

THE MEN WHO KNOW

IN the office, school or atelier it is contact with the men who know, that helps one to further development, to broader and more exact knowledge, and to acquaintance with the practical, time-saving and labor-saving methods. Appreciating the value to every live, ambitious man, of whatever age, of contact with men who know some one subject or branch of a subject better than most other men in their particular field, the publishers of PENCIL POINTS are endeavoring to make this journal the point of contact between its readers and just such men in the field of architectural design and draftsmanship.

This aim would be impossible of achievement without the co-operation of the men who know—but, fortunately, these men have shown themselves ready to give the results of their experience through this medium to the men who want to know. Though the man who knows is a busy man, he can be relied upon to take time to put out a helping hand, often remembering and gladly giving recognition to the men who helped him with advice or instruction.

Putting this idea into practice, the publishers of PENCIL POINTS have enlisted the help of many of the most able men in the country—the men who know—to write articles for publication in this journal or to permit the reproduction of their drawings in its pages. The response on the part of these men has been hearty and enthusiastic, while the recognition of the value of their contributions has been just as ready and enthusiastic—as shown by the success of PENCIL POINTS.

The object of PENCIL POINTS is to supplement the knowledge to be gained in the office, the school, and the atelier. No publication can, of course, take the place of any one of these three agencies for the development of architects, designers, and draftsmen, but PENCIL POINTS is endeavoring to help the man who has the will to help himself. That is its excuse for being.

Appreciating the value of the architectural club as a point of contact with the men who know, PENCIL POINTS is endeavoring to bring about a more general recognition of the desirability of membership in such a club for every draftsman, and urges the formation of clubs wherever they are now lacking. A club, even a small club, can secure able men, the best architects, artists and draftsmen in the city and from nearby cities, to give helpful

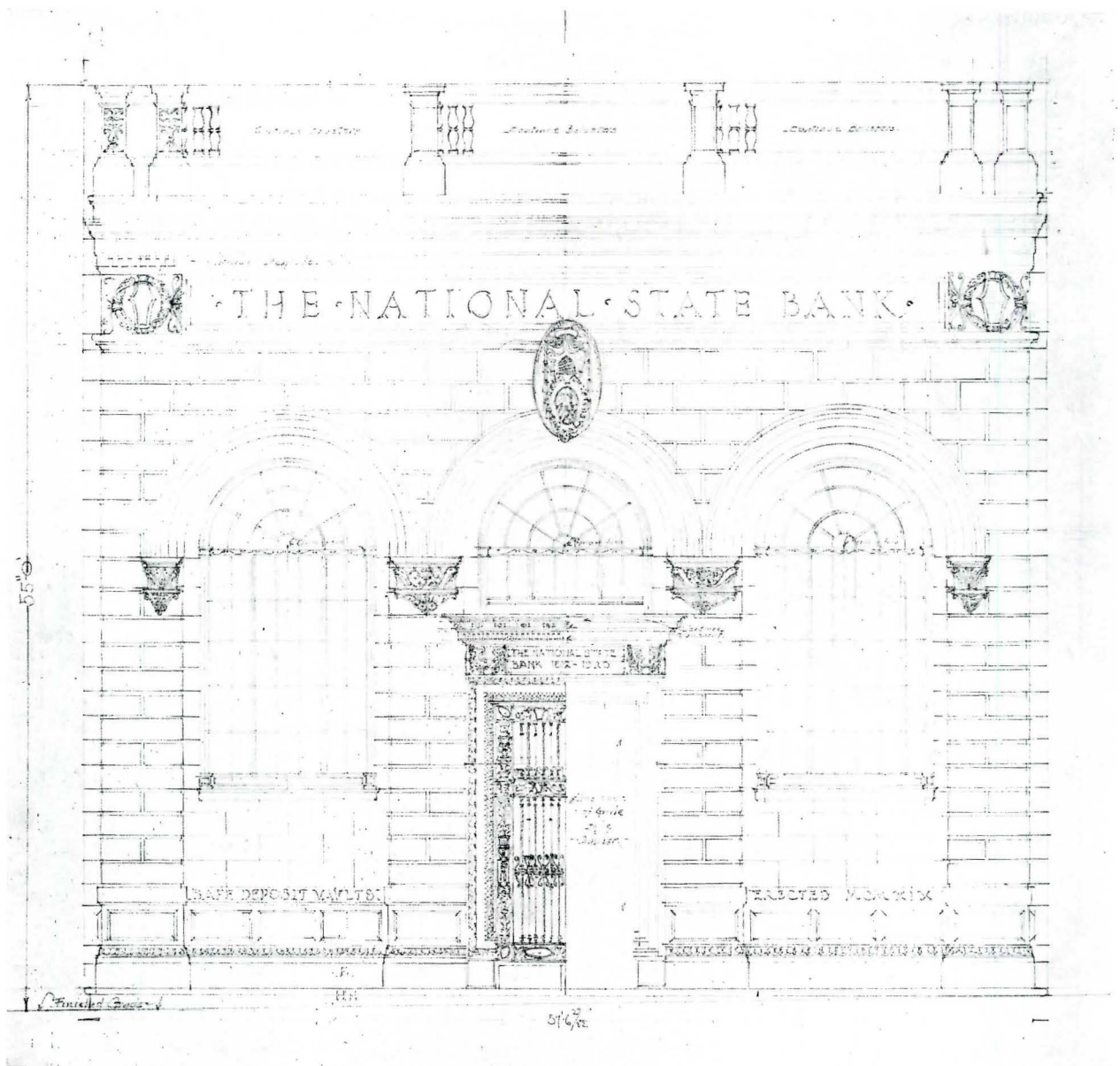
talks. Without an organization this is hardly possible.

An atelier brings its members into contact with at least one man who has much to give, the patron, and if the program of the Beaux Arts Institute of Design is followed, this in itself constitutes contact with a group that includes many of the most able men in the architectural profession. An atelier is possible almost anywhere. This journal urges upon every ambitious draftsman the desirability of joining an atelier, or of becoming active in the organization of one where none exists. It is the purpose of the publishers to make PENCIL POINTS as valuable as possible to the men working in the ateliers and as one means of accomplishing this purpose they will soon begin the publication in these pages of a series of articles bearing directly upon the work in ateliers in which the program of the Beaux Arts Institute of Design is followed.

The "big fellows" are not the only men who know, however, though they have the advantage of greater experience, and it is safe to say that every architect, designer, and draftsman knows many things that would be helpful to others—the club affords an opportunity for the exchange of these experiences and ideas. PENCIL POINTS also offers a medium of exchange through the publication of any letters or suggestions the editors believe will prove helpful. The usefulness of this journal in the exchange of ideas depends upon the response of its readers to the standing invitation—write to PENCIL POINTS.

THE HUMAN SIDE.

ALL the interests of life have their human side—to lose sight of that fact is fatal to the progress and happiness of the individual—the normal man is interested in other men, in his neighbors, the men who are associated with him in his work, the men who have worked with him, or studied with him, also in the men who have distinguished themselves by the excellence of their work in some field related to his own. In order to meet the requirements of its readers, PENCIL POINTS is endeavoring to give due attention to the human side of the drafting room, atelier and school. Personal items, accounts of entertainments, dances, etc., anything about the fellows has a legitimate and important place in the scheme of this journal.



FRONT ELEVATION

THE NATIONAL STATE BANK, ELIZABETH, N. J.

DENNISON & HIRONS, ARCHITECTS

The drawing reproduced above was supplied to the modeller at the time the contract drawings were being made, and the model shown on the opposite page was made from this drawing for the purpose of studying the design. See article beginning on page 5.

THE USE OF SCALE MODELS

BY FREDERIC C. HIRONS

In the article of which this is the first installment, Mr. Frederic C. Hirons, of the firm of Dennison & Hirons, Architects, points out the practical advantages in the use of scale models for study during the designing of buildings, and explains methods of procedure, step-by-step, from the time the first sketches are made until the full-size models of details are copied by the stone cutters at the building. The process as applied to a bank building is completely described in this installment. The working out of other problems will be taken up in the same manner in following issues.—ED.

IN general the architect or draftsman, in studying and developing the design of a building, relies upon drawing alone. From the $\frac{1}{8}$ -inch scale sketches he proceeds to the $\frac{1}{4}$ -inch scale working drawings, and then to the larger scale and full-size drawings. This is well enough,—so far as it goes. However, the possibilities of intelligent study and criticism of the design are greatly increased by the use of actual scale models, and a recognition of this fact has led to an increase in their use.

It is the object of the present article to point out the advantages of studying architectural designs with the help of models and to outline the method of procedure. Models made for this purpose are quite different from those which are made for exhibition, often after the working drawings are completed. For the purpose of study a model may be at $\frac{1}{4}$ -inch or $\frac{1}{2}$ -inch scale and later the detail and ornament may be developed to $1\frac{1}{2}$ -inch scale, and finally the full-size models of details may be made.

The principle advantage in the use of models is that the designer can grasp the sense of the third dimension in a way not possible by the use of drawing alone. No matter how lively an imagination he may have, the truth of the old saying, "seeing is believing," holds very firmly so far as the use of models is concerned. The model permits us to see the defects in our design clearly and easily.

To put it more definitely the object of the use of models in architectural designing is to enable the designer to settle in the most reliable way such troublesome questions as; whether the cornice overhangs too much, whether the relation of wall space to window openings is agreeable or not, and many of the other recurrent and vexatious problems which the

designing of buildings involves. At best, the drawing on paper, in two dimensions, gives a far from perfect answer.

The impression is current that such models are difficult and expensive to make, and that, unless correctly made, they may deceive the designer and thus cause him, perhaps, to commit greater errors of judgment than he would have committed without their use. It may be stated confidently that a model must be almost inconceivably inaccurate not to give some basis for constructive criticism. The difficulties of

making these models are not great—that is to say, they vary with the complexity of the design. Nor need the model be expensive to construct. For buildings of a semi-monumental or monumental character, the plaster model is easily the most practical. The finishing of the ornament, such as cornice detail, column flutes, capitals and so forth, is not necessary in order that the designer may arrive at a correct judgment of the general proportions of the building.

Before beginning the actual working drawings,

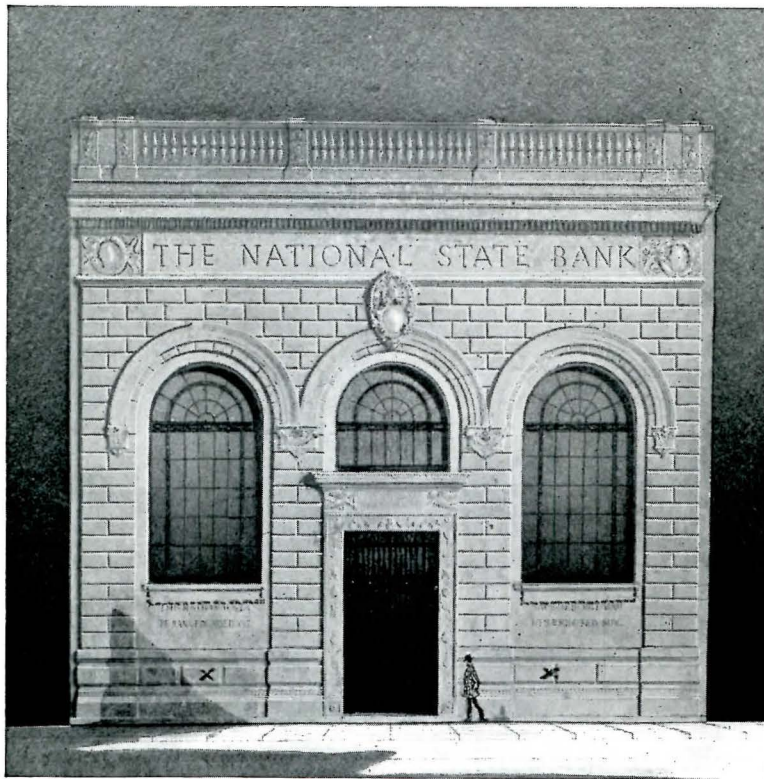


Figure 2. Half-inch Scale Model of the National State Bank, at Elizabeth, N. J., made from drawing reproduced on opposite page. Study of this model showed the desirability of making changes indicated by dotted lines and "X" marks

