

## FELLOWS

THE finest thing that has come to the surface since we began publishing this journal is the spirit of fellowship among men who draw and design—the community of interest among architects, designers, draftsmen and renderers.

This has shown itself in many ways, perhaps the most effectively, in the willingness of the men who have made themselves known for special excellence in some branch of the work to do everything in their power to pass along the results of their experience to others. They have shown this willingness by permitting the publication of their work in PENCIL POINTS and by giving this journal access to any material that may be thought helpful or interesting to its readers. They have shown also a willingness to tell in a straight-forward way how they work, for the benefit of other draftsmen. It is a fine spirit—the feeling that they are fellows in their interests. And this attitude has been matched by the readers, who have given evidence of their approval by becoming regular “*Pencil Pointers*.”

Furthermore this spirit has been shown towards the men who edit PENCIL POINTS from month to month. The friendly letters offering suggestions and expressing enthusiasm, criticisms and clever little tributes in the way of a card bearing good wishes and an amusing drawing, news of the activities of clubs and associations—things that are part of the human side.

Altogether this is the spirit of PENCIL POINTS, as a medium for the exchange of ideas. The publishers and editors have always the feeling that their function is the proper presentation of the work, ideas and experiences of some members of the group to other members of the group—and they have always the purpose in mind to edit PENCIL POINTS *with* as well as for our readers.

Because of this spirit the drafting room, the school and the atelier come together in this journal and clubs in various parts of the country exchange ideas by sending in copies of their club programs, etc., as well as news items. We hope that there may be a constantly increasing amount of this matter, for the fund of these ideas from which all can draw is dependent upon the contributions from the readers themselves.

In the selection of matter to appear in this journal the editors feel that they stand in very much

the position of a program committee with a big architectural club to serve, and they appreciate the help of the fellows—the willingness to do a turn, make suggestions and offer criticisms of the program from month to month.

The thought of the readers of this journal as members of a big club is one we like—it is pretty near the truth too. Let “*Pencil Pointers*” boost the membership, slap the program committee on the back or roast it as it may deserve.

## SERVICE.

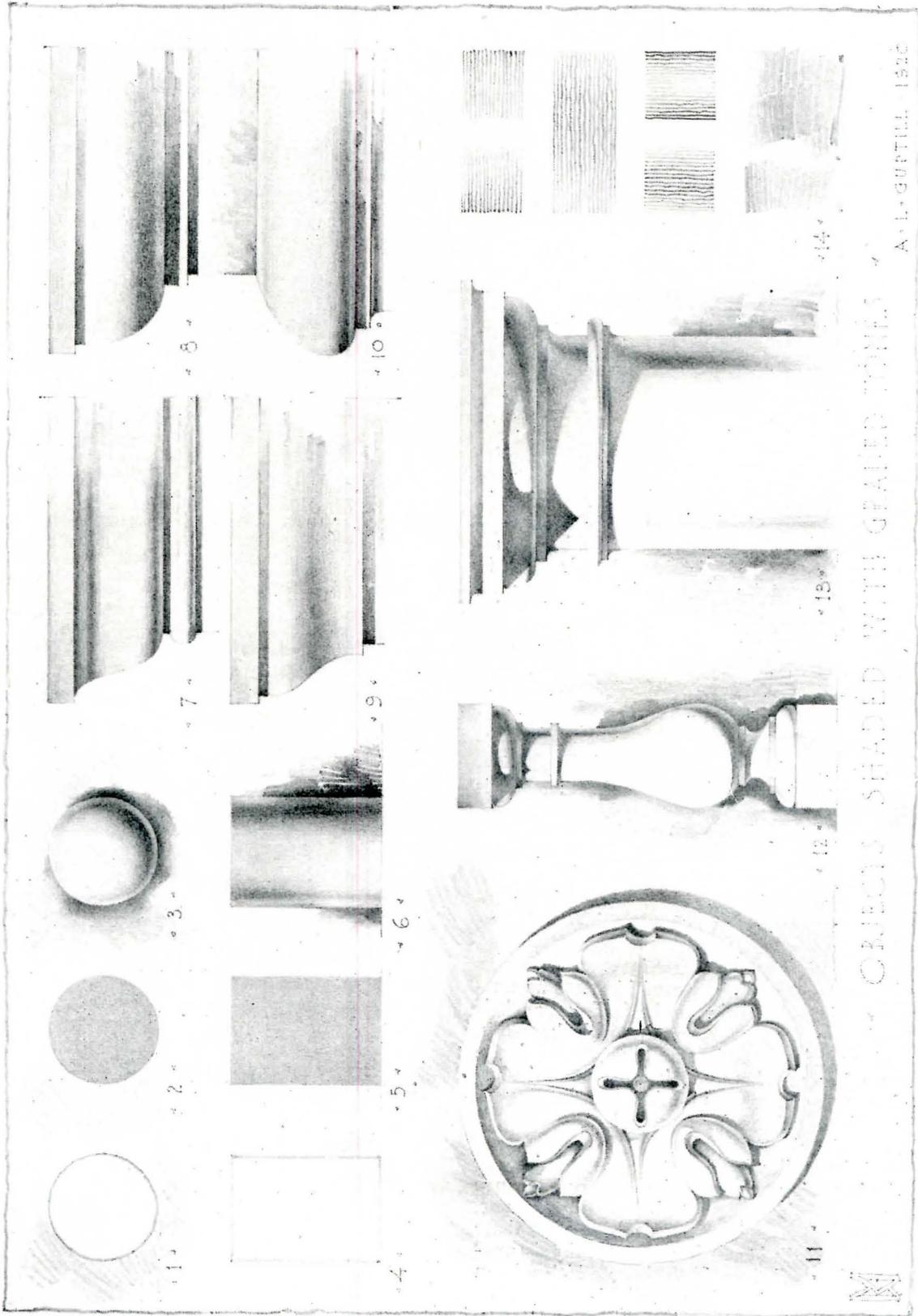
THE man who “delivers the goods” is the man everyone takes off his hat to—that is simply saying in the vernacular that service pays. From the days long ago when our half barbarous ancestors lifted the best fighter in their tribe on their shoulders and carried him along in an impromptu procession of victory, to the present day the position of dominance is occupied by *the man who can do something well*.

Today knowledge counts more than brawn and the student of now is likely to be the man of action a few years later. Fortunately the opportunities for mental development and for the acquisition of knowledge have kept pace with the need, and everyone has a chance to learn and develop.

It is worth noting that most of the men whose portraits have been published in PENCIL POINTS because they have done notable work have been holders of scholarships—it is also a fact that most of them were born in the smaller centers of population. It is also worth noting that some architectural club or some atelier has played a big part in the development of each of these men. The inspiration and guidance given by older and more experienced men through these agencies are accorded the greatest credit for their success by most of the men who have arrived.

This seems to show that everyone has a chance, if he has the right stuff in him, and that scholarships, architectural clubs and ateliers are well worth while—that they produce results, render a big service by providing the means of fitting the right men to render a service and to enjoy the success that rewards good work.

PENCIL POINTS



Sketching and Rendering in Pencil. Figure 16, illustrating the use of shading in graded tones.

# SKETCHING AND RENDERING IN PENCIL, PART VII

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.*

## *Gradations of Tone.*

CAREFUL observation and study of objects in nature, as well as those contrived by man, will reveal one fact of the greatest value to the student of drawing, and this is that although not a little of the beauty of such objects depends on color, on profile and on the proportions of the various parts into which they are divided, more of it than we usually suppose is caused by the varying light and shade and especially by the gradation of tones from light to dark or from dark to light.

There are, to be sure, some objects which seem to have no gradation of tone, each surface being apparently of one value throughout, but in spite of such exceptions there are far more "graded" tones in nature than "flat" tones of uniform appearance, and it is certainly true that a graded tone has more interest and variety than one of exactly the same value in every part.

It naturally follows that in representing nature by drawings, graded tones usually prove of greater value to the artist than do those which are flat. Almost any object can be represented satisfactorily by graded tones, whereas many objects, especially those which are rounded or curved, cannot be made to appear correct if flat tones alone are used. We can, for example, make a pleasing drawing of a square box, and, if we wish, have every tone graded. It is impossible, on the other hand, to nicely represent a sphere or an object of spherical form by the use of flat tones only, unless we resort to a succession of small adjacent flat tones, each slightly different in value from its neighbor, and such a combination really is, after all, a graded tone. If we try to portray a sphere by drawing its outline as at "1," Figure 16, we fail to give our picture any effect of convexity of form, and shading the entire circle with a flat tone as at "2" gives no better result. It is only when we copy as well as we can the gradations found on such surfaces in nature, as we have done at "3," that we approach the desired effect. In fact we would not even recognize a sphere when placed before us were it not for this subtle grading of its surface tones, for without these gradations it would appear simply as a flat circular disk. In the case of the cylinder and cone and similar rounded forms it is perhaps a bit less difficult to suggest their shapes on paper without recourse to graded tones providing they are drawn in perspective,

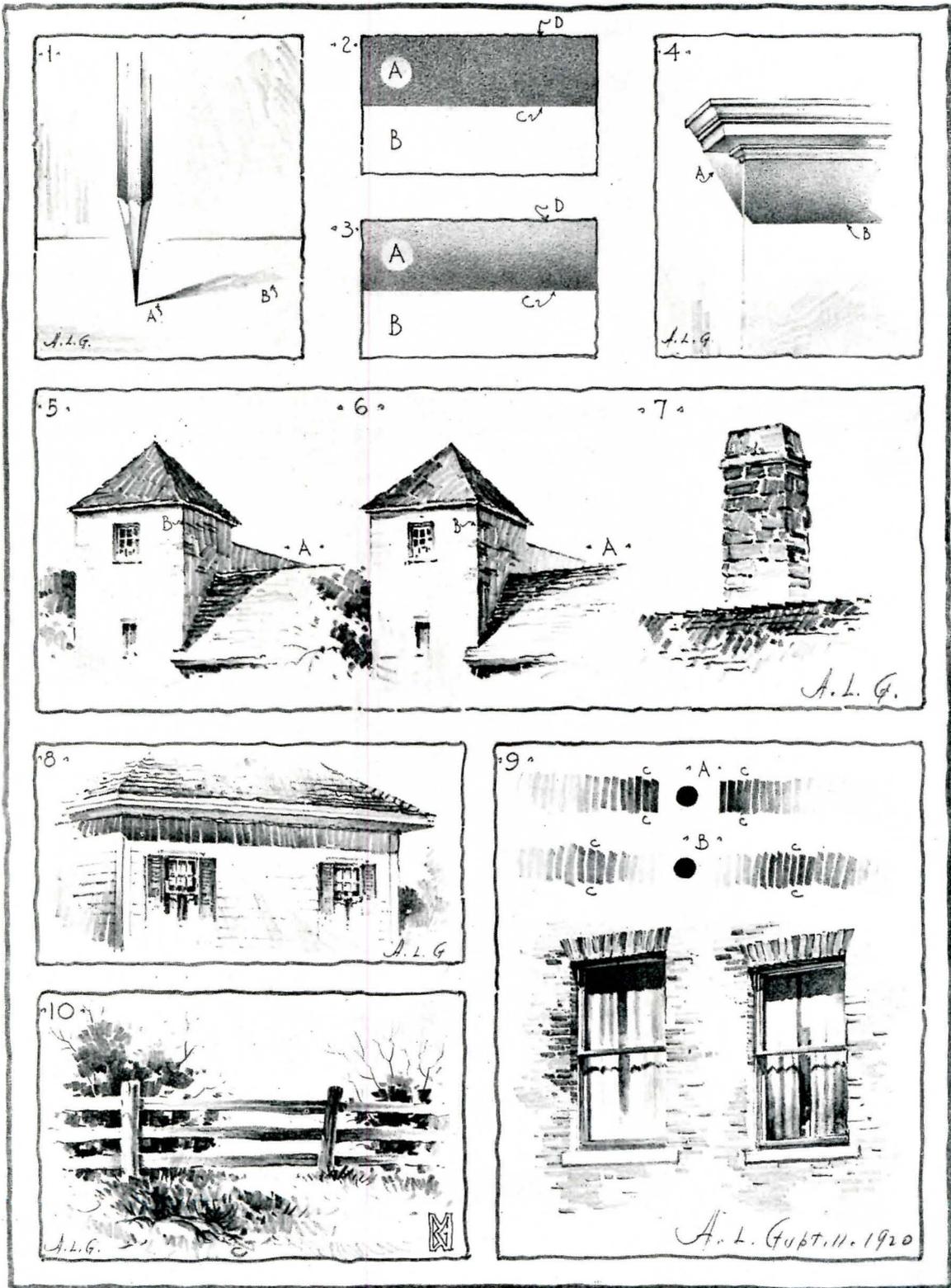
for when so drawn their forms can be fairly well indicated even in outline. If a real feeling of solidity and roundness is desired, however, it can best be obtained by the use of graded tones. If such objects are shown in elevation, instead of perspective it will be found that these tones are absolutely essential for their successful representation. Take for example the cylinder which is shown in elevation at "4," Figure 16, drawn in outline only. In this form it appears as a rectangle and seems flat. A smooth tone added as at "5" is of no help, and it is only when we use the grades as at "6" that we get the real appearance of roundness.

