all parties at interest to say just what they think about it interests me to such an extent that I am left no alternative but to call forth whatever literary abilities I possess to write my own opinions about Stock Plans in order to tranquilize my conscience. The reader should bear in mind that this audacious act of mine comes directly from the prize I won in the monthly informal competitions of this magazine of last December for my one-act play, "The Architect and His Client," which was published in the January issue.

As far as the architectural profession is concerned there is very little difference existing among the nations. In fact, the architects of various nationalities residing in all parts of the world can be considered as belonging to one fraternity. They share the same responsibilities which they shoulder in their daily work and collect whatever fortunes that are their due. This is particularly true about those young men who have just entered the profession and who naturally start with small house construction; and, generally, it requires them many years of struggle before their dreams of becoming a skyscraper-architect can be realized. In most cases, they have to first fight for an existence by helping an architect as either a draftsman or a designer before they can make a name for themselves as architects. They have to work under sweat and excessive anxiety, sometimes threatened by serious financial difficulties because of keen competition among their fellow professionals. Even without Stock Plans they have already sufficient trouble to tax their brains and energy.

Mass Production has made what America is today. As far as canned goods, cold drinks, and pop corns are concerned, the people are quite satisfied. But when house plans are sold for \$25.00 per set with specifications furnished gratis, it seems that the publishers of Stock Plans have trespassed the laws of architecture just like Old Doc Hokum, the Food Faker, who tours the whole continent broadcasting, en route, his scientific knowledge by telling the people that white bread will positively shorten their lives by twenty years, which is a lot of boloney. In this I am not insinuating that Stock Plans Publishers are doing a lot of harm to the public at large. They have turned out many neat designs of small houses, and have satisfied a few of their customers as far as garages are concerned, maybe. But one thing the Stock Plans Publishers have done that is detrimental to the interests of the young architects is their educating the people that a set of house plans costs only \$25.00, or utmost \$50.00. From the standpoint of the minimum charge they made on their stock plans we must admit that they, the publishers, have shown much generosity. And should the people be so thoroughly convinced about the usefulness of Stock Plans and dispense the assistance of the architects soon there will be little or no difference between Oshkosh and Chicago, with the provision that Chicago stop this shooting business which has given it a world-wide fame; the landscape of the Land of the Free will be reduced to such a uniformity that people will not be able to tell whether they are in New York or in Miami; motorists from Springfield arriving at Hartford will entertain the idea that their gears have been put on the reverse; and husbands arriving

home late may find themselves in the wrong house and may have to bear the consequences of getting shot by other angry and suspicious husbands.

An architect is a servant of the public. He submits designs closely following the suggestions made by his clients in order to suit their individual tastes. In other words, the architect knows exactly what his clients want. He is at all times willing to make alterations on his plans until the wishes of his clients are met. Should he be willing to accept \$25.00 as his fee for a set of made-to-order plans then it would be much better for him to take up bricklaying instead. But then there is the danger of an overflow of masons in the country.

Will the Stock Plans Publishers design a house according to the suggestions of the purchasers for \$25.00? Will they make alterations on their Stock Plans without additional charge? The answer to both questions is "No." Why? Ask the Stock Plans Publishers. They know.

In the long run, it does not pay to buy Stock Plans; and it is certainly better to give the \$25.00 to Mr. Ziegfeld in exchange for a few of his entertainments.

## THE SPECIFYING OF HARDWARE

*(Continued from page 733)*

have two lifts, preferably of the bar type, as flush lifts are undesirable. They do not give a good hand hold, and if the sash is tight a person's fingers may slip and break two or three finger nails.

Pulls should be located in the center of the meeting rail of upper sash, on the outside, and should always be of bronze or brass. Casement sash should have butts specified under butts and Cremorne bolts except for small casements which should have fasteners of the turn buckle type, which draw the sash into the rabbet, and should have either operators or holders.

There are several types of operators on the market; they are all attached to the sill, either on the stool or under it, and are operated with either a crank handle or a tee handle. By the use of these operators the casement can be opened or closed without removing the fly screen, and the sash is locked in whatever position it is left. Holders are cheaper than operators, and one of the best types is the friction holder which consists of a rod sliding in a cylinder, with a screw attachment for regulating the friction. This holder is attached to the head of the frame and to the top rail of the sash, permits the sash to be opened to an angle of about 100 degrees, and holds it at any point automatically. Side pivoted sash should be specified to have friction pivots and transom catches on the bottom rails. In all public buildings particular attention should be paid to the specifying of lavatory hardware, as it has to stand not a little hard usage. The old reliable spring hinges with clamp flanges are still used and give very good service; in specifying them the partitions should be specified to have strikes and keepers with rubber bumpers, doors should have a rim bolt, and each stall should have a combination coat and hat hook with rubber bumper. Hook should be specified to be fastened to marble partition and be secured with spanner head bolt to prevent theft.

A new method of hanging lavatory doors is on a spring pivot mounted at the lower corner of the door. This spring pivot is so fitted that it may be set either to close the door or to hold it open, and the spring may be adjusted so as to hold the door open at any selected point.

Much more could be written on the subject of the specifying of hardware, but the space will not permit. In closing let me offer one more suggestion: Make your hardware as good as the rooms in which it is to be used.