PENCIL POINTS

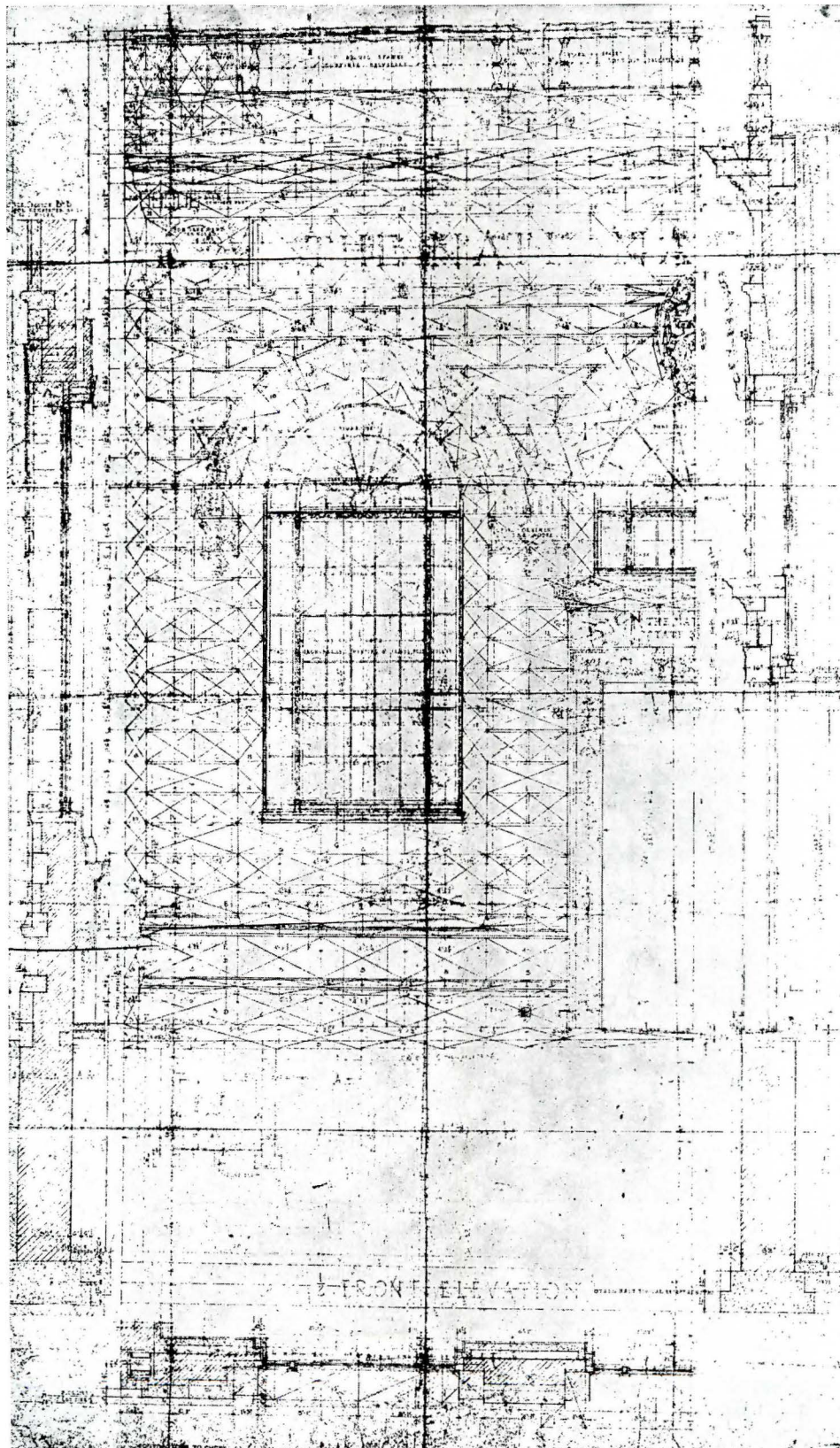


Figure 4. One of the three-quarter inch scale structural drawings for the National State Bank, at Elizabeth, N. J. Made after model shown in Figure 5 had been checked and criticized. This reproduction, though made from a worn and creased drawing used in the construction of the building, serves to show the manner of presentation.

PENCIL POINTS

the architect should furnish the modeller with $\frac{1}{4}$ -inch scale drawings of the elevations, giving dimensions. With this data the modeller can easily build up a model at $\frac{1}{4}$ -inch scale, which will serve as the basis for general study and criticism. The cost of this study may easily be taken care of by an allowance made to the architect. Very often the study of the model will suggest certain changes which will result in lowering the cost of the building, thus indirectly covering the cost of the model.

A photograph of a $\frac{1}{2}$ -inch scale model of the National State Bank at Elizabeth, N. J., is shown on page 5. It was made from the drawing shown on page 4 at the time the contract drawings were being prepared. A study of this model showed that it was desirable to omit the rustication at "X" and to lower the two windows about 1 foot 5 inches, as shown by dotted lines on Figure 2, also to reduce some of the mouldings in projection. This last-mentioned change, incidently, reduced the cost of the stone contract.

The model at $\frac{1}{2}$ -inch scale is but the first step. It is particularly our object in this article to show the value of a still further use of models, using the general model always as a basis. In the case of the building shown in the model on page 5, after this model had been checked and criticized, the draftsmen proceeded to make the $\frac{3}{4}$ -inch scale structural drawings, one sheet of which is shown on page 6. In these drawings the only information given concerning the ornament were the actual dimensions of the spaces the ornament was to fill, the actual dimensions of the overhanging members and so forth. This drawing was then turned over to the modeller, who made the $1\frac{1}{2}$ -inch scale model, one photograph of which is shown in the upper part of page 7. In this model the relief and character of the ornament were studied until the ensemble gave approximately



Figure 4. One and one-half inch scale model for study of relief and character of ornament

the effect the architect desired to obtain.

The modellers were then instructed to make full-size models, which could be safely made in sections, having the $1\frac{1}{2}$ -inch scale model to follow as a guide. Some of these models are shown in the photographs reproduced on the lower part of page 7 and on page 8. The models were then taken to the building and placed beside the stone that was to be carved. The sections were painted to match the color of the marble. This was necessary because the shadows thrown on the white plaster when it is exposed to direct sunlight, as it easily may be at the building, are greatly intensified. This over-emphasis would be disturbing to the stone carver in copying the model accurately. In important work it is advisable to

have all carving done at the building and not in the stone contractor's quarry which may be at a distance.

RESIDENCE DESIGN.

THE following paragraphs are quoted from a thoughtful article printed under the title "Render Unto Caesar," in the October issue of *The Charette*, the monthly journal published by The Pittsburgh Architectural Club.

"There has always seemed to exist a sentiment that monumental architecture must of necessity call for genius of a higher character than residence

architecture. This is a viewpoint which we have felt bound to combat rather stoutly at times, for personally the two forms have seemed to require totally different moods of mind, and the obvious fact that the residence is a less important work measured in mere terms of mass, does not seem admissible as an argument against its superior artistic worth. The predilection of the architect would rather seem the factor in judging the respective merits of the minds of design-



Figure 5. Full-size models of detail

PENCIL POINTS

ers in the two phases of building. It may be readily granted that the house calls for a more delicate taste than the public building and perhaps renders it more or less true that the ranks of residential architects of ability count more men of less vigorous imagination than will be found in an equal number of similarly competent monumental designers. Yet when a man of great imaginative power elects residential architecture as his medium, the result is only to be expected, namely the emergence of an astonishingly fine manner. But whatever may be the merits of the controversy we may concede that while residence work may not be as severe a test of the mental stamina of the designer, it is in fact the most exacting trial of taste in the art, for it is there that the refinement of cultivated races may be most readily displayed. The test



Figure 6. Full-size model of detail

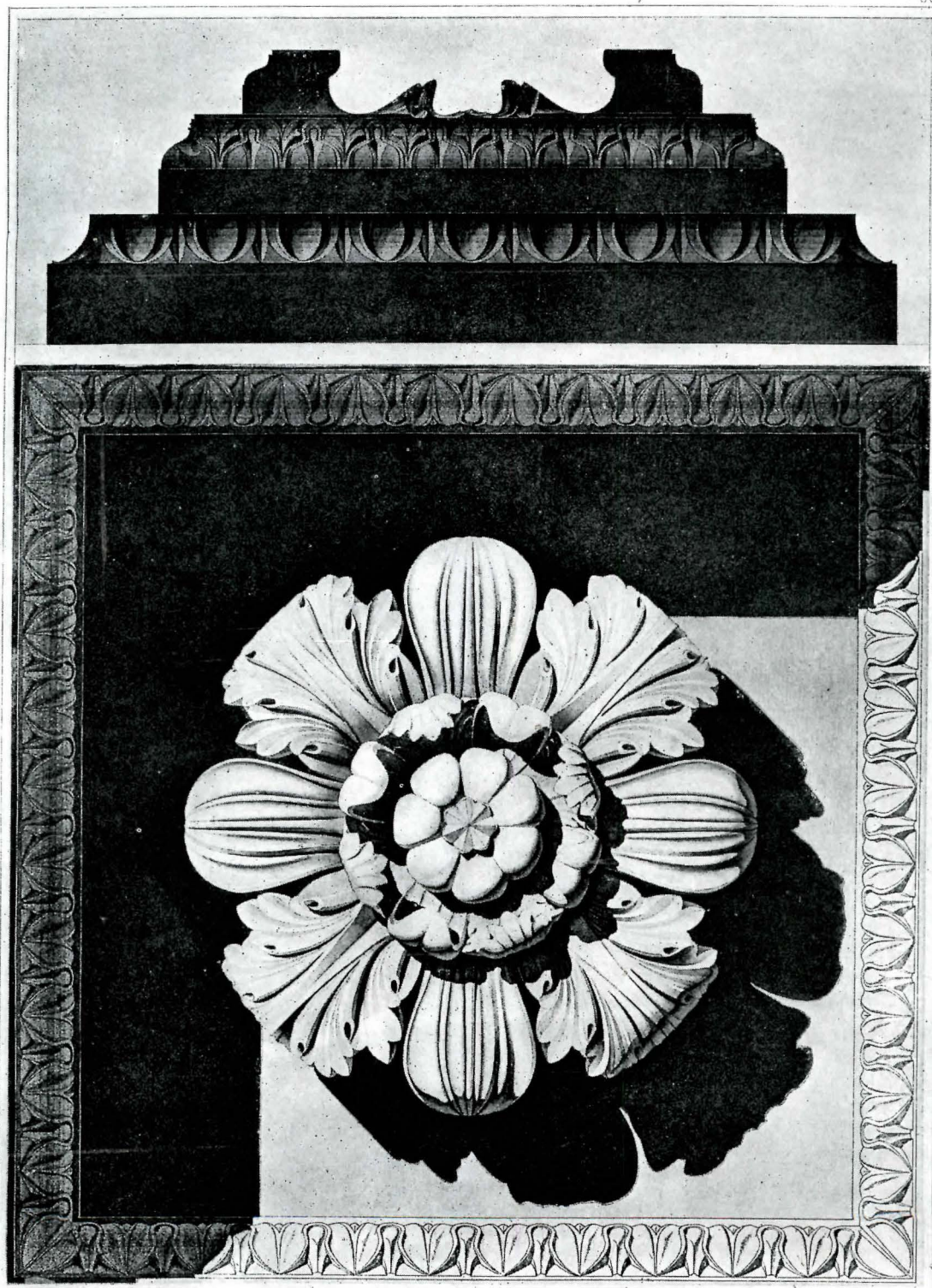
of civilization is the intellectual refinement of the individual, and the most individual of the works of man is his house. There will be found a fair reflection of his manners, and his manners are the measure of his development. The hall mark of progress in the slow ascent from savagery is increasing reserve. "A gentleman is quiet, a lady is serene." It is that quality which proves him farthest removed in spirit from the primitive, where self glorification was the delight and attribute of the warrior, bragging his bleeding kill. The glistened palace of the par-venue is the twentieth century skull heap of the twentieth century hunter of heads. No person of any refinement of mind would suffer himself to be paraded by his house. Such persons among the people will demand quietness in the character of their homes, whether they discriminate further or not."