Now just as the surfaces of cylinders and spheres and such geometric solids depend largely on gradation of tone for a pleasing effect, so, in architecture too, much of the beauty of the mouldings and ornament depends on similar gradations. After all, the mouldings are mainly combinations of curved surfaces, and if these curves are pleasingly designed the light and dark will be graded in a satisfactory manner. In fact these gradations on mouldings so nicely express the profiles which cause them that we are often able to judge the curve of each moulding at a glance even though its profile is not visible. If the light is favorable we are usually able to name every member composing a cornice and tell its exact form without once seeing its true profile. One of the main reasons why a designer works so hard to produce a good profile for a cornice or similar group of mouldings is that he is seeking the most pleasing arrangement of light and shade and shadow possible, and knows that an excellent profile is important, not as a thing in itself, for it is seen in its true form only at the corners or breaks in a building, but as a means of obtaining the most satisfactory results in light and shade. A poor profile usually means a poor cornice.

At "7," "8," "9" and "10," Figure 16, are four sketches of typical architectural mouldings, drawn in elevation, and with their tones graded. For convenience their profiles have been shown but even if these had been omitted it would not be difficult to visualize the correct curves. It should be borne in mind, however, that without the use of graded tones it would be impossible to produce such effects of curvature.

Now just as it is necessary to use graded tones for a truthful expression of the curved surfaces of mouldings, they are obviously needed also in the representation of other rounded surfaces such

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Sketching and Rendering in Pencil. Figure 17, illustrating detachment by the use of graded tones.

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as those which we so often find in ornamental work. Most ornament, in fact, consists so largely of curved surfaces of every possible shape that it would be very difficult to represent it on paper without the use of some graded tones. At "11," Figure 16, is a drawing of a rosette, nearly every surface of which is curved, and therefore represented by grades of light and dark. Certainly an object of such gradual curvature as this can be successfully portrayed only by equally subtle gradations of its values.

Balusters, columns, archways, round towers and all sorts of similar architectural objects and details require a certain amount of graded shading. At "12" and "13," Figure 16, a baluster and a capital are shown. Even though drawn in elevation the rounded effect is very evident. Had they been done in perspective less care would have been needed in the shading to express roundness, but for architectural purposes it is often necessary to work in elevation and therefore these sketches have been done in that manner to prove that it is not essential to show objects in perspective when a feeling of projection and curvature is required.

In order to illustrate the points under discussion in the clearest possible manner the drawings on Figure 16 have been done with very evenly graded tones for by this means the values as found on the objects themselves could be more accurately represented than by the use of tones built up of separate lines. As a general rule, however, such smooth tones are not needed, for much the same effect can be arrived at by forming them of lines just touching, in the usual manner, and the result is less mechanical or photographic and hence more desirable. At "14" a few suggestions are offered for the formation of graded tones by individual strokes. (It is suggested that the student make a few drawings similar to these on this plate, trying some with the smooth tone and others with a more sketchy handling.)

It should be remembered that although the exact form which the gradation of a tone takes depends largely on the curve of the surface, it really owes its effect to the light which causes it to be visible. If we had no light the most perfect mouldings would be lost in darkness—if we have too much light their beauty is often destroyed. The author has in mind a certain coffered ceiling of unusual beauty. After this ceiling had been in existence a number of years and had been much admired, it was decided to install a new indirect lighting system in the room, and this was done. The system was so arranged that the light was uniformly distributed over the ceiling in such a way that nearly all of the shade and shadow was destroyed. The lighting engineers pronounced the job a perfect one, but from an artistic standpoint the effect of the ceiling was ruined; the mouldings and detail were barely visible while the few shadows that remained took weird and grotesque shapes of a

most bewildering nature. In this case too much light, or rather light distributed in too uniform a manner, destroyed the effect. This all goes to prove that even a beautiful curve may lose much of its value through unfavorable lighting, and it shows also that the gradation of tone on any given moulding or curve varies with changes in light. Spheres and cylinders, for example, do not appear the same at all times and hence cannot always be represented in the same way. It should be remembered, too, that the gradation of tone on any given form, take a cylinder for example, depends not a little on the nature of the material of which the object is made. A study of a number of cylinders of equal size and of various materials such as wood, plaster, polished white marble, sandstone, red granite, brass, silver, etc., will reveal, even under the same conditions, a surprising difference in the values and the method of gradation of the tones. Those cylinders with highly polished surfaces will show a greater complication of values and much sharper and more sudden contrasts, as a rule, mainly because their surfaces serve as curved mirrors to reflect distorted images of other objects. Such surfaces usually have brilliant highlights in spots while those of the wood or plaster or other dull appearing objects will not only lack these highlights but will show throughout a more simple and gradual change in tone. It is because of such conditions as these that there can be no definite rules given as to just how such objects should be represented. Observation and study will give the student the desired knowledge.

We have, up to this point, spoken mainly of graded tones as found on curved surfaces, yet it should be realized that smooth flat surfaces often appear to grade from one part to another. Prove this to yourself by observing objects around you. It is especially true that on surfaces indoors, where the light is frequently coming from a number of sources and is all more or less diffused, we find many tones which are graded. A ceiling, for instance, often appears light at one side and dark at the other, but it is in the shadow tones especially that we find a great amount of gradation. As a rule the shadows of objects indoors seem the darkest and have the sharpest edges near the object casting them. A chair leg, for example, usually casts a dark shadow where it touches the floor, but this shadow softens as it gets farther from the leg and soon disappears. The little sketch of the pencil touching the paper at "1," Figure 17, was made to illustrate this point, the shadow being the darkest at "A," softening as the light becomes more diffused towards "B." In brilliant light, such as bright sunshine, the opposite effect is often found. Let an object project from the wall like the little cornice shown at "4" and the lower edge of the shadow as at "B" frequently seems sharper and darker than the edge nearer the object as at "A." Such an effect is as a rule only an optical illusion for unless there is something to cause a strong

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reflection of light into the upper portion of the shadow the tone is usually of equal value throughout. The effect of darkness towards the lower edge is due to the fact that sunlight is so extremely brilliant that when it falls on a light wall or similar surface it produces a value so bright that it is impossible for us to correctly represent it on paper, and so when a shadow tone cast by some object similar to the cornice at "4" falls on this bright surface the tone appears, in its relation to the bright surface, darker than it really is. A shadow may be a medium gray if compared with black but if its lower edge is thrown into sudden and sharp contrast with extremely brilliant light it often seems actually black. In drawing shadows, therefore, there is a legitimate reason for such a gradation as we have shown in the sketch "4," as this method causes the white of the paper to appear brighter than it otherwise would, and therefore to more correctly represent the sunlit surface. The lighter shadow tone above also gains, by this gradation, a feeling of depth and transparency.

There is another use for graded tones which is of the greatest importance and this is to so employ them as to give a sense of distance and of detachment or separation of one object from another. We can perhaps best explain this by reference to sketches "5," "6" and "7," Figure 17. Objects in nature, even when they are of the same value, can usually be easily distinguished one from another because of differences of color or by their motion or in a number of other ways. In photographs, such objects, if the values of light and shade are the same or nearly the same, often seem lost or indistinct. Sketch "5," made from a photograph, shows at "A" just the condition which we describe; the roof tone and wall tone lack detachment—it is hard to distinguish one from the other. In sketch "6" this same wall tone has been graded back to light from dark and at "A" the roof has been darkened. The result gives us a much greater feeling of separation—the roof seems to come nearer to us and the wall tends to recede—as it should. The edge at "B" still appears just as sharp as it did before the wall was lightened towards "A," in just the same way that edge "C" in diagram "3" seems as sharp or even sharper than the same edge in diagram "2" (because in "2" the edge "D" detracts from "C" to a greater extent than it does in "3"). We therefore have about the same relative contrast in sketches "5" and "6" between the wall in light and the wall in shade, so that sketch "6" is not injured in any way because of the changed values at "A." Sketch "7" is another and very emphatic illustration of the use of graded tones in securing detachment, the chimney being lightened towards the bottom and the roof darkened towards the top in order to gain a sharp contrast. This method brings the roof forward and carries the chimney back, and so gives an effect of distance. The idea is, therefore, a useful one to remember as it can be applied in many dif-

ferent places in nearly every drawing. In sketch "1," for instance, the horizontal line is softened as it goes behind the pencil, thereby bringing the pencil forward.

Sketch "8" shows a similar application of a graded tone, for by darkening the cornice shadow towards the nearest corner of the house, that corner actually seems to come nearer. This method is of even more value when the wall is turned at a sharper angle, making the foreshortening more acute.

Graded tones are of the greatest assistance in forcing the eye to any given portion of a drawing, and the little diagrams "A" and "B," sketch "9," show two methods of bringing attention to a desired spot, in this case the dark circle. The sketches really explain themselves. Method "B" is perhaps the stronger one for the dark tone at "C" in sketch "A" detracts from the spot itself. Of the two little window sketches below, the second carries out the same idea represented by method "B," the dark shadow taking the place of the dark spot in the diagram. The eye here is forced to the bright upper portion of the window. The first window sketch shows in place of such strong contrast a more gradual grading from dark at the top down to light.