Figure 7. Full-size models of detail, made in sections, with $1\frac{1}{2}$ in. scale model as guide. They were painted to match color of marble, taken to building, and copied by the stone carvers

FRAGMENTS ANTIQUES

66

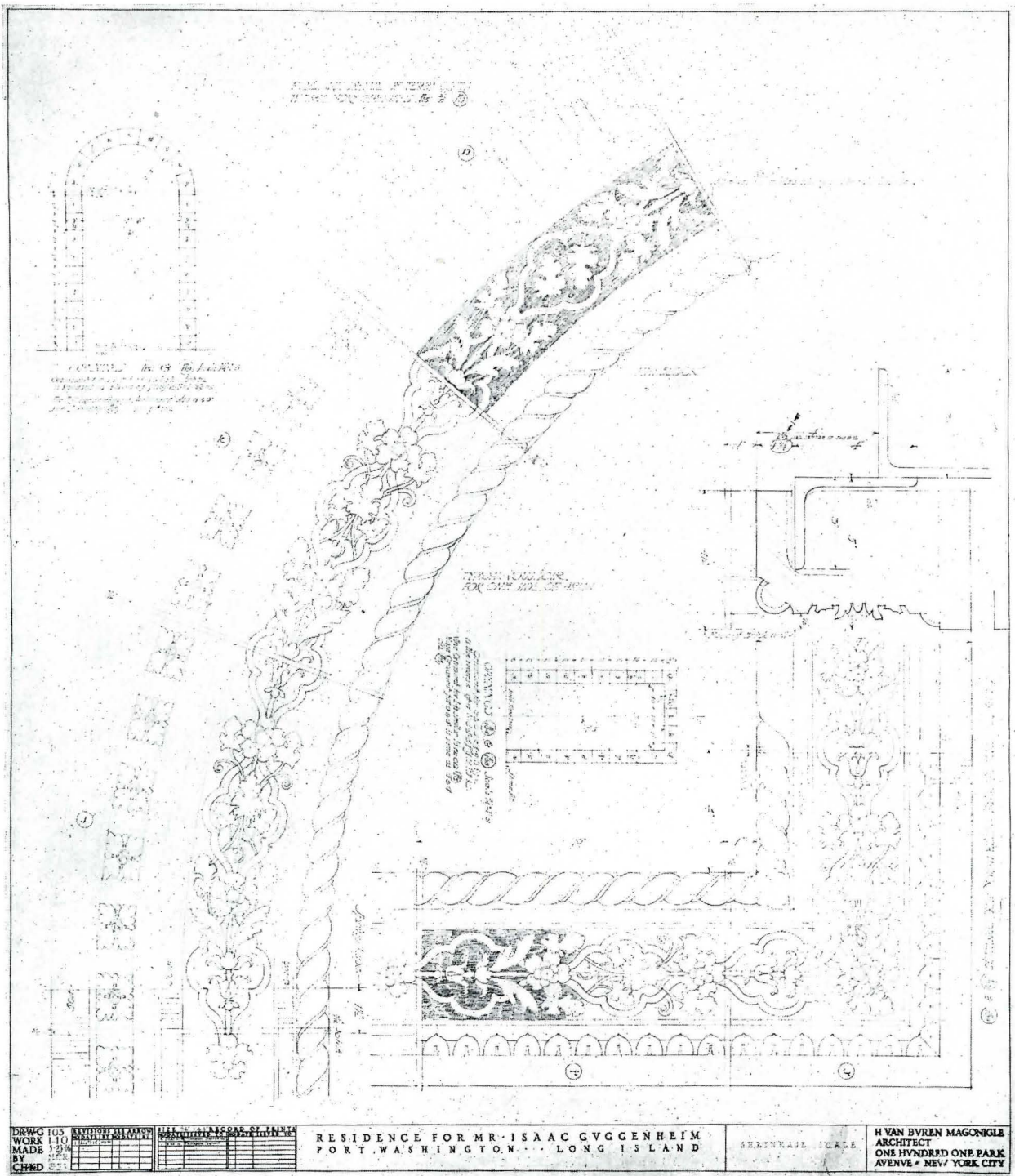


TEMPLE DE MARS VENCEUR A ROME

DETAIL OF TEMPLE OF MARS, ROME

RESTORATION BY G. REDON
FROM H. D'ESPOUY'S "FRAGMENTS D'ARCHITECTURE ANTIQUE"

The drawing reproduced on the opposite side of this sheet represents detail of "The Temple of Mars, The Avenger," which was erected by Augustus in the centre of his forum in Rome, to commemorate the victory at Philippi and the vengeance taken upon the assassins of Caesar. Of this building there remains only a part of the portico, three high Corinthian columns and a pilaster supporting the architrave, also a fragment of the side wall of the cella. These remains are regarded as among the most beautiful existing examples of Roman architecture.



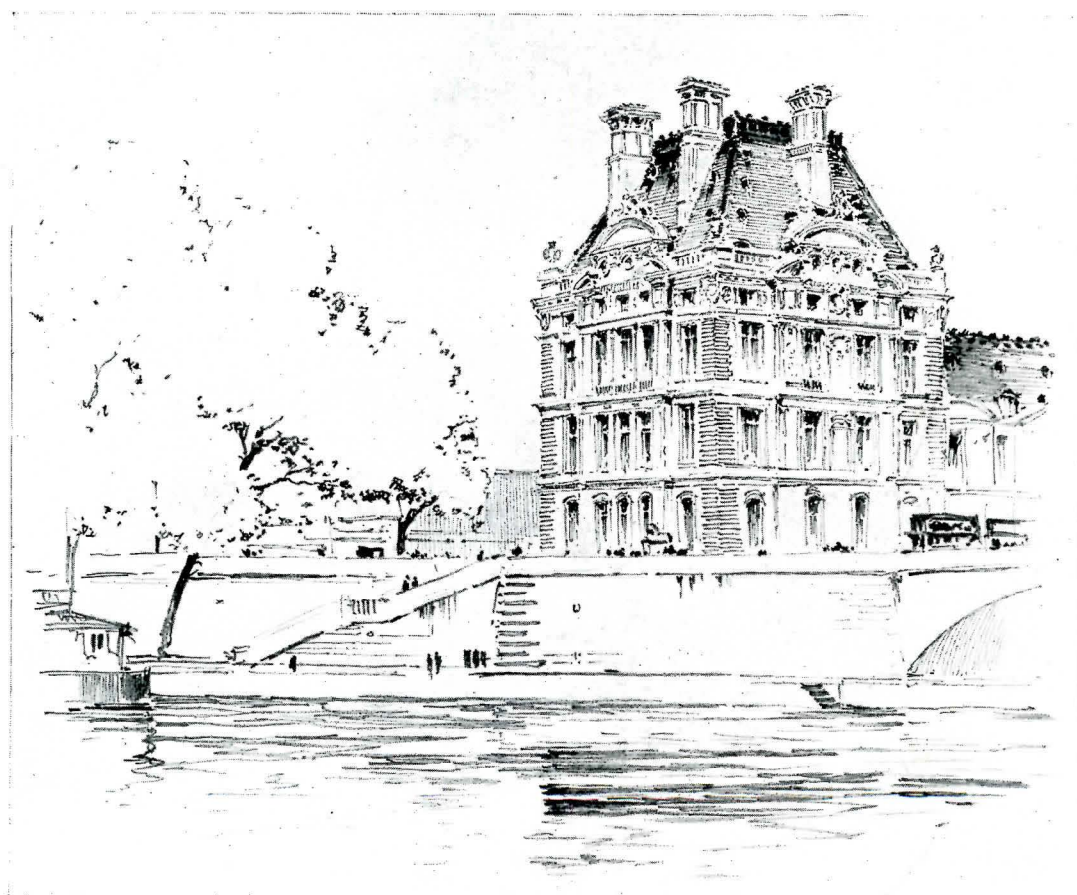
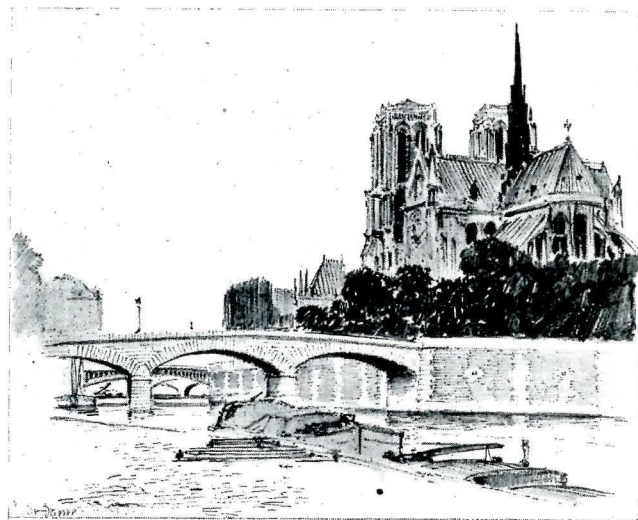
Drawn by H. E. Reynolds

DETAIL SHEET

HOUSE FOR ISAAC GUGGENHEIM, ESQ., AT PORT WASHINGTON, L. I.

H. VAN BUREN MAGONIGLE, ARCHITECT

On the opposite side of this page are shown a number of interesting architectural details for terra cotta. These designs were drawn to shrinkage scale, so that they might be transferred directly to the material.



PENCIL SKETCHES BY OTTO R. EGGERS

Sketches made while Mr. Eggers was holder of the Le Brun Traveling Scholarship, 1912

The pencil sketches reproduced on the opposite side of this sheet are from a sketch book carried by Mr. Otto R. Eggers while he was traveling abroad as the first holder of the Le Brun Scholarship, in 1912. The sketch of Notre Dame at the top of the page is reduced, but the one below is reproduced at the same size as the original sketch.



STUDY BY JULES GUERIN FOR ONE OF THE SYMBOLIC FIGURES IN ONE OF THE
MURAL DECORATIONS IN THE LINCOLN MEMORIAL AT WASHINGTON, D. C.
HENRY BACON, ARCHITECT

The drawing by Mr. Jules Guerin reproduced on the other side of this sheet is the artist's study for one of the figures in the great mural decorations recently put in place in the new Lincoln Memorial at Washington, D. C. This building, which is one of the noblest memorials ever built, has not as yet been dedicated and opened to the public. Mr. Henry Bacon was the architect. This study, like the many others used, was drawn from life. It is for one of the figures of the group typifying "Charity." A noted actor, a friend of Mr. Guerin, posed for this figure, a difficult bit of characterization and an interesting drawing.

PERSPECTIVE DRAWING, PART VI

BY PAUL VALENTI

IN the preceding issues we have acquainted ourselves with the general principles of perspective by first ascertaining the means by which we are enabled to see things physically; secondly, by applying these rules graphically, with the aid of descriptive geometry, we have proved these principles; and, thirdly, again with the aid of descriptive geometry, we have reduced all previous operations from the three planes, (*i.e.*, the plane containing the observer, the picture plane, and the plane containing the object or geometric plane), to the one plane at our disposal, the plane containing our drawing.

It is of vital importance for the student to follow this development very closely and master it thoroughly. Once these general principles are clearly comprehended, not only will his progress in this study prove interesting, but he will be able to solve the greater problems with relative ease.

The only difference between a simple problem and a more complicated one lies in the multiplication of the one process. For example, to find the perspective of one point requires one operation, whereas to find the perspective of more points or of an entire building, which is represented by numerous points, requires merely the repetition of the operation as many times as it will be found necessary to embrace the object in question. Hence the importance of grasping these fundamentals at the start.

Thus we have arrived at the stage where we have defined our picture plane. This we will notice is a perfect square, being inscribed in a circle which in turn represents the area covered by our vision. For example (see Figure 17), the circle corresponds to the base of the visual cone and the square to that portion of this area arbitrarily selected as a more convenient shape for our picture.

Of course we can also reduce this area however much we please, cutting portions from the top or bottom as well as from the sides to suit our convenience. Thus for example we may raise the ground line to any height and bring it as close to the horizon line as will better suit any particular

case. (See Figure 18.) Since we are more accustomed to picturing things in a rectangle instead of a circle we arbitrarily choose the rectangular shaped picture. It must be noted that the shaded portions in Figures 17, 18 and 19 indicate areas also within our vision, which although discarded are part of the whole included by the visual cone. (See diagrams of visual cone in June issue.)

It is well for the student to dwell upon the matter just outlined, namely that any rectangular picture represents merely a portion of the field covered by our vision and that the drawing of an object shown in perspective is not changed in any way by the fact that the vision point may be at one side or the other of the centre of the rectangle within the boundaries of which it is to be shown, or above or below the centre of the rectangle; also that the proportions of the rectangle, the relation

of its sides to each other, have no effect upon the drawing of the perspective. It is, in fact, as though the drawing were made on a circular piece of paper, corresponding to the base of the visual cone, and then trimmed to any shape, usually rectangular, that may have been thought most pleasing.

At this point it may be noted that the effectiveness and beauty of a perspective drawing depend in no small degree upon the judgment exercised in making this arbitrary choice of the portion of the whole field of vision which is to be included in the rectangle and is, therefore, to be the only portion presented. It may be said that usually a drawing that has the vision point at or near its centre is not as interesting as are drawings in which this point is off the centre, also that rectangles of other proportions are usually more pleasing than is the square as the form for a picture.

Then, too, a pleasing arrangement of the masses within the frame of the rectangle is highly desirable, and the lines should compose. These considerations and others govern the choice of the portion of the field of vision to be represented.

These considerations need not be discussed here.

(Continued on page 27)

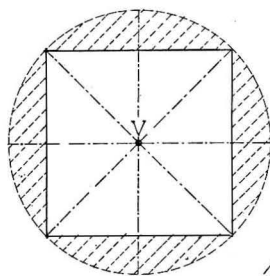


Fig. 17

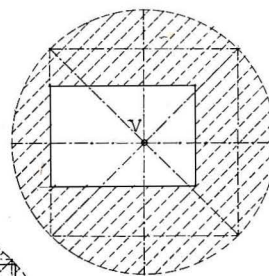


Fig. 19

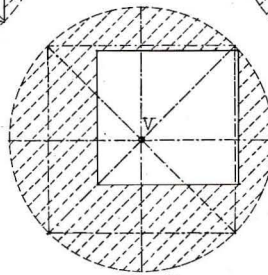


Fig. 18

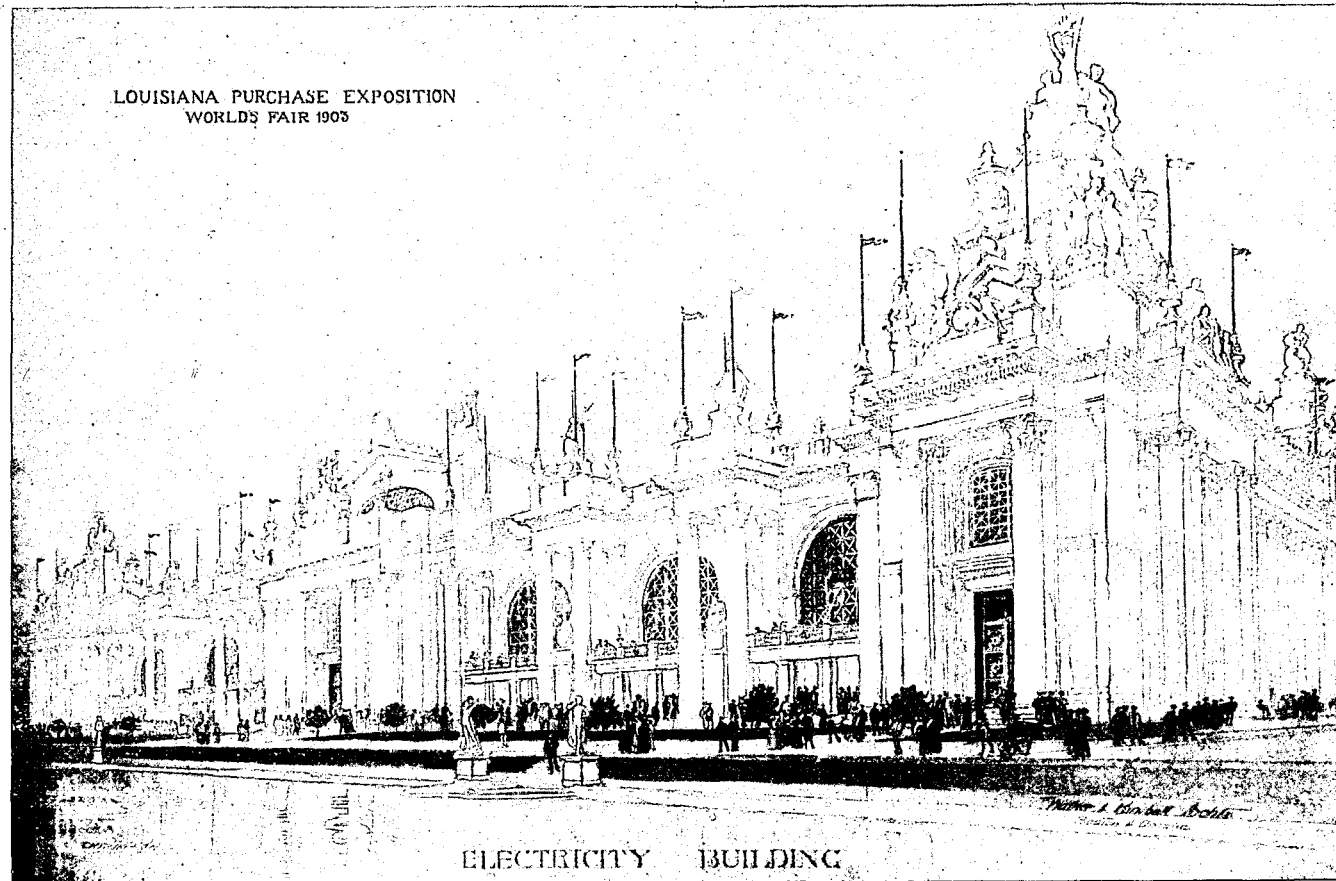


Figure 26. An effective presentation of an exposition building, The Electricity Building at the Louisiana Purchase Exposition, St. Louis, Mo.
Drawn by Mr. C. Howard Walker. Walker & Kimball, Architects

PRESENTATION DRAWINGS, PART IV

BY FRANCIS S. SWALES

WHEN the work of the architect is well-known to the client it often happens that no presentation drawings are required as far as he is concerned, still they may be necessary to show official authorities that the design conforms to some general scheme of design or color, as is usually the case with exposition buildings or other buildings forming part of a group. It is seldom either necessary or desirable to present fine or finished drawings to the official architects who have to pass upon the design or color scheme. A simple elevation showing also the outline of portions of buildings at either side, and a study of a detail—no more than such a drawing as is required at the admission to the Ecole des Beaux Arts—is preferable for its practical purpose, namely, to serve as a basis for the discussion of the adaptability of the design to the general scheme.

The only drawing required to obtain approval for the large, irregular-shaped buildings for the Messina Earthquake Scenograph, erected at Turin and London, was a sketch-study in pencil with a few touches of water-color, for the main entrance—which was the same for both buildings. (Figure 25.) Each building was completed within two months of the date of contracting for space and ordering drawings. Had it been necessary to prepare sets of drawings such as are usual in competitions, the buildings would have been finished before, and without, the drawings.

The official architects of the larger expositions have nearly always been men of good training and, therefore, ready of judgment. To such architects the drawing as such means little. The most elaborate rendering of a scheme that does not fit in,

fails to secure the concession; and a second essay is prevented by the limitation of time. In the practice of concession work the designer's most useful asset is facility in making free-hand plans and perspective sketches without previous study of elevations, and in developing them directly into working drawings. The eight hours and twelve hours *esquisse* problems of the Ecole des Beaux Arts, and the similar problems of the Beaux Arts Institute of Design in this country, provide a particularly valuable training for work of this kind, which requires the designer to think, decide and act without hesitation. Ordinary but clear draughtsmanship, with the use of the fewest possible lines and definite indication of ornament, is most desirable.

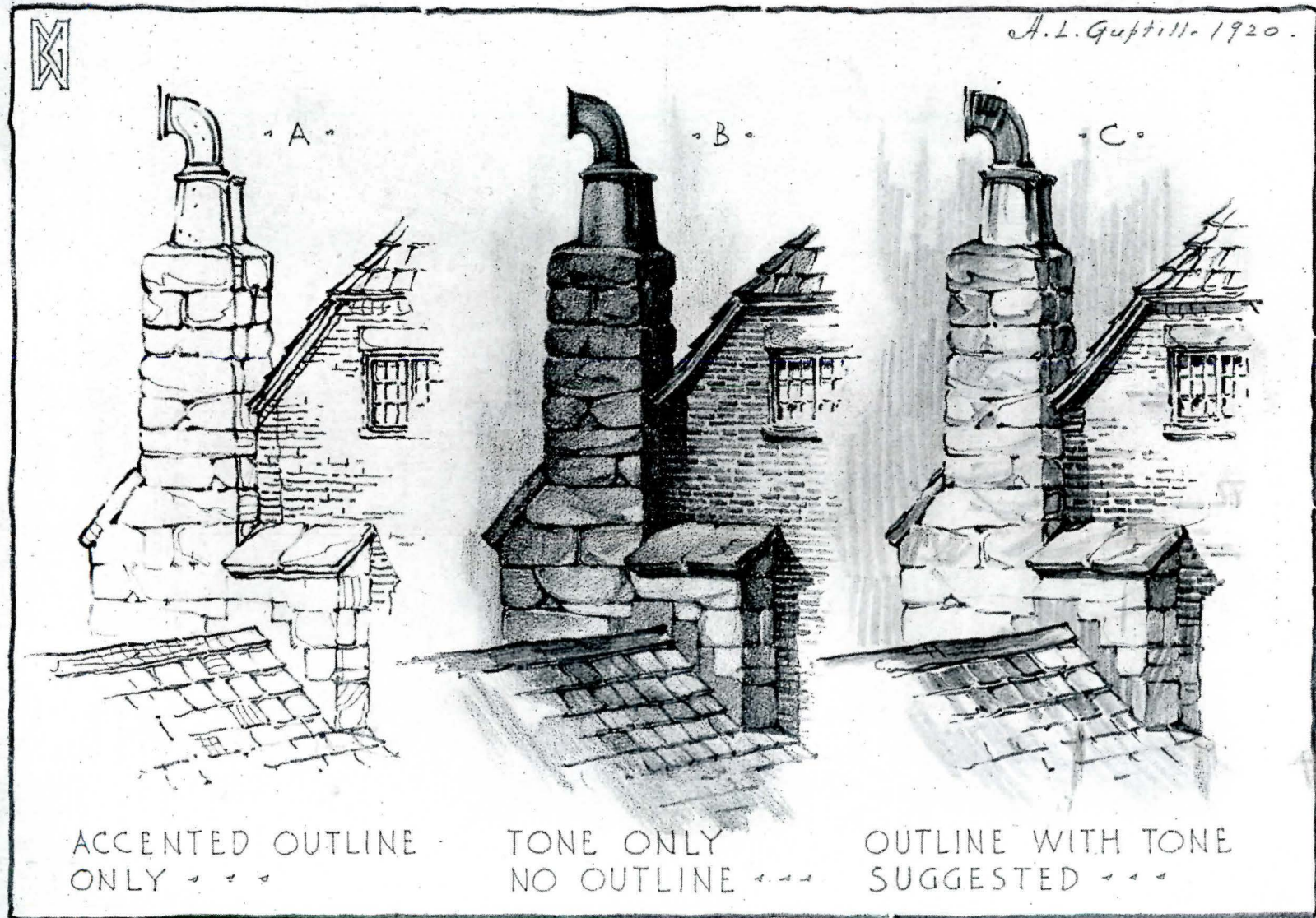
In connection with exposition and amusement buildings, drawings for advertising or display purposes are usually desired. Of the very many original drawings of exposition buildings which have come to my attention, the best indication I have seen, was shown in a perspective made by Mr. C. Howard Walker, of the Electricity Building of the St. Louis Exposition. It might be described as a pencil drawing in right lines with a few main shadows in monotone and the high lights put in with Chinese white. It was made on a buff paper, the color of which served for the shades on the col-

umns, frieze and all the ornamental detail and a few mere touches of water-color served to complete a very effective drawing. If it had been reproduced in color it would have served as an admirable model for the best kind of presentation of any white-painted building. (Figure 26.)

In the next issue, Mr. Swales will discuss the types of drawings best suited to the presentation of designs for business buildings.—Ed.



Figure 25. Entrance to the Messina Earthquake Scenograph
Buildings at Expositions in Turin and London
Francis S. Swales, Architect



Sketching and Rendering in Pencil. Figure 10, illustrating different methods of indicating the same subject.

SKETCHING AND RENDERING IN PENCIL, PART IV

BY ARTHUR L. GUPTILL

In this series of illustrated articles, the first of which appeared in the August issue of this journal, the technique of pencil sketching and rendering is being taken up step by step, carrying the architectural draftsman or student through a systematic course of study which has been gradually developed and put into practice by Mr. Guptill in his classes at Pratt Institute, Brooklyn, New York City. The illustrations are not merely copy plates, but each is drawn to illustrate some principle of composition or some suggestion for technique given in the text. Although these plates are primarily intended to assist the student in freehand work, they will prove helpful as well to those making pencil renderings of subjects prepared instrumentally.—Ed.

Conditions of Light and Their Effect on Representative Drawing.

AS we are unable to fully and exactly reproduce by means of pencil drawings, all of nature's intricate form, her complicated light and shade, and her varied colors, we are forced to adopt certain conventional methods for their suggestion and indication.