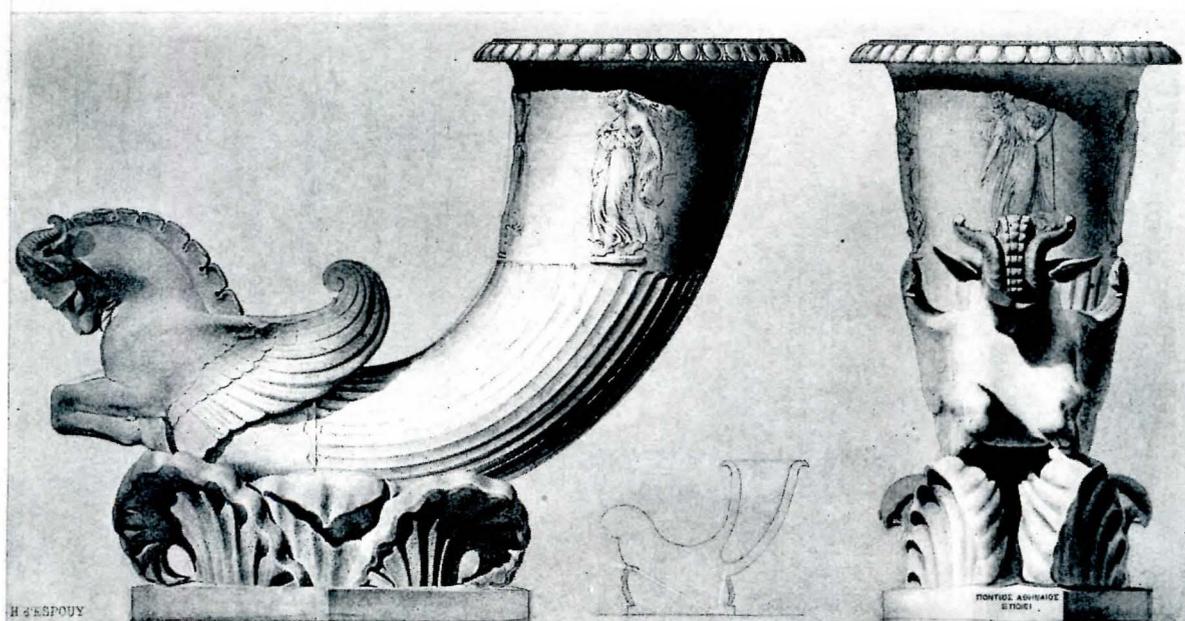
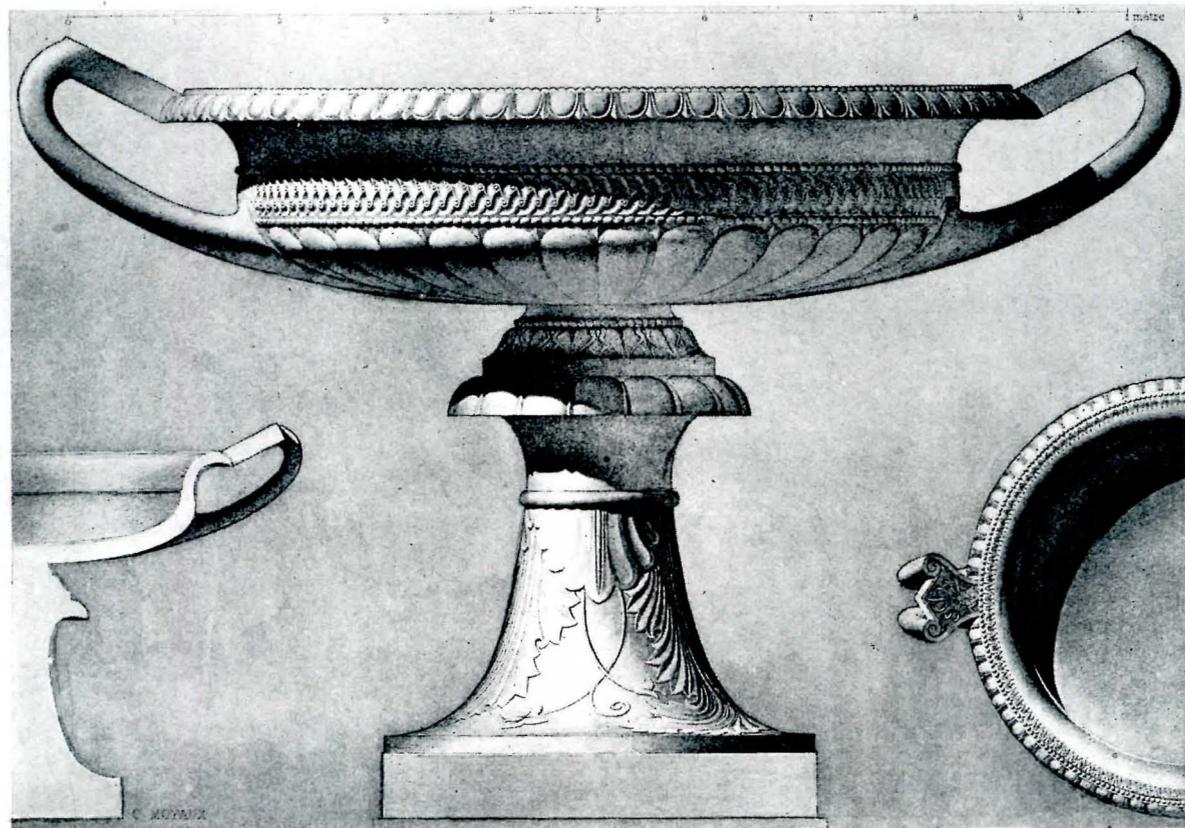
Occasionally it is necessary to apply the idea of separation or detachment to such accessories as fences and tree trunks. In sketch 10 the fence is so graded as to bring it light against the two dark masses of foliage and dark against the light background. When this same idea is applied to trees the trunks and branches often appear dark against the sky, then are graded to a lighter tone against the background of hedge or other foliage, and sometimes reappear dark in contrast with the grass of the lawn.

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### INTERESTING RENDERINGS AND DESIGNS.

**T**HE rendered elevations and perspectives of Grassy Sprayn Manor in the January issue of THE ARCHITECTURAL REVIEW are especially interesting from the standpoint of draftsmanship, while the design of this group of suburban apartment buildings is notable for the dignity and distinction of architectural character given it by the architects, Messrs. Carrère & Hastings—Shreve, Lamb & Blake, Associated. The solution of the essentially modern problem presented by this group and its importance, estimated cost \$4,000,000, make the article of interest.

A feature of the same issue is the illustrated article on The Cushing Memorial Gallery, at Newport, R. I., of which Messrs. Delano & Aldrich were the architects. An attractive home in Pasadena, Cal., is the subject of an illustrated article; the exteriors are very pleasing and the interiors have a simple charm. The building, "Casa Flores," is a restoration of an old Spanish adobe house. Mr. Carleton Monroe Winslow was the architect. There is also much other matter of value.



A POMPEIAN VASE AND A VASE FOUND IN ROME  
RESTORATIONS AND DRAWINGS BY C. MOYAU AND H. D'ESPOUY  
FROM H. D'ESPOUY'S "FRAGMENTS D'ARCHITECTURE ANTIQUE"

In the upper part of the plate from D'Espouy's "Fragments d'Architecture Antique" reproduced on the other side of this sheet is a Pompeian vase from a drawing by M. Moyaux. In the lower part of this plate is shown a drawing by H. D'Espouy from a vase found in 1875 upon the Aquiline Hill, on the site of the ancient city of Caetani. This vase was designed as a fountain, the jet of water from the front taking a curve the reverse of that of the vase, produced a line in harmony with the vase. The hollow upper part of the vase was probably intended to hold flowers or growing plants. This vase is believed to date from the First Century of the Roman Empire and the figures of the bachantes to be copies of Attic figures of the middle of the Fifth Century B. C. An inscription on the plinth states that the designer was an Athenian named Ponthios.

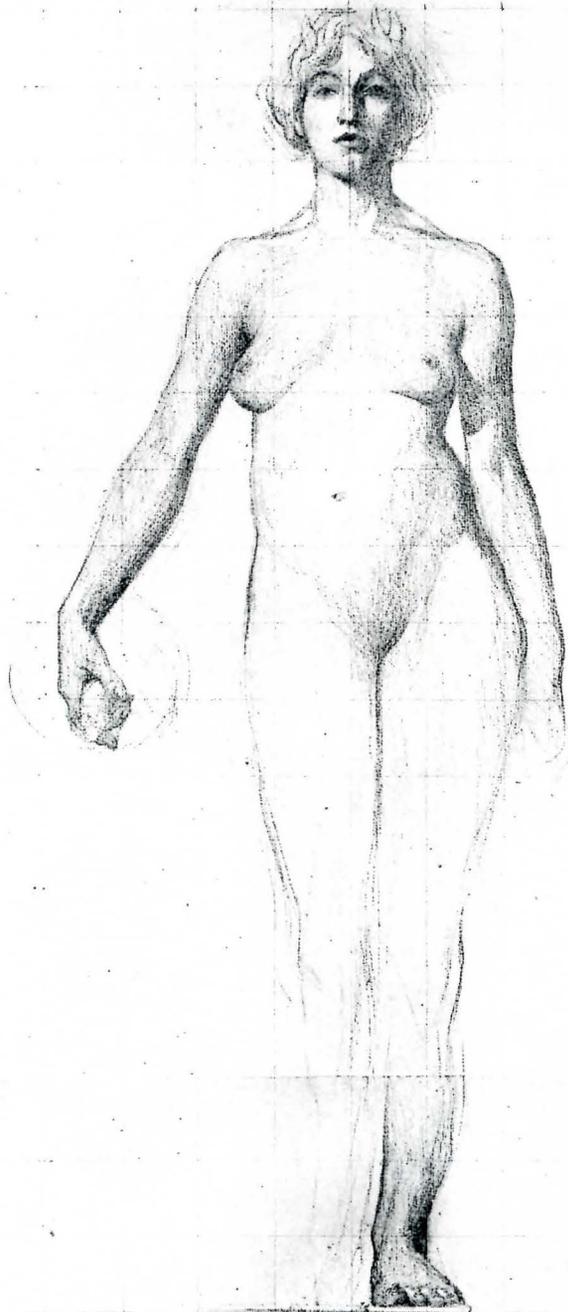


*Courtesy of Arthur H. Harlow & Co.*

CATHEDRAL, SANTIAGO DE COMPOSTELLA

BY KENNETH CONANT

*On the opposite side of this sheet is reproduced a drawing by Kenneth Conant of the Cathedral, Santiago de Compostella, one of the series of drawings he made in Spain in 1920. This is one of the drawings exhibited recently in The Fogg Art Museum of Harvard and in the galleries of Arthur H. Harlow & Co., in New York City. Mr. Conant's drawings show a keen sense of appreciation and a sound knowledge of architecture as well as remarkable skill and sensitiveness in drawing.*



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

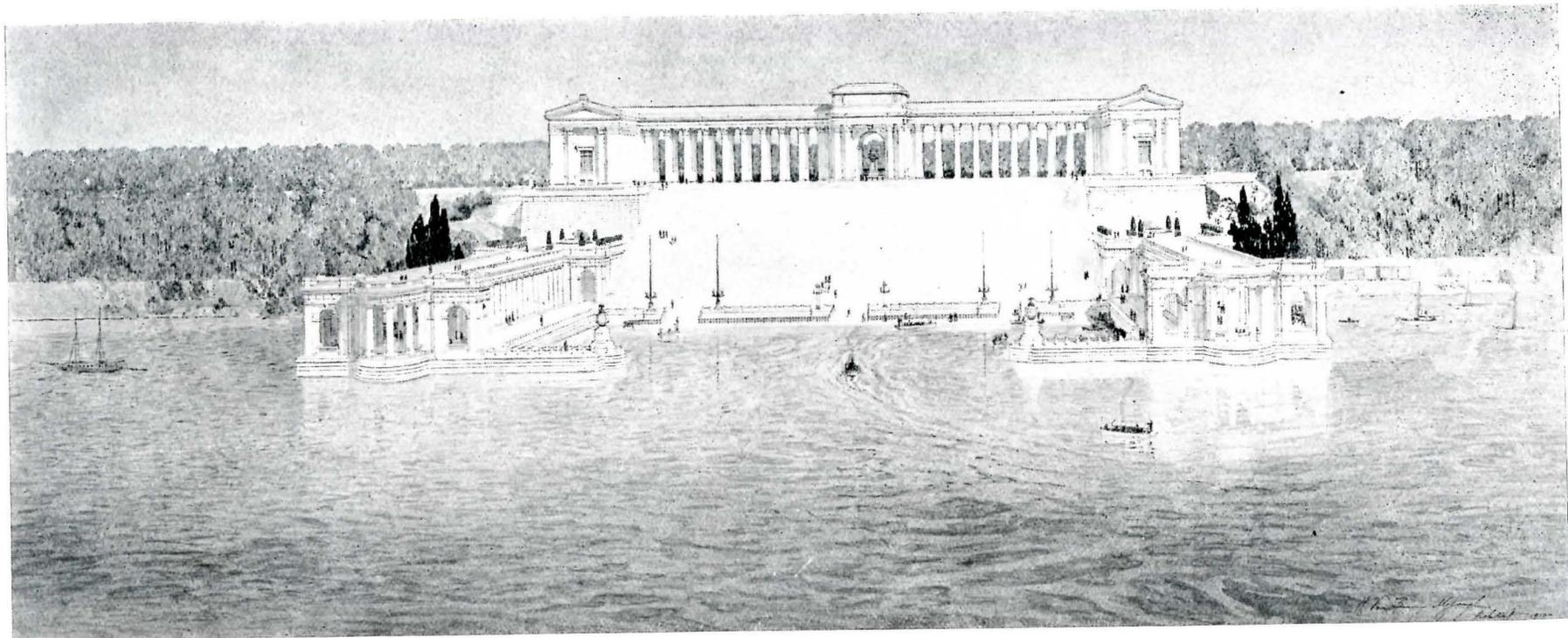
HENRY BACON, ARCHITECT

*On the other side of this sheet is reproduced the original study by Mr. Jules Guerin for one of the figures in his great mural decorations in the Lincoln Memorial, Washington, D. C. This study, like the others from this series already reproduced in this journal, was drawn from the model. From this study the artist then studied his drawing further, and from the final study he drew the figure on the canvas. This mural decoration, like the building of which it is a part, is of the greatest nobility and artistic worth, a fitting expression of the splendid character of Abraham Lincoln, in whose memory it was created.*