Of the numerous conventions thus employed outline is perhaps the one most commonly used. Natural forms, it should be understood, have no definite outlines. We are able to distinguish objects one from the other only because of their contrasts of light or shade or shadow or color. To demonstrate the truth of this, study the objects about you, and you will see that each is visible only because it is light against dark or dark against light or because one color is contrasted with a different one, but never because it has an outline. It may by chance have a border of some strong color or tone which at first glance seems to be an outline, but closer inspection will prove it to be merely a narrow tone of light or dark or of color, so small as to appear as a line. Cracks between floorboards, for instance, often seem to be the outlines of the boards themselves, but in reality we see these cracks only because they form shadows or because they are filled with dirt or other materials of a color or tone different from that of the wood itself. Streaks of highlight along the edges of objects frequently appear to be outlines, too, unless the source of light causing them is hidden or moved, when they either disappear or change their positions.

Granting, then, that nature employs no real outline, it is remarkable that her forms can be so quickly and accurately suggested by its use. Even a child, as a rule, is able to so indicate objects by a few simple profiles that we can recognize them easily, and primitive peoples, ages ago, made outline drawings which we are able to read and understand with little effort. Because such drawings do indicate form simply and directly, it is important for the student to learn to make them well and he should frequently practice this form of work. By varying the lines used, the textures and materials represented can be more accurately and artistically suggested than at first seems possible. Shadow, too, can be indicated by darkening such edges as are turned away from the light. Outline drawing has, at the same time, so many limitations that for

architectural purposes it is mainly valuable for the suggestion of form. Therefore, whenever we wish to do more than simply indicate the light and shade or color we are forced to either supplement the outline by the addition of tones of gray or black, or to do away with it entirely, representing the object wholly by values of light and shade, approximating as closely as is possible those tones found in nature itself.

At "A," Figure 10, is a sketch of an old chimney done in outline only, but this outline is so accented as to suggest the textures of the various surfaces and a few tiny lines are added also as an indication of the shade and shadow. At "B" the same chimney is shown in full tone of light and shade but with the outline omitted. This drawing is much like a photograph of the same subject, in that the stone and brick and other materials have been given tones as similar as is possible to those appearing in nature. Though this type of drawing is used to some extent, it is not as popular as that shown at "C" in which much of the white of the paper is left. Drawing "C" not only has more character than "B" but the method used is a more economical one. In this particular instance the outline was drawn exactly as at "A" and then enough tone added to suggest the values of light and shade as found at "B." For architectural work this method is quite satisfactory, for much of the form can be represented by the accented outline; the white of the paper answers for the lighter values and the darker tones can be drawn with the gray and black of the pencil. Color cannot, of course, be more than suggested in any pencil drawing. A dark red brick wall can be shown dark, and light green shutters can be shown light, but unless explanatory notes are added or some color employed there is no way of making it clear that the brickwork is red and the shutters are green. Because of their limitations, tints of water color are frequently washed over a pencil drawing and the results obtained in this way are often very effective, especially if the tints are light and delicate. Colored pencils are sometimes used, too, with considerable success.

At "A," Figure 11, is a sketch in which the effect is gained by the use of values representing the color and tone of the various building materials and accessories, little attempt being made to show the shadows. It is sometimes possible to obtain a very pleasing result by this means and it would be well

PENCIL POINTS



Sketching and Rendering in Pencil. Figure II, illustrating effect gained by the use of values representing the color and tone of various building materials and accessories.

PENCIL POINTS

for the student to try a few such drawings, but the average subject demands some suggestion of the shadow tones as well. Many drawings can, in fact, be entirely made by the use of the shade and shadow tones only, the color of the building materials being largely disregarded, and the sketch at "B," Figure 11, is shown to illustrate this point. This method proves especially useful when drawing objects made of light colored materials such as carved white marble, ornamental terra-cotta, white clapboarded or stucco walls, etc.

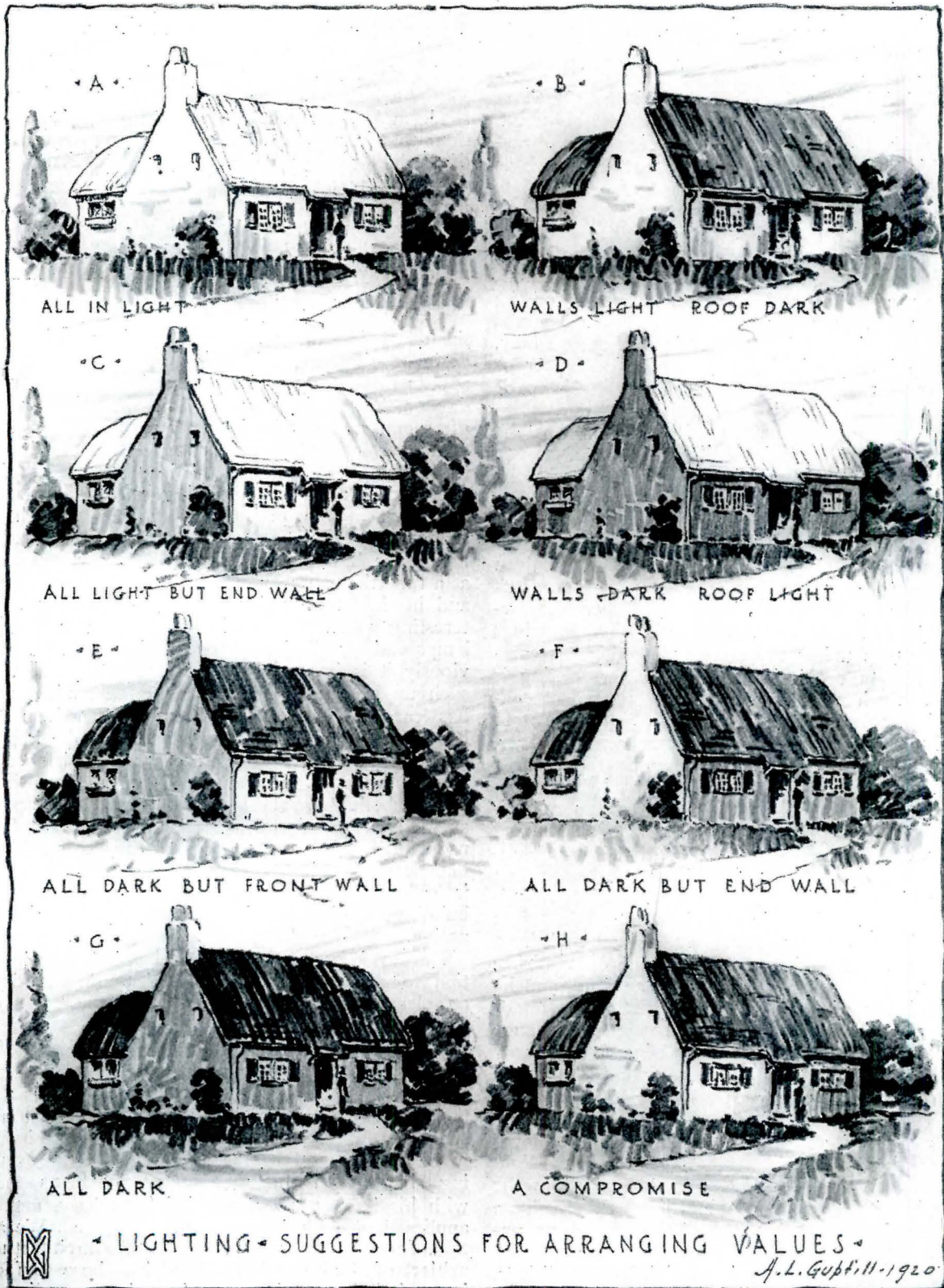
Although the natural tone and color of materials in buildings and their surroundings is of great importance, so much of the effect of a structure, both as a whole and in detail, depends on its shadows that the study of light and shade deserves special attention. When a sketch is in outline only, the light is either indicated in a simple manner or entirely disregarded, but when a drawing is to be done in full values it is especially important to determine both the source of the light and the direction in which it is coming before starting to render. Students have been known to cast the shadows on a building in one direction and to indicate the shade on the trees as though the light were coming at a different angle. Such inconsistencies are amusing, but warning should be given that they are almost sure to occur when students attempt to copy and combine parts of several drawings by other men or even make original drawings of their own unless the matter of lighting is carefully thought out before the pencil rendering is begun. Such mistakes show that the student cannot give too much study to this subject if he is to avoid many similar errors. There are, however, so many separate influences affecting the lighting of all objects, such as the condition of the atmosphere, the reflective or absorbing powers of different surfaces and materials, the constant shifting and moving of clouds and foliage, that it seems unwise to attempt here to give the student more than a few hints to point the way for his further individual study. Even in interiors the light often comes from so many sources and is reflected from so many surfaces that nothing but constant observation and sketching will teach the student what he should know of such conditions. The opening or closing of a door may be sufficient to entirely change the appearance of an interior and in the same way the shifting of a cloud may cause windows viewed from without to appear very light one minute and almost black the next. Sometimes the lighting varies to such an extent that an entire building may appear dark against light at one time and light against dark at another, as was illustrated in the example of the lighthouse in Figure 5. Such an extreme change as this, though by no means unusual, generally takes place at morning or in the evening or under exceptional lighting conditions, but even the average building under normal conditions will vary greatly in appearance from hour to hour. Because of these constant changes most buildings appear to better advantage at certain

time of day than at others, and so if drawings of them are to be made it is naturally best to make them during these favorable moments. Building and foliage usually get the most satisfactory light during the late afternoon when the sun's rays are so slanted as to cause an interesting variety of shade and shadow, but there are of course exceptions to this, a great deal depending on the location of the building in relation to the points of the compass. Many architects fail when designing buildings to give sufficient attention to the fact that a design which will appear well when turned at a certain angle with the sun or other source of illumination, may be much less effective placed in some other position. It is not enough to make instrumental studies of buildings, with shadows cast in the usual 45 degree manner, but in addition the designer should consider how the structure will appear under the vertical rays of the sun at mid-day or the slanting rays of early morning or late afternoon, and should, in many cases, make special studies with the shadows shown as they would exist in the completed building. The author has in mind one particular public building which was most attractive in the preliminary drawings, with its shadows cast in the conventional manner. Unfortunately the building is so situated that for months at a time the sun seldom shines on the main façade and in the evening this façade is especially uninteresting when the bright light from the street lamps entirely eliminates the cornice shadows. Obviously it is impossible to foresee and prevent all such unpleasant appearances, but the student who has learned to study and observe light effects and has drawn much from nature will find the knowledge gained from this work of great assistance to him, if he is called upon to do original work in design, both in avoiding such unpleasant results as we have mentioned and in making the greatest use of the lighting conditions as they exist. Such knowledge is of great importance, too, when one is called upon to make renderings of proposed buildings or sketches from memory or the imagination.

Do not for a moment think that it is our intention to condemn the practice of casting shadows on elevations in the conventional 45-degree manner, for that is not the case, as even the student of freehand drawing can gain considerable knowledge useful in sketching through a course in shades and shadows. What we do wish to make clear is that the draftsman or designer who studies light and shade directly from nature does not allow himself to be handicapped by the man-made rules governing shades and shadows, but supplements these with his knowledge of nature's own laws, and so applies them with far greater intelligence. We are told, for example, when studying the architectural subject of shades and shadows, that those surfaces in a building which are turned most directly towards the source of light will usually appear, all other things being equal, the brightest. From this

(Continued on page 26)

PENCIL POINTS



Sketching and Rendering in Pencil. Figure 12, illustrating different lighting of the same subject.

PENCIL POINTS

Published Monthly by

THE ARCHITECTURAL REVIEW, Inc.

Publication Office—Stamford, Conn.

Editorial and Advertising Offices—One Madison Ave., New York

RALPH REINHOLD, President
F. W. ROBINSON, Treasurer

C. H. PETERS, Vice-President
EDWARD G. NELLIS, Secretary

EUGENE CLUTE, Editor

Associate Editors

W. V. MONTGOMERY

E. M. URBAND

Western Representative

J. W. DICKINSON

702 Security Building, Chicago, Ill.

Copyright, 1920, by The Architectural Review, Inc.

Subscription rates per annum, payable in advance; United States of America and U. S. Possessions, Cuba and Mexico \$1.00, Single copies 10 cents; Canada \$1.25 all other countries \$1.50.

PENCIL POINTS is on sale at the following book shops: New York, Brentano's; Chicago, McClurg's; Boston, The Old Corner Book Store; Washington Brentano's. Wholesale Distributors, The American News Company, New York

DALLAS ARCHITECTURAL CLUB.

THE fall program of the Dallas Architectural Club was given a good start on October 15, when the Club acted as host to the joint convention of the Texas Chapter of the A. I. A. and the Texas Association of Architects at an informal luncheon. More than seventy-five architects, draftsmen and material men were on hand, of which over half were visiting architects from "down-state."

The purposes and progress of the club were outlined and discussed to the benefit of all present, and some very valuable suggestions were given by several speakers on "What an Architectural Club Can Do for the Profession." The luncheon served very well its dual purpose of offering the Club an opportunity to entertain the conventions, and of arousing in the architects of the state a greater interest in the work of the newly founded organization.

Through the courtesy of the local firm of R. H. Hunt & Company, architects, temporary quarters for the atelier have been obtained in the offices of that firm. John W. Dehnert, formerly of the St. Louis Architectural Club, is "massier" of the atelier and Sam C. P. Vosper, formerly of the Atelier Corbett, New York, is correspondent. Ten esquisses for the opening Beaux-Arts projet were handed in. In addition to this a number of members of the atelier are taking a civic planning problem given out by the local Metropolitan Development Association. The work of the atelier was given added stimulus when the head of a local architectural firm announced a prize of twenty-five dollars to the draftsmen of his office who received the highest award in each of the atelier's problems.

RALPH BRYAN.

GET A GREEN CARD.—Adv.

ALABAMA POLYTECHNIC INSTITUTE.

MR. HARRINGTON BARLOW, who has been recently appointed as Assistant Professor in Architecture, is a graduate of the Department of Architecture at Harvard University with years of experience in professional practice. He will have charge of the classes in Architectural Design.

The Department of Architecture of the Alabama Polytechnic Institute started work in 1907. Two full four-year courses are offered, one leading to the degree of Bachelor of Science in Architecture, and the other to

the same degree in Architectural Engineering. The schedule of studies conforms to the standard minima of the "Association of Collegiate Schools of Architecture." A two-year special course for office draftsmen is also given.

In the course in Architecture something over 25% of the entire four years is devoted to design, and particular attention is given to freehand and charcoal drawing, water color painting and clay modeling. In the course in Architectural Engineering less design is offered and water color painting and clay modeling are not required; the time thus saved is devoted to advanced structural design and kindred subjects. The students in either course, however, receive a thorough grounding in building construction, including plumbing, lighting, heating and ventilation.

Two Fellowships in Architecture are offered, each of the value of two hundred fifty dollars (\$250.00) annually. These are open to all who hold Bachelor's degrees in Architecture or Architectural Engineering from an institution of recognized standing. The fellow is required to give certain assistance with class instruction.

CHICAGO SCHOOL OF ARCHITECTURE

THE Chicago School of Architecture, the department of architecture of Armour Institute of Technology, has at present an enrollment of seventy-two students, divided as follows: fourteen seniors, ten juniors, nineteen sophomores, and twenty-nine freshmen. Mr. W. J. McCaughey, Jr., instructor for the past three years at the University of Illinois, has been added as a new member of the faculty, teaching design.

EDWARD, S. CAMPBELL,
Professor of Architecture,
Head of Department.

UNIVERSITY OF VIRGINIA.

IN reply to your request of September 20 I am enclosing some leaflets regarding our School. As you may know, this School was founded only in 1919, so that we feel pleased to have some forty students in the courses in art and architecture. You may be interested in the unique environment here for architectural instruction furnished by the old buildings of the University designed by Jefferson, particularly as "specimens for the architectural lecturer," and the modern buildings by McKim, Mead & White. We are making use of these buildings in the courses on the elements of architectural form, in a direct method of instruction similar to that employed by the American University in France.

Very truly yours,
FISKE KIMBALL.

UNIVERSITY OF ILLINOIS.

EVERY city has its atelier and every college its architectural club. The Architectural Club of the University of Illinois was listed during the war and up to the present time as a "has been," but now, with the stabilization of the department of architecture and the return of students to their chosen field of endeavor, a revival of the club is in full swing.

The chief aim of the club, of course, is to promote good fellowship among the students and co-operation with the faculty. Coupled with this, and on a par, comes the furtherance of the study of architecture and its kindred arts by means of lectures by prominent men of the profession outside of the department. The Architectural Club also aims to publish a year book, plan and stage a fête, and inaugurate a co-operative buying system to take care of architectural supplies for members of the club.

The success of the club is up to the students themselves. But if the attendance of the first meeting can be regarded as an omen, such an undertaking cannot fail. October 12 saw this meeting carried out in the form of a smoker, and it is safe to say that the sponsors of the club were well satisfied.

PENCIL POINTS

SKETCHING AND RENDERING IN PENCIL.

(Continued from page 23)

one might judge that a shingled roof receiving direct rays of light from the sun would appear very bright, and, in fact it often does. Not infrequently, however, such a roof seems very dark under these conditions, even though the wood of the shingles be light in color, this appearance being largely due to the fact that the horizontal lines of the butts of the shingles, which are so turned as to receive little light and are also, because of the nature of their grain often dark, show so black and are so conspicuous as to deepen and darken the effect of the otherwise light tone. The rule is worth remembering, however, in spite of such exceptions, as is also the rule that the darkest, sharpest shadows are cast by the surfaces receiving the most direct light. It naturally follows that surfaces so turned as to receive the light rays in a slantwise direction will be less bright than those receiving the direct rays. It is true, too, that a shiny surface generally appears brighter than a dull surface of the same actual value and sometimes even a black shiny surface will reflect some light tone and so appear practically white. There are exceptions to this for a shiny light surface may reflect some very dark tone and thus appear nearly black, and likewise a smooth gray surface may appear nearly black, and likewise a smooth gray surface may appear either lighter or darker than it really is. In other words glossy surfaces change in appearance with changes of light to a much greater extent than dull surfaces. Even light, dull surfaces, however, often throw much brilliancy onto other objects and white concrete walks or terraces or driveways sometimes reflect enough light upon adjacent buildings to materially affect their appearance, as such lights soften the shadow tone or even cast shadows themselves.

While we might go on with such general hints as these it is hardly worth while, for it is only by observing nature at first hand that the student can gain much knowledge of real value. One excellent way of studying constantly changing effects of light on a building is by making a series of snapshots from some one fixed point at intervals during a clear day and comparing them with care. Such photographs reveal much of interest and value to the observing student, especially if the building chosen be rather small. It might be well to make sketches from these photographs as this would help to fix the ideas in the mind, or, if the student has sufficient ability or training to sketch rapidly, directly from the building, he can possibly learn more by making a series of sketches instead of the snapshots.

We have spoken of the fact that it is sometimes possible to make an effective drawing by the use of shadows only and sometimes by suggesting the building materials alone, but it is more often necessary to represent both the material and the shadows in order to obtain a satisfactory drawing. It is not always easy, though, to decide just how much of each should be shown, especially when working from the imagination, as the architect is often called upon to do. This can perhaps best be determined by making several rough studies on tracing paper directly over the outline drawing or by making two or three small sketches similar to those shown in Figure 12. These eight sketches illustrate the fact that it is often possible to get many fairly satisfactory compositions of the same subject, but there are usually one or two which are better than the others, and one of these should be selected as a guide for the final larger renderings. It is suggested that the student make several similar small sketches of some object from memory or the imagination as practice in composition, and it is well to remember too, that in making drawings from the photograph it is often helpful to try similar studies on tracing paper directly over the photograph, to determine how much to omit and how best to compose that which it seems essential to show.

It may be well to repeat here that the only way to learn to draw is by constant practice. Reading a dozen books on drawing might give the student many ideas,

but unless such suggestions are carried out they are useless. If you lack the inspiration to draw by yourself, it would be well to join some sketching class or engage a critic to help you with your work.

GET A GREEN CARD.—Adv.

ST. LOUIS ARCHITECTURAL CLUB.

THE St. Louis Architectural Club opened the season Thursday, September 16, with a reception and dance. An exhibition of Pencil and Color Sketches made by members during the summer months was held in the Club rooms.

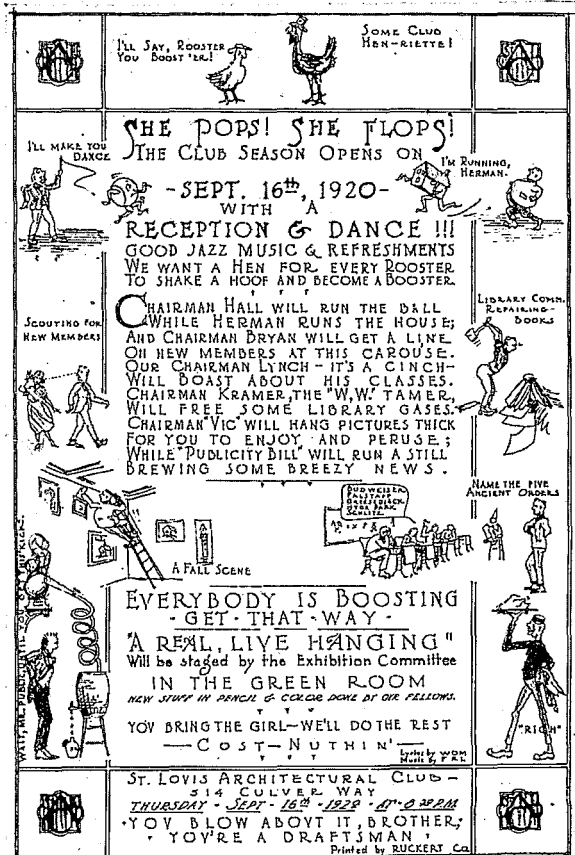
Co-operating with the Architectural Department of Washington University, the Club will continue this year the evening classes in Architectural Design, Shades and Shadows and Construction.

The Club is now working on a plan to double its active membership.

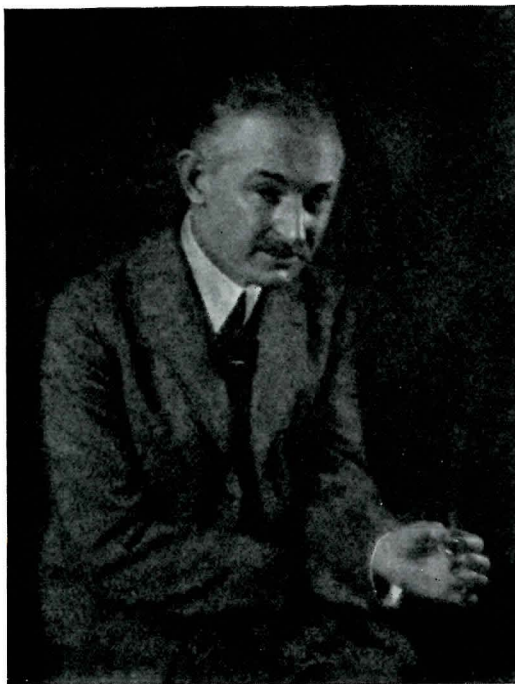
An exhibition of Water Color and Oil Sketches by the architects of St. Louis and members of the Club will be held in the Art Room of the Central Library from September 20th to October 15th.

I am inclosing notice of the opening Reception and Dance—our President, W. O. Mullgardt, and Secretary, F. R. Leimkuehler, are jointly responsible for this creation.

WM. A. HIRSCH.



Reduced reproduction of the announcement of the first reception and dance of the season held by the St. Louis Architectural Club. Blue print colored with pencils. Size of original about 7 3/4 in. x 11 1/4 in.



BIRCH BURDETTE LONG

THE many notable renderings Mr. Birch Burdette Long has made in recent years of the designs for important architectural works have made him known throughout the profession, and the publication of the drawings made especially for *The Century Magazine* has given the general public an opportunity to become acquainted with an interesting phase of his work. Many also found pleasure in his mural decorations in the New York State Building at the Exposition in San Francisco.

Mr. Long was born at Columbia City, Indiana. He went to Chicago when he was sixteen years old and entered an architect's office. In due time he became a draftsman and architectural designer. Mr. Long at first took up the drawing of perspectives as a side line. Soon, however, he took a studio and devoted his whole time to this work.

At this time he became associated with a group of the younger architects and artists of Chicago and came in contact with a number of the older men who inspired him and helped in his artistic development.

Mr. Long first traveled abroad as the third holder of the scholarship of the Chicago Architectural Club. Upon his return to this country he was engaged upon the work on the designs for the Grand Central Terminal in New York City.

He then went abroad again, this time to make a series of drawings for *The Century Magazine*, showing the South Kensington Museum, the War Offices, and other important buildings that had been built recently in London.

Mr. Long then returned to New York City where he has produced innumerable drawings of great distinction, including his drawing of the Lincoln Memorial, at Washington, D. C., of which Mr. Henry Bacon is the architect, the Fulton Memorial design by Mr. H. Van Buren Magonigle, and other works of first importance.