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PLATE VIII



RENDERING BY BIRCH BURDETTE LONG OF DESIGN FOR PROPOSED NATIONAL WATERGATE, AT 110th STREET AND RIVERSIDE DRIVE,  
NEW YORK CITY

H. VAN BUREN MAGONIGLE, ARCHITECT

*On the other side of this sheet is reproduced a rendering by Mr. Birch Burdette Long of the design by Mr. H. Vanburen Magonigle, architect, for a National Water-gate, New York City. It conveys the spirit of the surroundings in addition to expressing the spirit of the architectural composition admirably and it gives much information while it makes a strong appeal as a picture.*

# THE USE OF SCALE MODELS, PART IV

BY FREDERIC C. HIRONS

*In this article 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. The process as applied to the ceiling of a bank building is described in this installment. The working out of other problems has been taken up in earlier installments of this article, which began in the issue for August, 1920.—ED.*

**T**HE development of the design for the ceiling in the main banking-room of the office building for the Delaware Title Insurance Company at Wilmington, Del., is shown by the drawings and photographs of models reproduced in connection with this article.

Among the more important conditions governing the design of this ceiling were the following: The room was about twenty-two feet high and had columns on both sides of the public space. As the room was lighted from the side the ceiling would always be seen by a diffused side light.

A 1½-inch scale drawing was made of one bay. Figure 19. It was very free and sketchy in character as it was desired to give the general spirit of the detail rather than an exact drawing of it. From this drawing the modeller proceeded to make a model at the scale of 1½ inches to the foot, that is, one-eighth of the full size. In this model he blocked out the design in the same sketchy manner that was indicated in the drawing sent to him, then the model was inspected and fully discussed. Difficulties were found with the cartouch in the centre of the large panel, consequently several sketchy studies were made which can be seen in the photograph of this model, Figure 22, on page 24.

It can be realized readily that to have drawn all this ornament out at full size would have taken a great deal of time and that with the finest kind of full sizes the results could not possibly have been as positive and convincing as those obtained by the making of scale models. The only drawing besides the sketchy detail shown in Figure 19 was the drawing

showing a plan and sections of the ceiling. This drawing gives the radii of the spring and the rise of the various arches, and was purely a structural drawing used for fitting the furring and putting on the rough coat and the scratch coat of plaster.

This drawing is reproduced on page 23.

When the 1½-inch scale model already spoken of was approved the modeller proceeded to make the full-size models of portions of the ceiling following the scale model very carefully, as can be seen by comparing the cartouch in the scale model on page 24 with the photograph of the full-size model of the same cartouch shown in Figure 23 on page 25. When the full-size models were finished, they were hoisted up in the modeller's studio to the same height the ceiling was to be above the floor in the room in the bank. In this way, the height of relief and the scale of ornament were given a final checking up.

In the installment of this article which appeared in the January number of this journal the choice of a modeller was mentioned and the writer wishes to emphasize as strongly as possible that this is, probably, the most important step of all. There are any number of modellers who will make full-size models and make good ones, but in nine cases out of ten their work shows a serious lack of study, in that it has not been carefully studied in the small scale before the models were made at the size at which the work is to be executed. The modellers with whom the writer has worked in this way agree that it is a decided advantage to make sure that everything in general is right

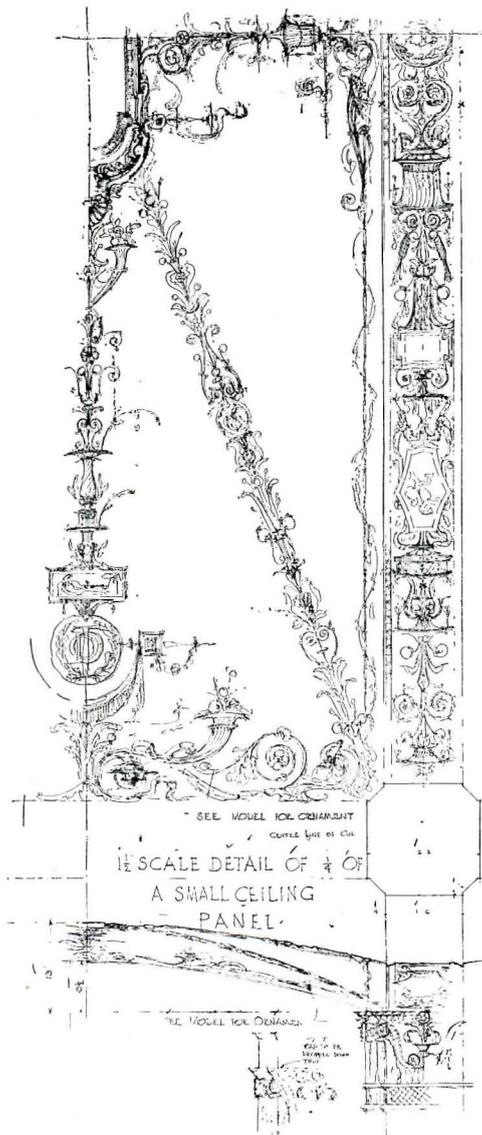
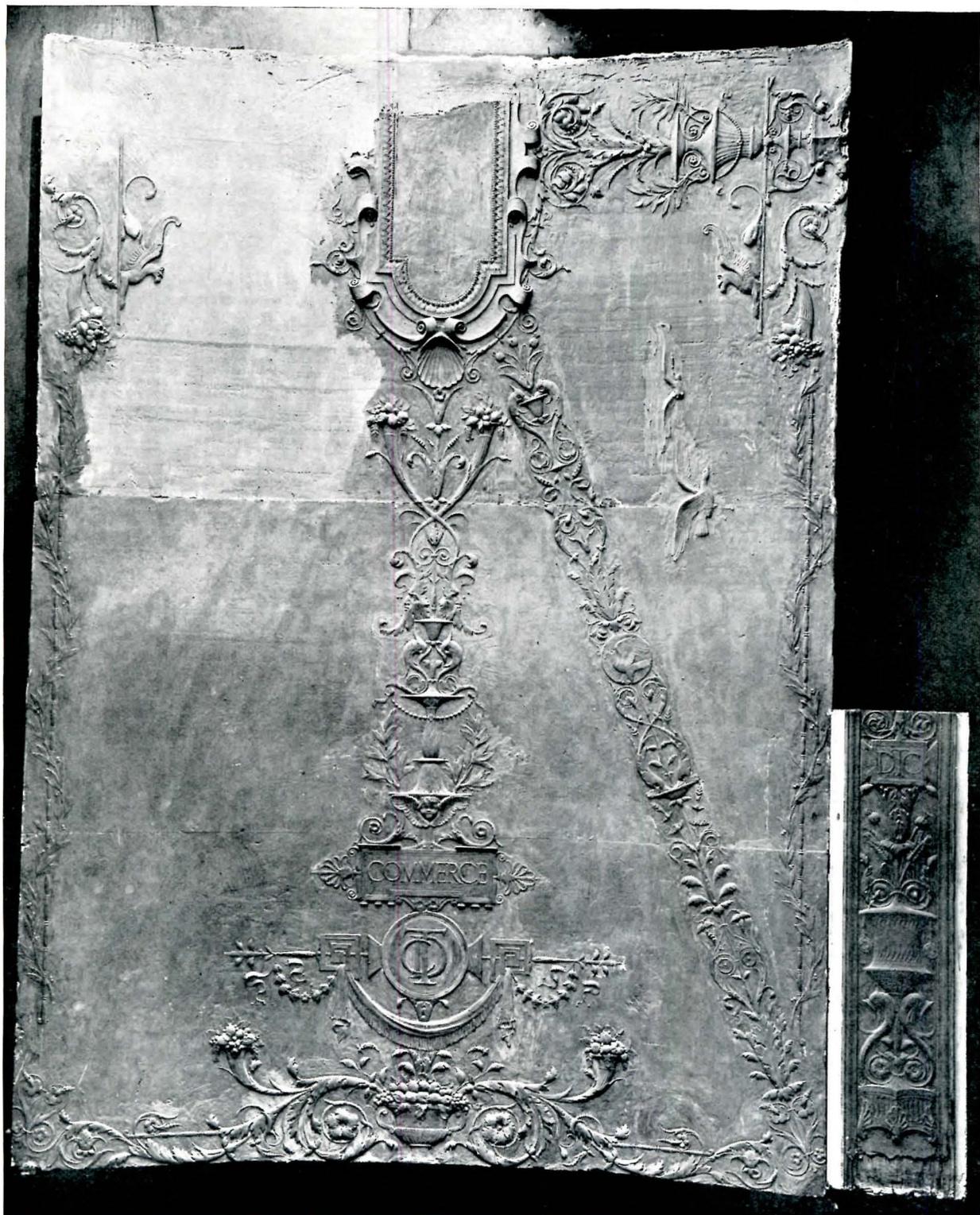


Figure 19. Scale Drawing to Give the General Spirit of the Detail. Model on page 22 was made From This Drawing