PERSPECTIVE DRAWING, PART VI

(Continued from page 17)

They have been mentioned in passing only to call attention to the possibilities.

Students frequently become confused and find much difficulty owing to the failure to grasp the facts pointed out in the preceding paragraphs. Though simple, these facts are of an importance that makes them worthy of careful consideration.

PERSONALS

FRANK A. WESTON and HARRY J. SIMMONDS have formed a partnership for the practice of architecture under the firm name of Weston & Simmonds, offices are 612 Banner Building, Greensboro, N. C.

MURRAY KLEIN, Architect, is now located at 37 Graham Avenue, Brooklyn, N. Y.

C. FRANK JOBSON, Architect, Chicago, announces that his office is now incorporated under the name of Jobson & Hubbard, with offices at 225 North Michigan Boulevard, Chicago.

PHILIP S. AVERY, Architect, has removed from 95 Milk Street to 99 Chauncy Street, Boston, Mass.

Classified Advertisements

Advertisements in this column Five cents a word, none less than \$1.00. Remittance must accompany order.

COLONIAL DETAILS in post-card form, 40c per set, sixteen cards. Architectural Post Card Co., 1603 Real Estate Trust Building, Philadelphia, Pa.

WANTED—An experienced architectural draftsman and specification writer desires a position with an established firm; am a technical graduate; understand design. References. Address: "Architect," 914 Md. Ave., N. E., Washington, D. C.

SCHOOLS.

School of the Fine Arts, Yale University

Department of Architecture

1. A four-year general course in Architecture leading to the degree of Bachelor of Fine Arts (B.F.A.). Students may specialize in the above course (a) in Design; (b) in Construction.
2. Special students properly qualified are admitted to the courses in the Department of Architecture. Students of the Department of Architecture may avail themselves of general allied courses in Painting and Modeling. For special catalogue of the Department of Architecture address Secretary of the School of the Fine Arts, Yale University, New Haven, Connecticut.

OHIO MECHANICS INSTITUTE

Intensive Two-Year Course in Architecture. Four-Year Technical High School Course in Architecture. Also Special Courses for Draftsmen. For further information, address the Registrar, Central Parkway and Walnut St., Cincinnati, O.

GET A GREEN CARD

We want a Representative in each town to handle subscriptions for THE ARCHITECTURAL REVIEW and PENCIL POINTS.

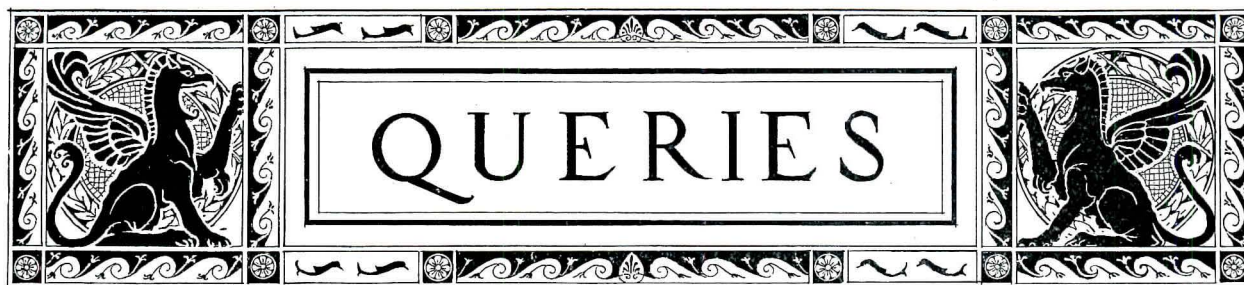
A good commission will be paid to the right man. If you are he, send for particulars, giving name and address of present employer.

Don't let the other fellow beat you to it.

Get a Green Card

which authorizes you to represent us in your locality.

THE ARCHITECTURAL REVIEW, Inc.
ONE MADISON AVENUE, NEW YORK



QUERIES

In this department PENCIL POINTS will endeavor to answer questions of general interest pertaining to Architecture and allied arts, giving the best available information from authoritative sources. We desire that you feel free at all times to make use of this service, inviting your co-operation in making the department both interesting and valuable. Should you desire an answer by mail, enclose stamp for reply. Address queries to, PENCIL POINTS, (Attention of E. M. Urband), Metropolitan Tower, New York City.

Question.—Can you tell us what practical methods are employed and what devices are used in large industrial plants and institutions for locating wandering employees? Our clients frequently request information of this character and we wish to be prepared with suggestions founded on the best practice. W. L. M., New York. **Answer.**—The question of determining the best type of apparatus for "man-locating" involves considerable study. Space here scarcely permits more than mere mention of the different methods. The following methods may be used: 1. Telephone P.B.X. and call each department, one after another in rotation. 2. Interior or private telephone systems, if outlying stations are available in all sections of the plant. 3. Messengers or runners on foot, skates, bicycle, motorcycle or motor car—depending upon size of plant and importance of message. 4. Loud-speaking telephone systems—sometimes called "paging outfits." 5. Automatic factory-calling or man-locating systems. Doubtless any one of the five foregoing methods would serve its purpose; namely, that of determining the location of an individual. *System No. 5, 5A—Audible signal systems; 5B—Visual signal systems.* These to be again subdivided as follows: 5A-1—Continuous sounding systems. 5A-2—Selective sounding systems. 5B-1—Colored unit lighting systems. 5B-2—Flash-lighting light systems.

Question.—Where can I obtain statistics relative to the increased cost of building materials in the United States in the last year? J. W., Lackwood, Ohio. **Answer.**—By writing to the Secretary of Department of Labor, Washington, D. C., you can obtain a book called "Economics of the Construction Industry." Architectural Samples Corporation, at 101 Park Avenue, New York; The F. W. Dodge Co., 119 West 40th Street, New York; Dowe Service Building Reports, 1170 Broadway, New York, and Bradstreet's Journal at 148 Lafayette Street, New York, will also supply you information about costs.

THE UNIVERSITY OF KANSAS

THE Department of Architecture, University of Kansas, began the year with an enrollment of 55, an increase of about 20% over last year. The department has averaged 20% increase each year since its establishment in 1913. The students are about evenly divided, this year, between the course in architecture and the course in architectural engineering.

Mr. N. E. Weidemann, Illinois, 1920, is a new instructor in the department, teaching Shades and Shadows and Perspective, and assisting with Building Construction and Building Sanitation.

Professor La Force Bailey, Illinois, 1915, B.S. and M.A., has been advanced to an assistant professorship, in charge of Design.

Professor Goldwin Goldsmith, Ph.B. Columbia, '96, who started the department seven years ago, was for seventeen years a member of the firm of Van Vleck & Goldsmith, New York City, prior to taking charge of the department.

Ernest Pickering, B.S., 1919, is in the office of J. W. Royer, Urbana, Ill. He has the degree of B.S. in Archi-

tectural Engineering from Kansas and last year secured the degree of B.S. in Architecture at Illinois.

The Thayer prize medal for excellence in design was won in 1919 by Ernest Pickering in Class B Projet, Beaux-Arts Design, and by Earl M. Moore, Kansas City, in Analytique. In 1920 the medals were won by J. Leland Benson, Lawrence, Kan., in Class A Projet, and Homer F. Neville in Analytique.

CORNELL UNIVERSITY.

THE College of Architecture has appointed Mr. Robert North, B. Arch. A. I. A., as Assistant Professor of Design, to succeed Professor Stevens who has accepted a similar position at Yale University this year. Mr. North achieved notable success as a practitioner in Buffalo where he has been in independent practice during the past thirteen years and brings to his new work much enthusiasm, as well as a broad culture and experience.

Walter King Stone, the well known illustrator, has been appointed acting Assistant Professor in the Fine Arts Department of the College. In addition to carrying on the work of Professor Gutsell, who is on Sabbatical leave this year, Mr. Stone is giving extra courses in Book Illustrating and Art Editorship.

Dean F. H. Bosworth, Professor A. C. Phelps and Natalie W. Duncan, '20, have been elected charter members of the new local chapter of the Phi Kappa Phi which was installed at the University last June. Election to this society is based on high scholarship, character and service to the University and the cause of learning.

The new book on "Descriptive Geometry," by Professor Geo. Young, Jr., is now on the press.

R. M. Kennedy, '16, who received the Fellowship in Architecture in the American Academy in Rome, returned during the past summer and is now with York & Sawyer, New York. H. G. Spellman, who has been in the Air Service in France and since with Myron Hunt, Los Angeles, Calif., has returned to Cornell to finish his course in Architecture. H. B. Pentland, '20; P. B. Oteiza, '20; J. Hernandez, '18, and J. Weiss, '16, are all prospering in Havana, Cuba. R. Bailey, B. T. Hill, and A. E. Middlehurst are with York & Sawyer, New York. E. L. Howard is with H. Van Buren Magonigle, New York. E. Purdy is working with Horace Peaslee, '10, in Washington. D. C. K. Carver, '20, is doing graduate work at Cornell this year, also Mr. Fraser of the University of Minn.

Prizes: The Student Medal of the American Institute of Architects, J. S. Whitman; The Clifton Beckwith Brown Memorials Medals, First—J. S. Whitman, second—E. Purdy; The Medal of the Societe des Architectes Diplomes par le Gouvernement Francais, First—E. Purdy, second—L. I. Nichols; The Fellowship for the year, K. Carver.

THE demand for copies of the first four issues of PENCIL POINTS has been so great that the supply is entirely exhausted. The June, July, August and September issues are out of print—extinct as the Do-Do Bird.

ARCHITECTURAL ACOUSTICS

CHAPTER IV

REVERBERATION in excessive amount is responsible for the majority of acoustical difficulties experienced in auditoriums. When a short, sharp sound is produced in an enclosed space, such as a room, a train of waves is emitted and these waves are reflected back and forth from surface to surface, losing by absorption and transmission a little energy at each reflection until eventually they cease to be audible. The more dense and rigid the reflecting surfaces, the greater is the percentage of sound reflected, hence the larger the number of reflections and the longer the time required to absorb the energy.

Modern building materials such as concrete, hard plaster, stone and brick (see Curve 1 in diagram) reflect a large proportion of sound striking them, so that in any room finished with these materials the prolongation of every sound, or its audible duration in the room after the source has ceased, amounts to several seconds. If a number of new sounds are created in rapid succession during that period, they will overlap and blur, thus causing loss of distinctness as well as a noisy condition by the accumulation of energy. The result is not only disturbing to the nerves but fatal to the proper hearing of music and speech, especially of the latter.

The introduction of absorbent materials such as carpets, draperies, upholstery, or the clothing of an audience, will greatly diminish the amount of reverberation, often to the extent of entirely correcting faulty conditions. Such is especially the case in low rooms. In any hall of good-sized height or volume, however, the possible amount of such absorption is not usually sufficient to produce correct conditions. This accounts for the extremely poor acoustics of many modern churches, legislative chambers, court rooms, theatres, concert halls and other auditoriums.

In such cases, where architectural considerations preclude any radical change in design, it is necessary to increase the absorbing power of at least a portion of the interior surfaces. To accomplish this result and at the same time preserve the struc-

tural character of the surfaces, two masonry materials have been devised which are highly absorbent of sound. One is a ceramic tile, known as RUMFORD TILE, which has been used in the churches of St. Bartholomew and St. Vincent Ferrer in New York City, and in a number of other well-known structures. The other substance, having a somewhat wider range of use owing to the fact that it can be fashioned in ornamental forms, is a cast material called AKOUSTOLITH. The absorbing power of this material is shown in Curve 3 on the accompanying diagram. The degree of absorption is truly remarkable, being comparable with the best felt absorbents and many times in excess of any other building material.

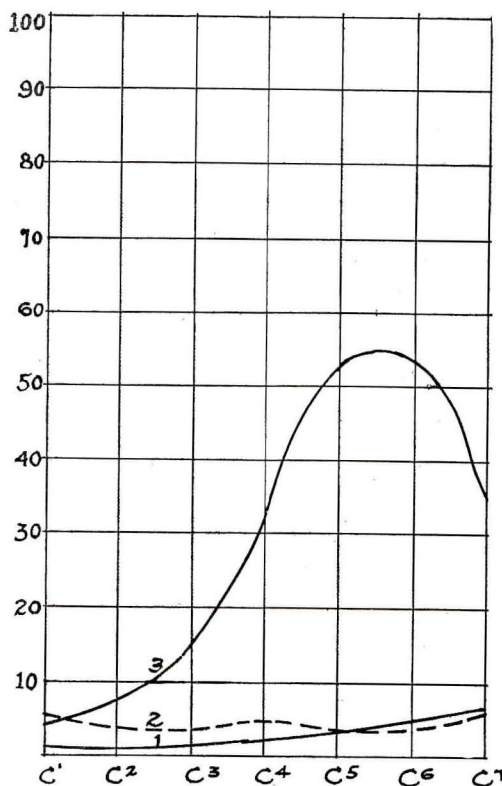


FIGURE 1

The above graph shows the variation of absorbing power for reflected sound with the musical pitch. Curve 1 shows the absorption of unpainted brick surfaces. Curve 2 shows the absorption of soft plaster on wood lath. Curve 3 shows the absorption of Akoustolith sound-absorbing stone. The figures at the left show the percentage of absorption, while the letters at the bottom indicate octave intervals of pitch, C³ being "middle C." Most of the audible energy of the voice, as well as other sounds, lies in overtones above C⁴. It will be noted that in this region the absorbing power of AKOUSTOLITH* is from seven to sixteen times greater than the most favorable of other types of construction. The advantage over glazed tile, concrete or hard plaster on metal lath is even greater.

*Akoustolith is an artificial stone and can be cast in the form of tile, wall blocks or in ornamental forms.

The extent and location of such absorbing materials will depend upon the shape and the volume of the given auditorium and the purpose for which it is to be used. In any room used chiefly for speaking, the reverberation must be reduced to a far lower degree than in one used for music, especially of an instrumental character. In the former case, the necessity of making successive syllables clear and distinct without overlapping means the reduction of the reverberation to as low a point as is consistent with maintaining the loudness and carrying power of the sound. With musical instruments, however, owing to the fact that high pitches are absorbed more readily than low ones, the amount of absorptive material must be so limited as not to destroy the upper harmonics and consequently the quality of the musical tone. The correct amount of absorptive treatment in every case is susceptible of mathematical calculation according to the problem involved.

The location of the treatment is further governed by conditions of echo, and this we shall discuss in our next chapter.

R. Guastavino Co.,

Boston

New York

THE SPECIFICATION DESK

It is the purpose of this department to cover all matters having to do with specifications. The Specification Desk is to be an open forum to which manufacturers as well as architects, draftsmen and specification writers are invited to contribute. Nothing of an advertising nature will be permitted but it seems to the publishers wholly desirable that those who prepare specifications and those desirous of having their goods specified shall meet on common ground in this department of PENCIL POINTS. It is not the idea that the merits of materials shall be discussed in these pages but rather those broad questions which come up in connection with every building operation for which the specifications prepared in the architect's office form the basis not only for the builder's estimates, but also for the determination of the materials and equipment to be used.

The readers of PENCIL POINTS are invited to submit material for this department, either in the form of questions or suggestions calculated to improve any phase of specification work.

THE SPECIFICATION WRITER AND THE MANUFACTURERS' LITERATURE, PART IV

BY LOUIS R. HOLSKE

THE articles listed below are not mason's materials but inasmuch as they are customarily set by masons they will be considered in this division, each in its relation to, "What the architect wants to know," without special effort to arrange them in the order in which they are usually set in the building. They are as follows: steel windows of various types, underwriters scuppers, shutter eyes, curb bars, window chains, safety bolts, safety treads, fireplace dampers, ash traps, coal chutes, clean-out doors, milk and package receivers, coal-hole frames and covers for sidewalk lift openings.

Steel Windows—Full-size sections of jamb, head, sill and transom of each type, embracing the sash, and of meeting rails in case of double-hung sash. A detail of muntins in the sash. If carried in stock, a list of sizes, the points of measurement, indicated by dimension lines on the details. A detail of mullion construction. A statement as to material, rolled steel sections, heavy gauge sheets steel or a combination of both. Quality of hardware, rough and finishing. Hardware finish—details of operating hardware. Is the priming coat applied in the shop? In the case of shallow reveals, just how can window cleaner safety bolts be accommodated? An illustration of the possible application of shades on the inside.

Underwriter's Supplies—A detail showing the pitch and method of hinging valve, material of valve. How is the ill effect of corrosion avoided at the hinge point? How is hinge protected against the weather? For what thicknesses of walls are they made?

Shutter Eyes—The architect would be interested in knowing the size, thickness of casting and the manner of reinforcing the side carrying the eye on steel shutters.

Curb Bars—A full-size section of the bar showing the method of anchoring. The spacing of the anchors. The method used in galvanizing, whether hot dip, electro plate or Sherardizing.

Window Cleaner's Safety Bolts—Material of bolts. Illustrations of different types, minimum area of cross section of each type.

Safety Treads—Sections, either full-size or to scale, of the different forms made by the manufacturer, showing methods of anchoring. Description of non-slip material and base used. Manner of attaching or incorporating non-slip material to or with base. Reliable tests for durability.

Fireplace Dampers—Plan and section drawn to scale which will enable the architect to determine readily the splay of the jambs, and the height and angle of the dome. A list of sizes made, the points of measurement indicated by dimension lines on the drawing; the thickness of metal of the front of dome and front flange.

Ash Traps—Plan and sections to scale, properly fig-

ured, including a figure for the projection of the top of the flange beyond the body of the trap.

Coal Chutes—A plan and section of each type, drawn to scale and properly figured. A list of sizes made, the points of measurement indicated by dimension lines in the drawing. An illustration and description of the locking device. Adaptability to walls of various thicknesses.

Clean-out Doors—A list of sizes manufactured along with a large-scale section of the frame, showing the point of measurement, and the methods of anchoring. The locking device.

Milk and Package Receivers—Details of the inner and outer frames, showing method of anchoring to masonry. The sizes manufactured, the points of measurement indicated by dimension lines on the detail. Adaptability to walls of various thicknesses. An illustration and description of the automatic locking device.

Wall Garbage Receiver—This, being a device similar to the milk and package receiver, same kind of information is required.

Coal Hole Frames and Covers—Regarding the flush type, the architect would be interested in knowing the size, form of frame, shape of cheeks, guards, manner of hinging cover, how the cover and framework are made non-slipping, and whether any attempt at drainage has been made.

Sidewalk Lift Frame and Cover—A section of frame and cover, how drainage is provided for; how slipping is provided against on frame and cover; manner of hinging and material at hinges. What guards are provided to prevent persons from falling in when the cover is open? What stays are provided to hold the cover in position when open?

There are many other items which might be discussed in this division, but the writer believes that the principles involved have been illustrated sufficiently to make their application clear in the preparation of data on all materials and equipment under this head, with the purpose of supplying the facts the specification writer needs.

A PUBLICATION OF INTEREST TO SPECIFICATION WRITERS

The Home Electrical—A book of suggestions and data. Floor plans of typical modern residences with full details of electrical equipment for the hall, living room, dining room, library, bedroom, bathroom, laundry, kitchen and garage. Complete electrical plans with illustrations of all modern electrical apparatus for the home. A copy will be sent free to readers of PENCIL POINTS on application to the Habirshaw Electric Cable Co., 10 East 43rd Street, New York.

“L. & C. HARDTMUTH'S” **KOH-I-NOOR** **PENCILS**

USE DRAWING INSTRUMENTS

MADE IN THE U. S. A.



View of one of the Drawing Instrument Departments of our Factory

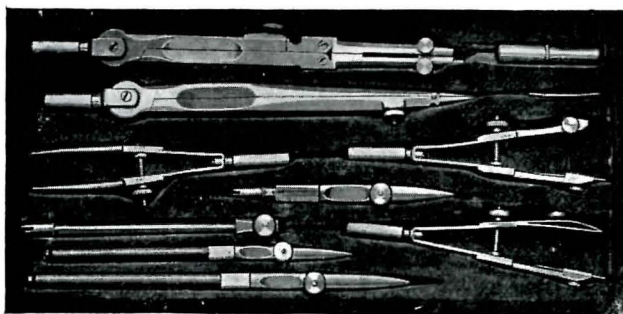
Before the war, drawing instruments were almost exclusively imported from Germany. When this source of supply was shut off we began the manufacture of drawing instruments in the United States. We are now manufacturing on a large scale and are in position to supply instruments comparing most favorably with those of European make.

We take pleasure in calling the attention of Draftsmen to our ANCHOR and PILOT drawing instruments, which are designed to do the finest and most accurate work, and are fully guaranteed by us.

The merit of the goods warrants your support to this, a new American industry.

Price list will be sent on request.

KEUFFEL & ESSER Co.
 NEW YORK, 127 Fulton St. General Office and Factories, HOBOKEN, N. J.
 CHICAGO 516-20 S. Dearborn St. ST. LOUIS 817 Locust St. SAN FRANCISCO 30-34 Second St. MONTREAL 5 Notre Dame St. W.
 Drawing Materials • Mathematical and Surveying Instruments • Measuring Tapes



No. F. 1854, 5 1/2" Compass

DRAWING SET

AS ILLUSTRATED

By Mail, \$7.50

Write for description of other sets

High Grade Drawing Instruments and
Materials

Let us quote on what you need



KOLESCH & CO.

138 Fulton Street, New York

ESTABLISHED 1885

PENCIL POINTS

THE T-SQUARE CLUB, PHILADELPHIA.

OUR first club meeting of the season was held October 6th, and proved very enjoyable.

Mr. Elliott's "Glimpses of the Obvious" gave us the benefit of his keen and entertaining criticism of a wide range of subjects, all the way from fragments of Greek Sculpture to Grand Rapid furniture and back to the sixteenth century tapestries.

The exhibition for the evening consisted of some thirty water color sketches of Nantucket by Mr. D'Ascenzo and photographs of old work along the New England Coast by M. Edmunds Dunlap and Wetherill P. Trout, with several color sketches by Rudolph Nickel and three by H. L. Duhring.

The result of the semi-monthly 1919-1920 Sketch Problems, as announced by the Chairman of the Educational Committee, Mr. W. C. Stanton, is as follows: R. J. Wadsworth (15 points), Gold Medal; W. Pope Barney (14 points), Silver Medal; Ellery K. Taylor (8 points), Honorable Mention; Frank Lee Bodine (3 points), H. A. MacNeil (3 points).

The post card enclosed shows how we started the atelier season this year, the meeting being attended by some fifty men, a third of whom were new comers to the Club. Mr. John F. Harbeson, Assistant Patron, was in the chair and stirring short addresses were given by Mr. Albert Kelsey and five other members of the Club. The meeting resulted in bringing in twelve new members, so that this year's atelier starts with a membership of thirty. Class "A" Esquisse (Sept. 25th) was done by twelve men and Class "B" (Oct. 2nd) by ten.

ELLERY K. TAYLOR.



VOID UNLESS SIGNED BY

Member.

Above is shown at exact size the design for card of admission to the Halloween Party of the T-Square Club, Philadelphia. It was printed in black on cards of pumpkin color.

PENCIL POINTS—ITS READERS AND ITS ADVERTISERS.

PENCIL POINTS, even though a new publication, is already carrying the advertising announcements of several representative firms. These companies appreciate the position occupied by the readers of this journal and are showing their faith in a new enterprise by giving it their effective and tangible co-operation during the period of its development.

The readers of PENCIL POINTS can effectively co-operate with the publishers to their mutual advantage by letting the advertisers know that their advertisements have been read. Whenever you communicate with any of the patrons of our advertising section, please mention PENCIL POINTS. This is easy for you to do and it means much to us. The faster our advertising section grows, the more reading matter we can include in each issue. It is our purpose to publish the advertisements only of firms fully deserving your confidence and so we do not hesitate to recommend them strongly to you.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912,

Of PENCIL POINTS, published monthly at Stamford, Conn., for October 1st, 1920.

STATE OF CONNECTICUT, } ss.,
COUNTY OF FAIRFIELD, }

Before me, a Notary Public, in and for the State and county aforesaid, personally appeared C. H. Peters, who, having been duly sworn according to law, deposes and says that he is the General Manager of Pencil Points, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Name of	Post office address
Publisher, The Architectural Review, Inc., Stamford Conn., and One Madison Avenue, New York.	
Editor, Eugene Clute, One Madison Avenue, New York.	
Managing Editor, None.	
Business Manager, C. H. Peters, One Madison Avenue, New York.	

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent. or more of the total amount of stock.)

The Architectural Review, Inc., Stamford, Conn., and One Madison Avenue, New York.
Ralph Reinhold, One Madison Avenue, New York.
C. H. Peters, One Madison Avenue, New York.
F. W. Robinson, One Madison Avenue, New York.
Edward G. Nellis, One Madison Avenue, New York.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent. or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is..... (This information is required from daily publications only.)

C. H. PETERS,
Business Manager.

Sworn to and subscribed before me this 23d day of Sept., 1920.
[SEAL.]

G. H. SYKES,
Notary Public.
Certificate filed in New York County No. 656.
My commission expires March 30, 1922.