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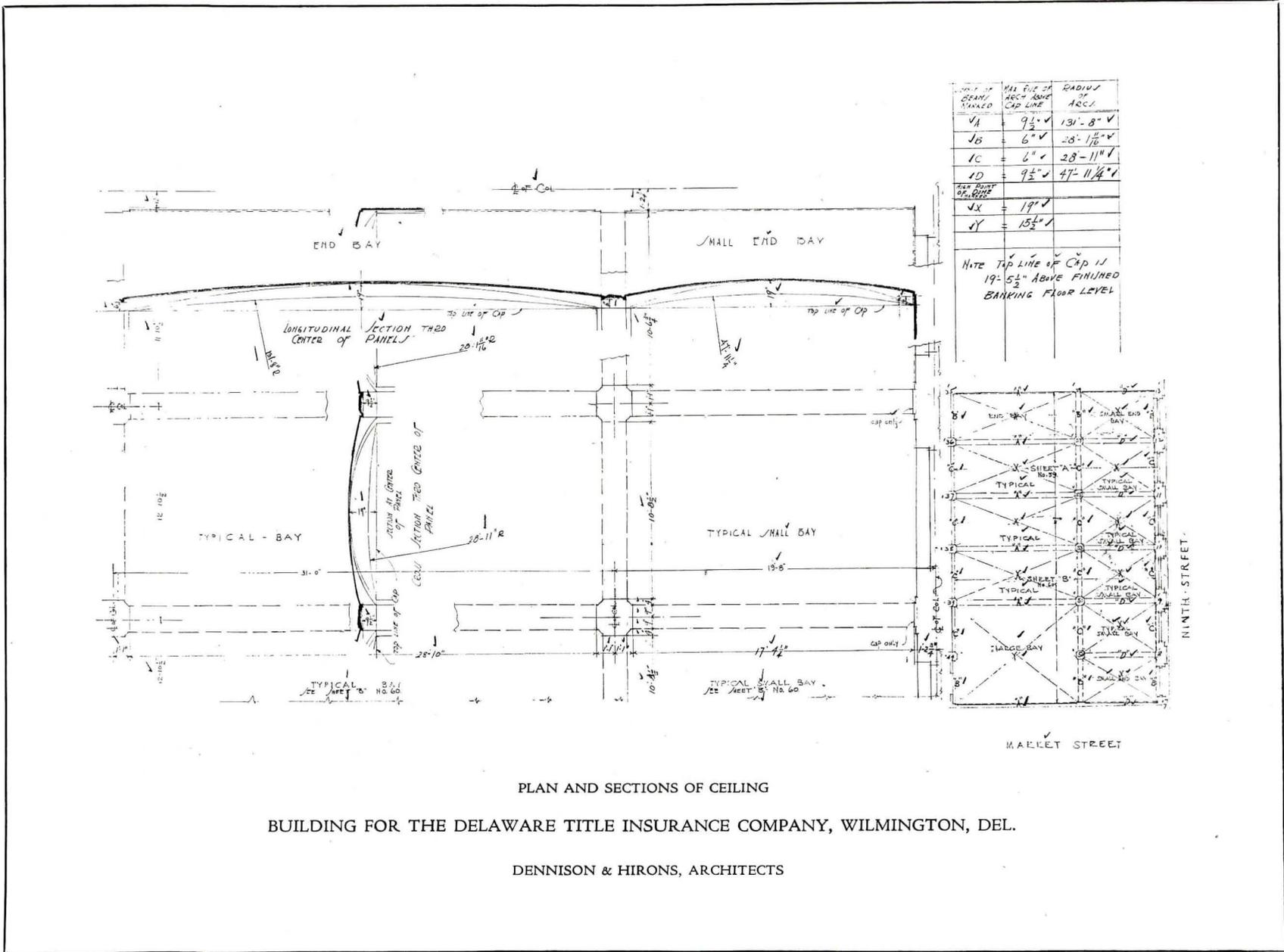


DETAIL OF SMALL CEILING PANEL

BUILDING FOR THE DELAWARE TITLE INSURANCE COMPANY, AT WILMINGTON, DEL.

DENNISON & HIRONS, ARCHITECTS

*Full-size model made after the scale model on page 24.*



PLAN AND SECTIONS OF CEILING

BUILDING FOR THE DELAWARE TITLE INSURANCE COMPANY, WILMINGTON, DEL.

DENNISON & HIRONS, ARCHITECTS

PENCIL POINTS

## PENCIL POINTS

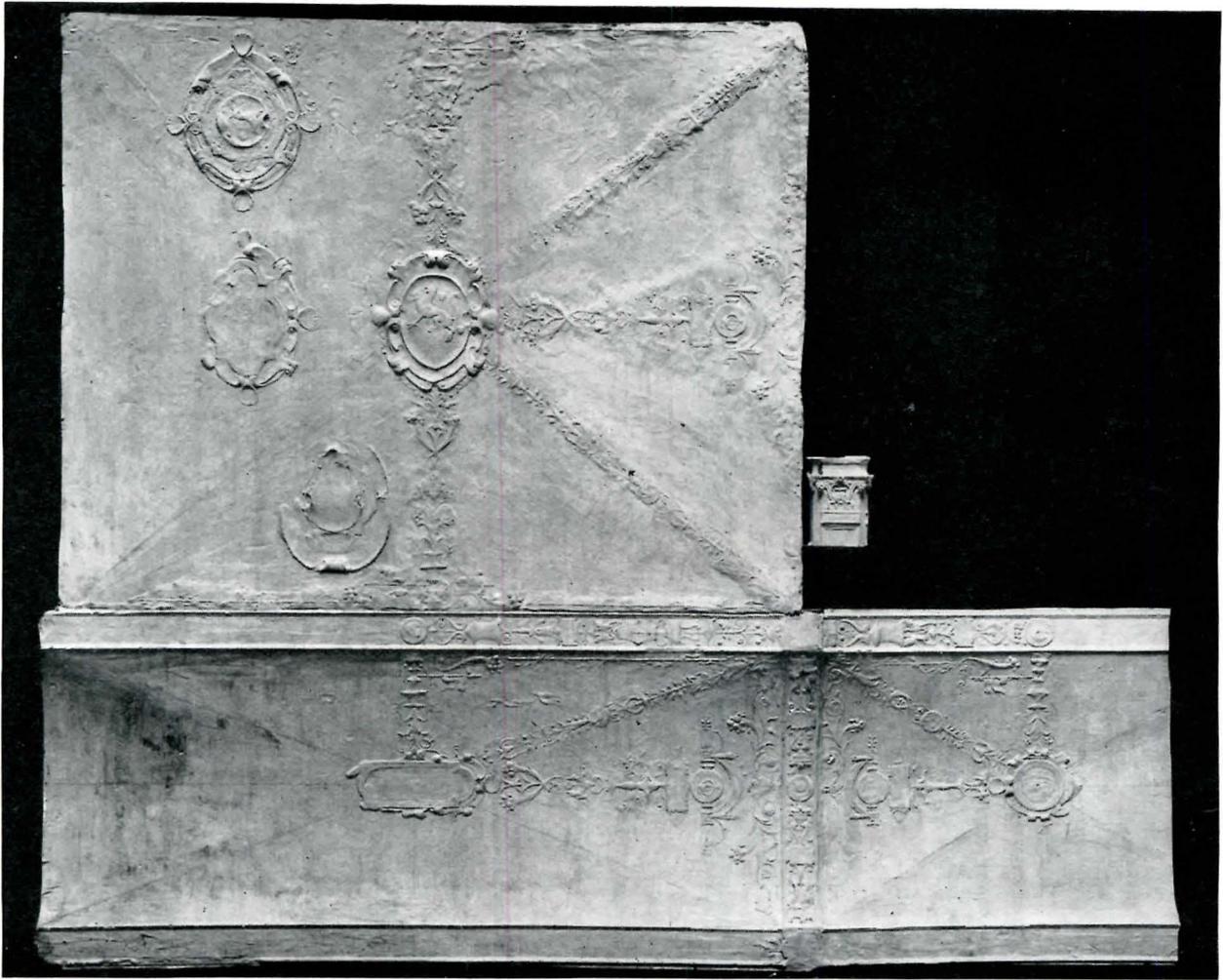


Figure 22. Model for One Bay of Ceiling, made from drawing shown in Figure 19. Note Rough Sketches of Alternative Designs for Central Cartouch of Large Panel. Scale  $1\frac{1}{2}$  inches to the Foot

before any full-size models are made.

The procedure in using scale models is in general the same that an architect ordinarily follows in studying a project. He starts at small scale,  $\frac{1}{8}$ -inch or  $\frac{1}{4}$ -inch and gradually works up to the contract drawings,  $\frac{3}{4}$ -inch and  $1\frac{1}{2}$ -inch scale details. Full-size drawings are made of profiles only, but where there is any decoration the writer firmly believes that if the  $1\frac{1}{2}$ -inch scale drawings have been made the decoration can be studied to much greater advantage from that point in the plastic form than by making any number of drawings.

Study by means of scale models proceeds with greater facility and its value is increased if the architect is well informed in regard to the methods of working the various materials such as bronze, iron, etc. Bronze foundry and iron foundry men dislike modelling that has a great deal of undercut-

ting in the ornament, and they will in some cases fill up all the under-cuts so that the castings may be pulled from the sand mould more easily.

In making models for materials of this nature better results can be obtained, the writer believes, if when the full-size models are blocked out the man who is to have charge of the production of the metal work for these models is called in and given an opportunity to see the models and make whatever suggestions he may think will lead to the best results from the craftsman's point of view. When this is not done it often happens that the craftsman is not able to use the plaster models supplied to him and must make other patterns in which he is likely to lose all the spirit that the architect and modeller have worked to secure. One important fact that has to be taken into account in all cast metal work is shrinkage. Bronze and iron each has a different shrinkage scale to which the plaster models must be made in order that the finished castings may be of the size desired. Only a

*Note—The models shown by illustrations in this article were made by Mr. Maxfield Keck.*

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few of the many technical details that have to be taken into consideration have been mentioned, in order to indicate the desirability of study along these lines. Before beginning to study the design for any piece of ornament one should naturally have all the general information as to these details and the problems that the craftsman will have to solve in the use of the models supplied to him. One may say that these are only minor matters and that he is concerned only with the finished result, but if the architect wishes to create work that will have decided merit and deserve the approval of his associates, he will find it important to acquire a general idea of difficulties that confront the craftsmen.

In concluding this article on the use of scale models the writer wishes to emphasize the importance of close co-operation between the modeller and the architect in all cases where the desire of the architect is to study his work in a most thorough and effective manner for the purpose of producing the most satisfactory results.

ONE of the unique features of the Architectural School at George Washington University, is the fact that it offers exceptional opportunities for study to men working in the government offices. The lecture classes are arranged from five to seven and the drafting hours from seven-thirty to ten-thirty. This allows a student to carry on a complete course outside of office hours, while the fortunate location, near the



Figure 23. Full-size Model of Detail in Centre of Large Ceiling Panel

government offices and down town district, makes it especially convenient to the young men and women in the government service who are part time students.

The course is a very practical one. In addition to liberal courses in design, lecture courses, supplemented by drafting work, are given in wood, masonry, and concrete construction, also heating, plumbing and sanitation. In this way the student learns the theoretical side of the work, which he sees going on every day in the office. In addition to the opportunities offered by the University itself, the Congressional Library, with its excellent collection of books, magazines, and plates, is an almost inexhaustible source of knowledge and inspiration. An-

other unusual advantage open to the young architect, is the opportunity to study the fine examples of architecture with which the city abounds.

THE annual exhibition of the American Water Color Society will be held at the National Arts Club, 119 East 19th Street, New York City, February 3d to 24th. The Alexander Hudnut Prize of \$200 will be awarded for the best water color. The annual rotary exhibition of the American Federation of Arts, which is shown on a circuit for six months, draws on this exhibition with the artists' permission.

The jury of selection comprises George Elmer Browne, John F. Carlson, Eliot Clark, E. Irving Couse, Edward Dufner, Howard Giles,

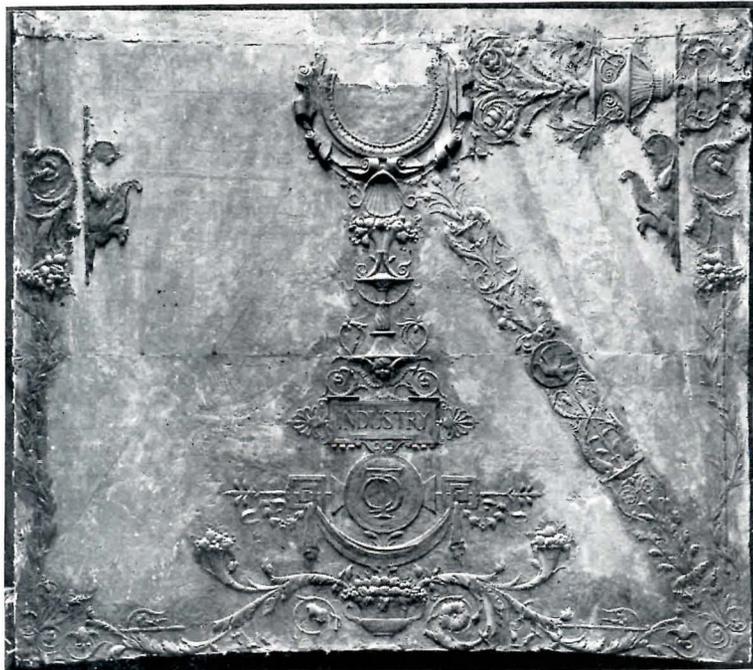
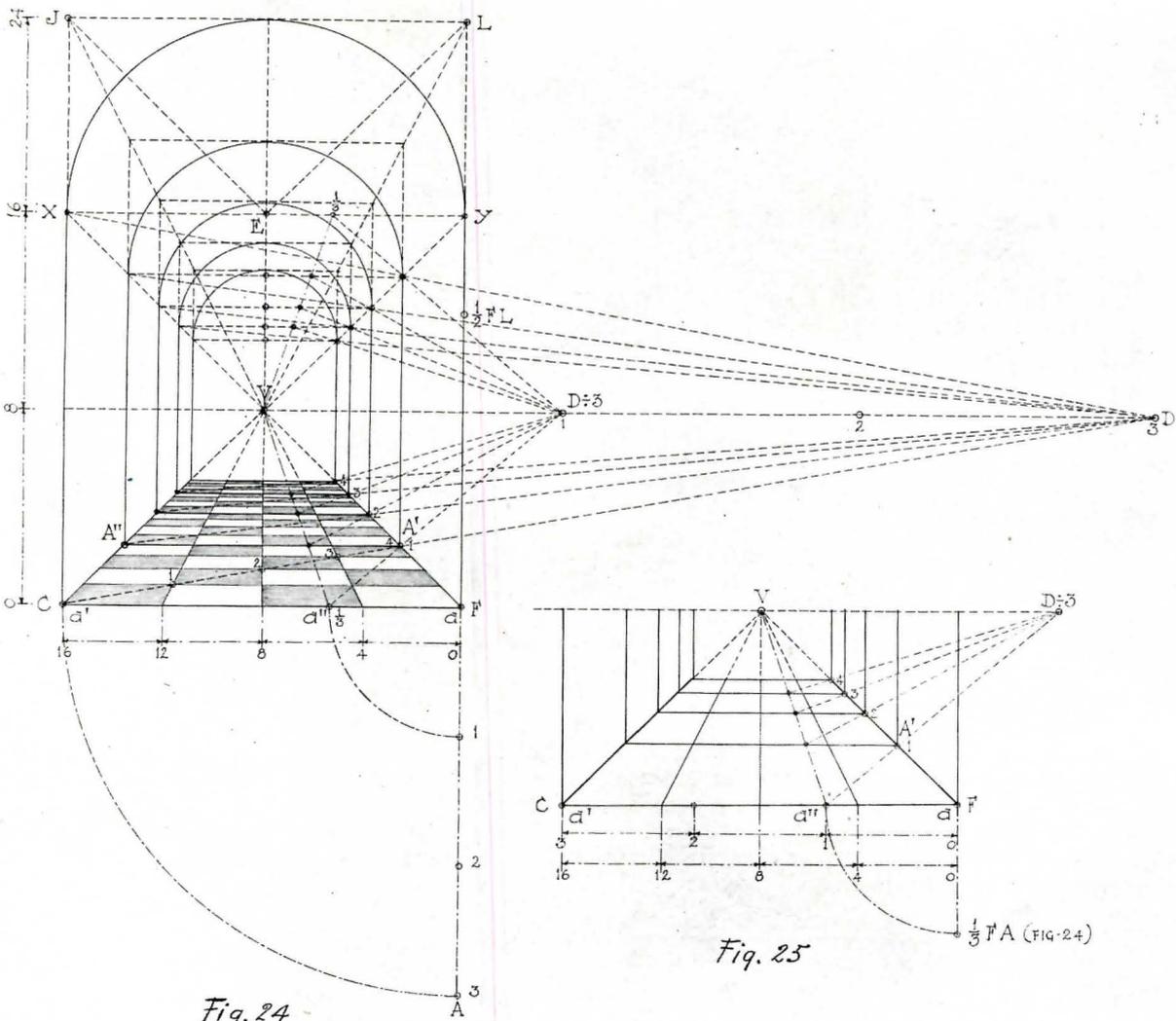


Figure 24. Model of Detail of Small End Panel of Ceiling  
Scale 1½ inches to the Foot

## PENCIL POINTS



*Fig. 24*  
*Perspective Drawing, Figures 24 and 25. See text on the opposite page.*

H. L. Hildebrandt, Harry L. Hoffman, Francis C. Jones, William S. Robinson, Chauncey F. Ryder, Edward C. Volkert. The hanging committee will be G. Glenn Newell, W. Granville Smith, Henry B. Snell.

H. Boston, William Glackens, Leon Kroll, Henry W. Parton, John Folinsbee, Harry Franklin Waltman, Walter Ufer. Sculptors: Herman A. MacNeil, James Earle Fraser, Mahonry Young, Anna Hyatt, Edmond T. Quinn, A. Phimister Proctor.

**A**T A dinner given January 4th to the painter and sculptor life members by the Board of Governors of the National Arts Club, 15 Gramercy Park, two prizes were announced for the Annual Prize Members' Exhibition which opened January 6th, in the National Arts Club Galleries, 119 East 19th Street. George Bellows received first prize, \$600, and a club medal, for his painting "Old Lady in Black." The second prize, \$400, and a club medal were presented to Frank DeHaven for his painting "Moonlit Stream."

Fourteen new life members—eight painters and six sculptors—were elected to Artist Life Membership in the Club. Painters: Howard Giles, Joseph

**A**BULLETIN edited by Theodora Kimball, Librarian of the School of Landscape Architecture, Harvard University, Honorary Librarian, American City Planning Institute, under the title "Municipal Accomplishment in City Planning," contains an interesting summary of municipal activity in city planning since 1917. By means of questionnaires sent by the Detroit City Plan Commission to the mayors of cities in the United States and Canada where city planning work was known to have been represented in published plan reports, much valuable data has been collected in regard to the difficulties encountered, public attitude and creation of popular interest in improvements.

## PERSPECTIVE DRAWING, PART IX

BY PAUL VALENTI

LET us take, in Figure 24, our picture as limited by figure  $CJLF$  which may represent the transverse section of a particular room, laid out in the following proportions, 16'-0" wide and 24'-0" high. Conducting a straight line from points  $CFJ$  and  $L$  respectively to the vision point  $V$  we will obtain the direction of the four corners of our room as they vanish indefinitely from the picture away into the distance. We wish to make our room  $4 \times 16'-0''$  (four times the width) deep, or  $64'-0''$ . Raising a perpendicular from point  $F$  to point  $A$  in the geometric plane equal to 16'-0" in the same scale as is used on the ground line of our picture, we will center in point  $F$  and rotate this arc of circle  $AC$  to the left until it intersects the ground line in point  $a'$ . From this point  $a'$  conduct a straight line in the opposite direction to point  $D$  which is  $3 \times \frac{1}{2}$  of  $FL$  or maximum dimension of our picture, and at the intersection of this line and line  $aV$  we will find as in all previous cases the perspective of point  $A$  in point  $A'$ . Therefore point  $A'$  is just 16'-0" from point  $a$ . Conduct a horizontal from point  $A'$  to point  $A''$  on line  $a'V$  and repeating the operation as before by uniting this point  $A''$  with point  $D$ , we will intersect line  $aV$  a second time at which point we have penetrated sixteen more feet into our room making a total of thirty-two feet. Again repeating this operation by conducting a horizontal from this point and intersecting line  $a'V$  on the opposite side and uniting the point of this intersection with point  $D$  at intersection of this line and line  $aV$ , we have penetrated sixteen more feet into our room, and with this operation repeated once more, we will reach a depth of the total sixty-four feet or the total desired depth. Centering in point  $E$  which is the intersection of a horizontal line (taken two-thirds the way up) and the central axis, describe one-half of a circle, representing a vaulted ceiling. (The horizon occurring at one-third of the distance up.) From the spring line of the arch, ( $X$  and  $Y$  respectively) conduct a straight line to the vision point  $V$ . From the points of intersection 1, 2, 3 and 4 on lines  $aV$  and  $a'V$  respectively raise perpendiculars to lines  $JV$  and  $LV$  and close with horizontals at the top. Also conduct horizontals at intersections of these verticals and lines  $YV$  and  $XV$  respectively, corresponding to the spring lines of the remaining four arcs and at the intersection of these horizontals and the central axis find the center respectively for each new arc 2, 3, 4 and 5. Center in these points and describe the arcs required to complete the figure. On the ground line  $CF$  mark off four equal spacings and conduct therefrom straight lines respectively to the vision point  $V$ . At the intersections 1, 2, 3, 4 of these lines, and lines conducted from intersections on lines  $a'V$  to distance point  $D$ , such as lines  $CD$  and  $A''D$ , etc., conduct horizontals from line  $aV$  to line  $a'V$  forming pattern of alternate squares.

To reduce the distance point  $D$  divide line  $VD$  into three equal parts and find the reduced distance  $D \div 3$ . Dividing line  $aA$  into three equal parts and with one-third ( $\frac{1}{3}$ ) of this distance as radius, by centering in point  $a$  and rotating this arc to the left, and by conducting a straight line from the intersection of this arc and line  $CF$  at point  $a''$ , to the reduced distance point  $D \div 3$ , it will be noticed that this line intersects line  $aV$  at point  $A'$  or exactly in the same place as before. See Figure 25. From point  $a''$  conduct a straight line to vision point  $V$ . As was previously done, conduct a horizontal first from intersection  $A'$  to line  $a'V$ . Repeat the operation as before, conducting a straight line from intersection of line  $a'V$  and horizontal from point  $A'$  to line  $a'V$  to reduced distance point  $D \div 3$ . Again at intersection of this line and line  $aV$  conduct a horizontal back to line  $a'V$  intersecting line  $a'V$  and so on, repeating this operation until the full depth required is reached. Upon studying both operations in Figure 24 it will be noticed that exactly the same results are obtained in the case of  $D$  (distance point) divided by three (or  $D \div 3$ ) as were obtained using the full distance  $D$ , with the difference that in the case of  $D \div 3$  our operations are confined within a much smaller area and the inconvenience of a point far removed from our plane of operations is eliminated.

### EXHIBITION BY ARTISTS OF CHICAGO AND VICINITY.

ONE of the most popular exhibitions of the Art Institute of Chicago, the Twenty-fifth Annual Exhibition by Artists of Chicago and Vicinity, was opened at the Institute on January 25th.

Several additions have been made to the list of prizes available for this exhibition and are as follows: The Fine Arts Building Purchase Prize of five hundred dollars; the Business Men's Art Club Prize of one hundred dollars; the Chicago Woman's Aid Prize of fifty dollars; the William H. Tuthill Prize of one hundred dollars. The other prizes given as in former years include: Two Mr. and Mrs. Frank G. Logan Medals with accompanying money prizes; the Edward B. Butler and the Mrs. Julius Rosenwald Purchase Funds; the Joseph N. Eisendrath Prize; the Harry A. Frank Prize; the Clyde M. Carr Prize; the Municipal Art League Prize; the Mrs. John C. Shaffer Prize; the Mrs. William O. Thompson Prize; the Englewood Woman's Club Prize. The Municipal Art League makes an annual purchase of a work of art for the Municipal Art Gallery and the Chicago Society of Artists gives a Silver Medal.

This year the annual exhibition of the Chicago Society of Etchers was held in the Print Room at the same time as the annual exhibition of Chicago painters and sculptors.

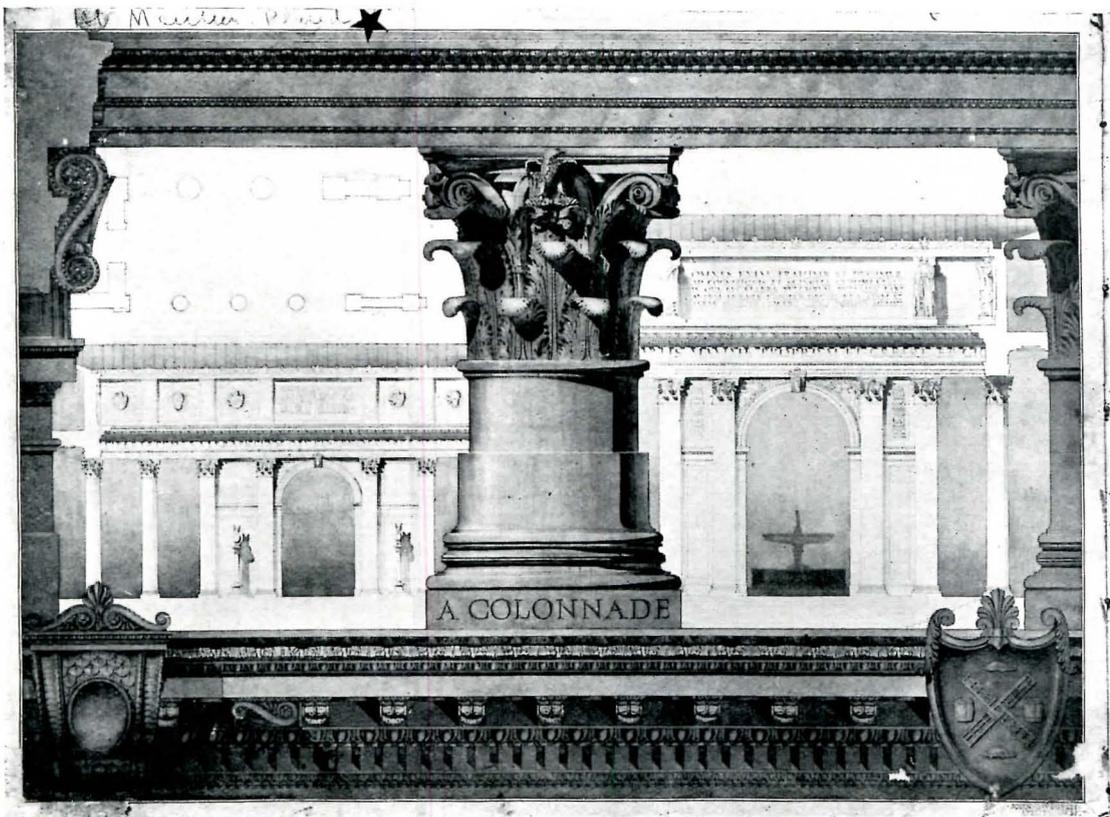


Figure 1. Analytique, "A Colonnade," John O. Vagezzi, Atelier Corbett.

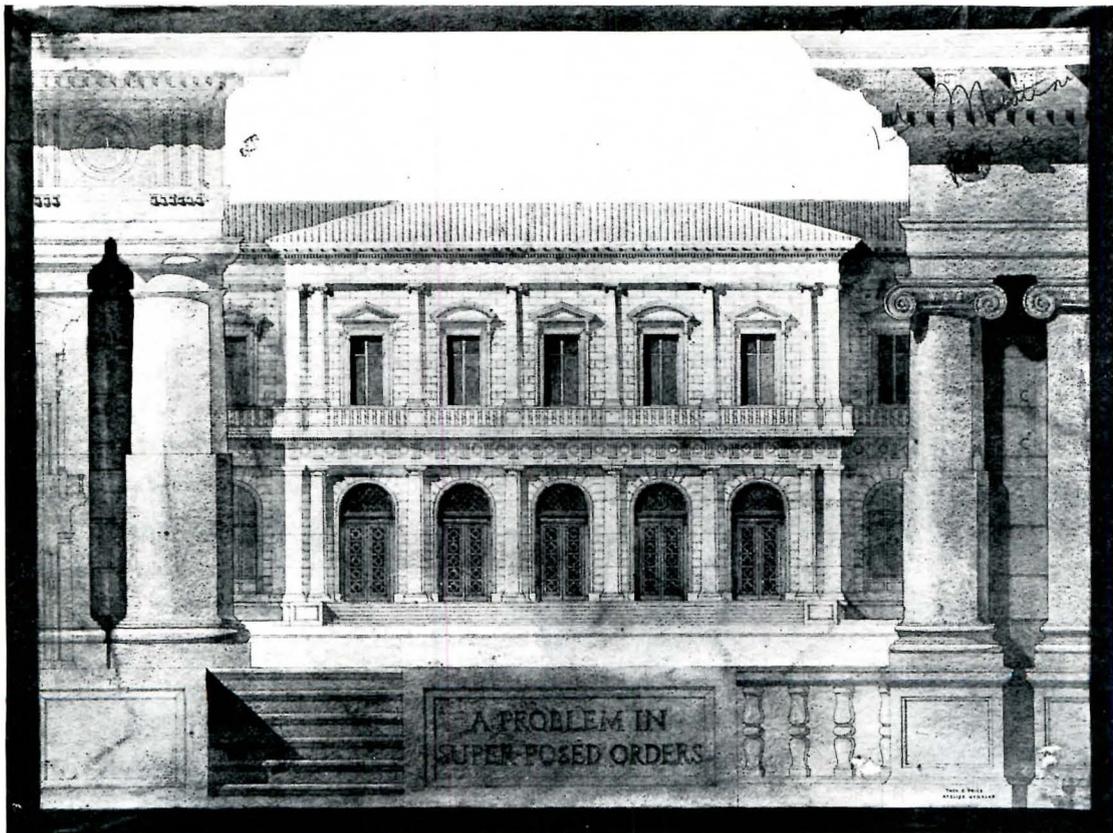


Figure 2. Analytique, "A Problem in Super-posed Orders," T. A. Price, Atelier Wynkoop.

STUDENTS' WORK, BEAUX-ARTS INSTITUTE OF DESIGN

# THE STUDY OF ARCHITECTURAL DESIGN

WITH SPECIAL REFERENCE TO THE PROGRAM OF THE BEAUX-ARTS INSTITUTE OF DESIGN

## THE "ANALYTIQUE" OR ORDER PROBLEM. PART I. TAKING THE ESQUISSE

BY JOHN F. HARBESON

*This is the second of a series of articles in which Mr. Harbeson is explaining the method of working and how to get the greatest benefit in following the program of The Beaux-Arts Institute of Design. This series is designed to cover matters of method and leave the time of the instructor and the student free for the individual problem. It is not intended as a substitute for personal instruction and criticism.*

HAVING joined an atelier, or if no atelier is at hand having sent for the "circular of information" and arranged with some practising architect to conduct the exercise, let us take the first step in our first problem, an "analytique." The analytique is a study in proportion, and in the elements of architecture—the treatment of walls, doorways, windows, cornices, balustrades, porticos, arcades, etc., and usually requires the use of one of the so-called "five orders of architecture," at other times the choice is left with the student.

These problems may be very interesting as one can see from the illustrations. Figure 1, for instance, required two treatments for an arcade, connecting two wings of a building, one to carry a passage at the second floor level and one at the third. Figure 2 is a study in super-imposed orders. Figure 3 is quite different, the treatment of a niche in a garden wall. Figure 10 is also a piece of garden archi-

ture, a temple of love. Different in character from all of these are other problems, for instance, the portal of a fortress, a loggia, etc. You will note that the problems are quite varied; so also is the presentation of these examples, and the composition and treatment of the frame

of details at large scale, usually required for an analytique; but of that we shall have more to say later. At present we are to take the first step, which is to make an "esquisse."

Esquisse is the French word for sketch. It is used in the ateliers, however, in a specific sense and means a preliminary sketch showing the main ideas of a student's solution of a problem outlined in a program. It is done in a short and fixed time, usually nine hours, and is made "en loge." This means literally "in a box" or booth, and in Paris there are booths provided for this purpose; but the spirit of this requirement is that the student shall make his sketch without the aid of books or advice.

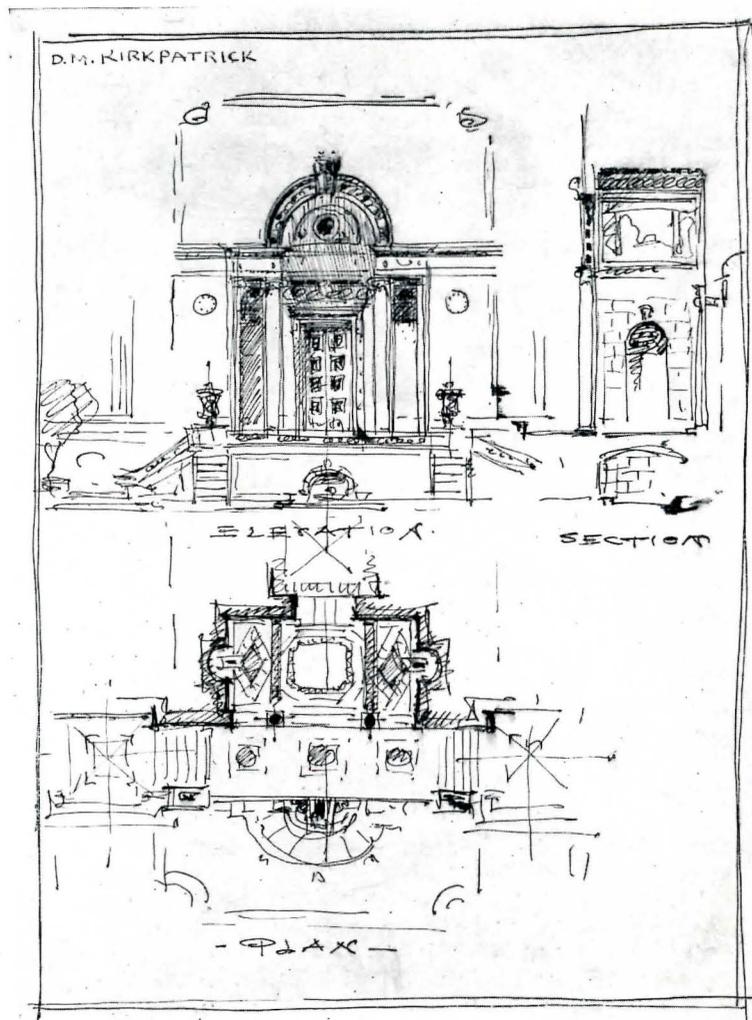


Figure 8. Esquisse, by Donald M. Kirkpatrick.

## PENCIL POINTS

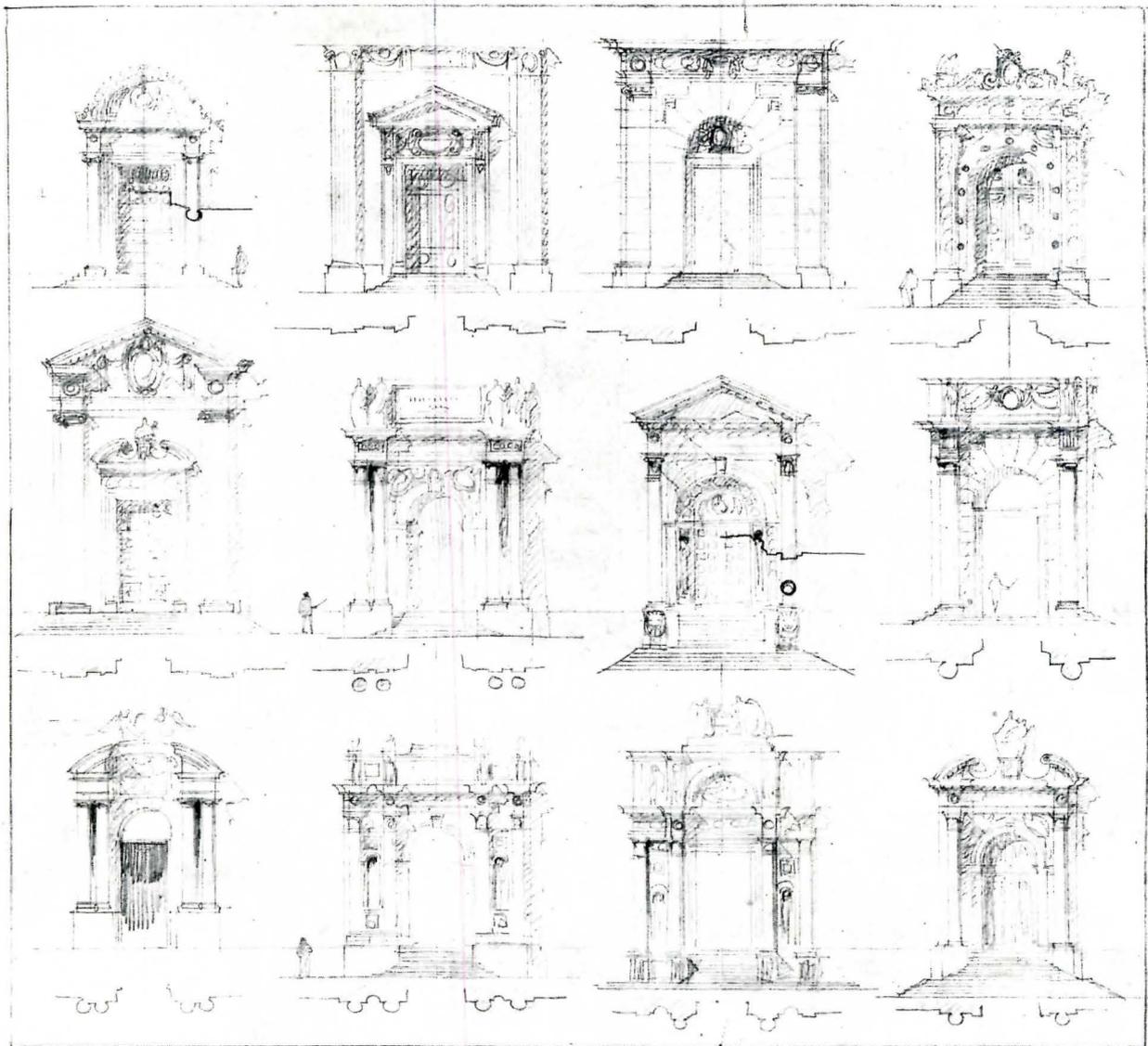


Figure 5. Showing a number of different ideas for a single problem, in the analytique.

A copy of this sketch is sent to New York, and to the main features of this sketch the student must conform under penalty of having his work thrown out by the jury.

Since the student's finished projet will be founded on his esquisse, the importance of the latter can hardly be over-estimated.

The value of the esquisse from the point of view of mental discipline is very great. The discipline of working on a problem on which one is tied down to an esquisse is as strong and as persistent a corrective as there can be against vague and loose thinking. One of the chief objects of the Beaux-Arts method is to teach a man to confine his efforts to a well-defined channel. The finishing of the projet, the passing to ink, rendering, titles and borders are only supplementary to this and are, if anything, of even less importance than the fact that the student has been obliged to make his point of view

precise at an early stage of the study of the problem.

In actual practice architectural problems are circumscribed by definite conditions, limitations of cost, peculiarities of site or of the client, etc. The esquisse takes the place of these limitations in the class room. Moreover it does much to insure some measure of originality. When several men are working together on the same problem, the strongest, and there usually is such a one, will sway the others by example; or one with a ready tongue will argue well his point of view. Were it not for the esquisse all would follow the lead of the clever student, and the problems as presented would be uninterestingly alike. Even with the esquisse there is frequently a distinct family resemblance in the work of a group.

Let us make an esquisse for the first analytique

## PENCIL POINTS

problem of this year (1920-21). The course of procedure is similar for any problem. The program was as follows:

### CLASS "B"—I. ANALYTIQUE.

#### "The Side Entrance to a Church."

A Catholic Church, situated on a plot bounded by four public streets, has been left with its side elevations unfinished, due to the lack of necessary funds at the time of the original construction. The architecture of the church as it stands is Renaissance, and it is now proposed to finish the exterior of the right transept wall and transept entrance. The latter is the subject of this Program.

The problem requires the study of an architectural composition, complete in itself, of solemn dignity, and properly accentuating the secondary entrance against the transept wall. The door opening shall be 8'-0" in width, which is the sole limitation of the problem. Such a door is usually treated with the ordinary classic elements, that is to say, columns, pilasters, pediments, niches, statuary, etc. in this problem the development of the motive is left entirely to the discretion of the student, save that account should be taken of the architectural treatment of the transept as a whole. Examples of such entrances occur in nearly all of the Renaissance churches in Italy and France.

REQUIRED FOR THE ESQUISSE: An elevation section and plan of the entrance motive, all at the scale of  $\frac{1}{8}$ " to the foot.

REQUIRED FOR THE PROJET RENDU: The same drawings at the scale of  $\frac{1}{2}$ " to the foot. Details of interest at not less than  $1\frac{1}{2}$ " to the foot. (Note—Esquisse shall be signed in Print Letters in the upper left hand corner, with the name of the Atelier or Patron drawn in ink on a single sheet of tracing paper, cut to the size of  $8\frac{1}{2}$ " x 11", with a single line border. The title and subject of the competition should also be noted on the esquisse.)

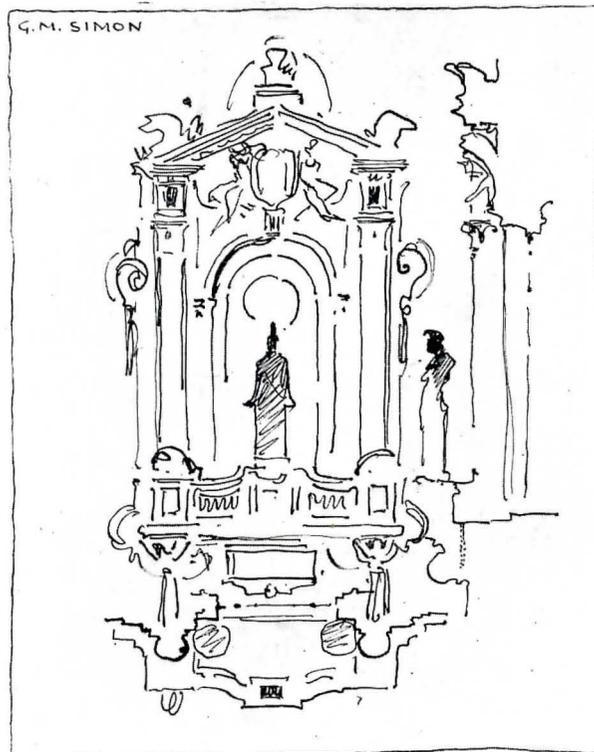


Figure 7. Esquisse, by Grant M. Simon.

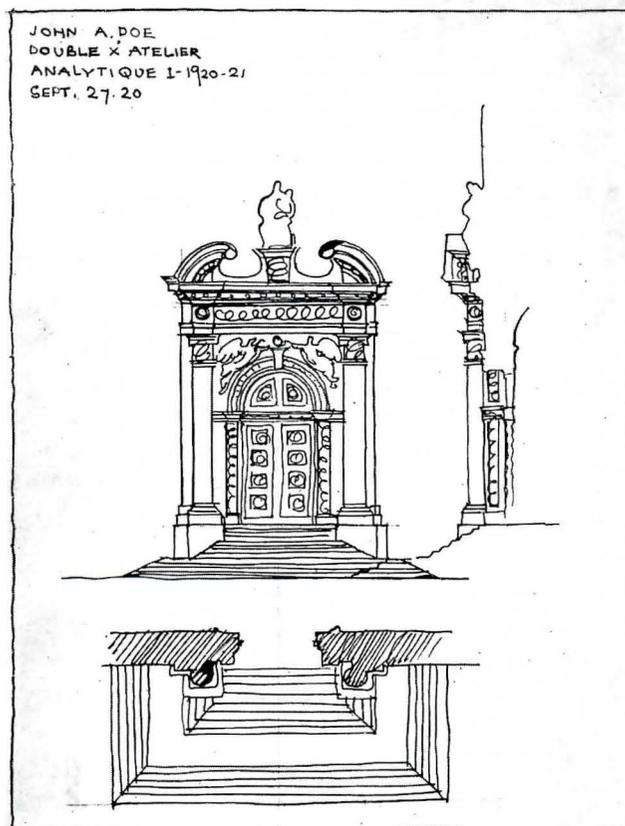


Figure 6. Esquisse made from last sketch shown in Figure 5.

The logical way to approach the problem is to put down first a list of what the program requires: 1—A religious character. 2—Architecture should be Renaissance. 3—The door is a secondary entrance, not the principal one. 4—The only fixed size is the width of the door opening.

It is well to note also what is left to the choice of the student, not only the details mentioned in the program, but also that he is at liberty to consider the church a large or a small one, that the door may be a square or round headed one and that the Renaissance character called for could be that of the Italian, French, Spanish or English Renaissance.

The scale at which the esquisse is called for is small, so we may as well start directly at that scale and lay off eight feet, and put down as many different solutions of the problem as we can think of. The door may be round-headed and surrounded by the square motif of pilasters and entablature. Or it may be square-headed, and contained within an arch treatment. It may have pilasters at the side, or engaged columns or columns standing free; or these elements may be doubled at either side; or there may be a column and a pilaster at each side. There are various treatments of cornice possible, and different arrangements above the cornice—whether pediment, or attic, or sculptural treatment, or even nothing at all.

(Continued on p. 40)

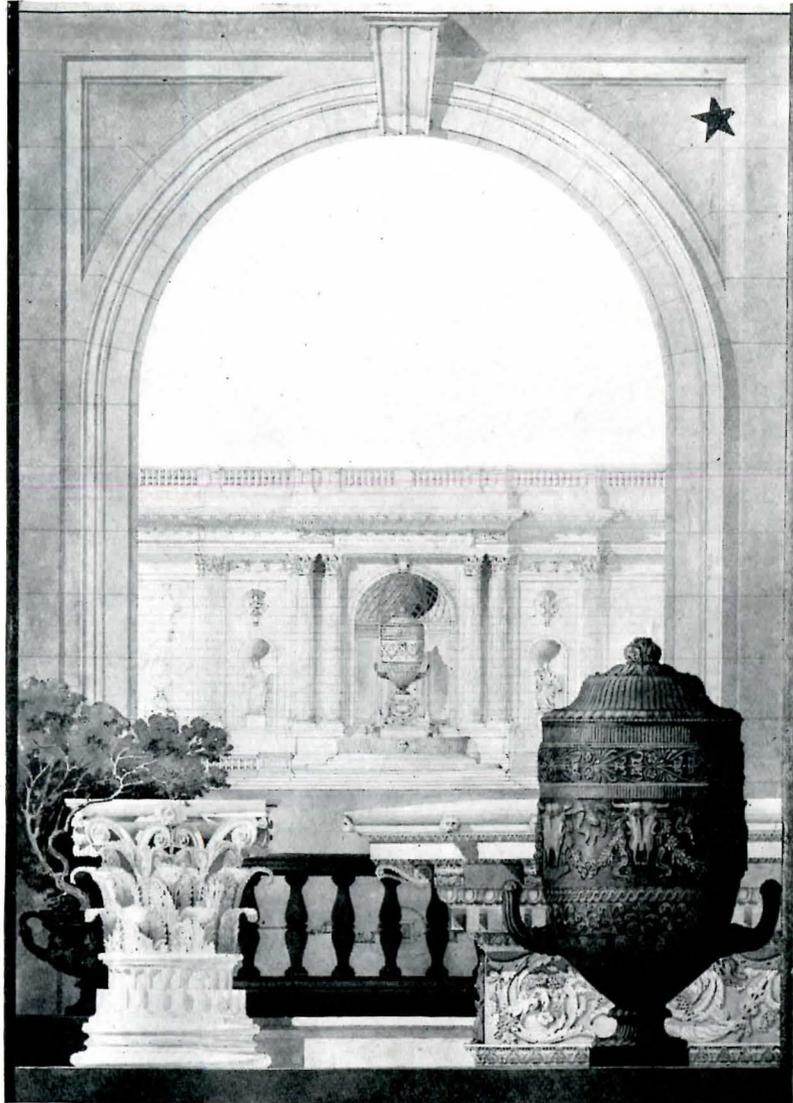


Figure 3. Analytique, "Central Motive for a Garden Wall,"  
L. Licht, Atelier Licht.

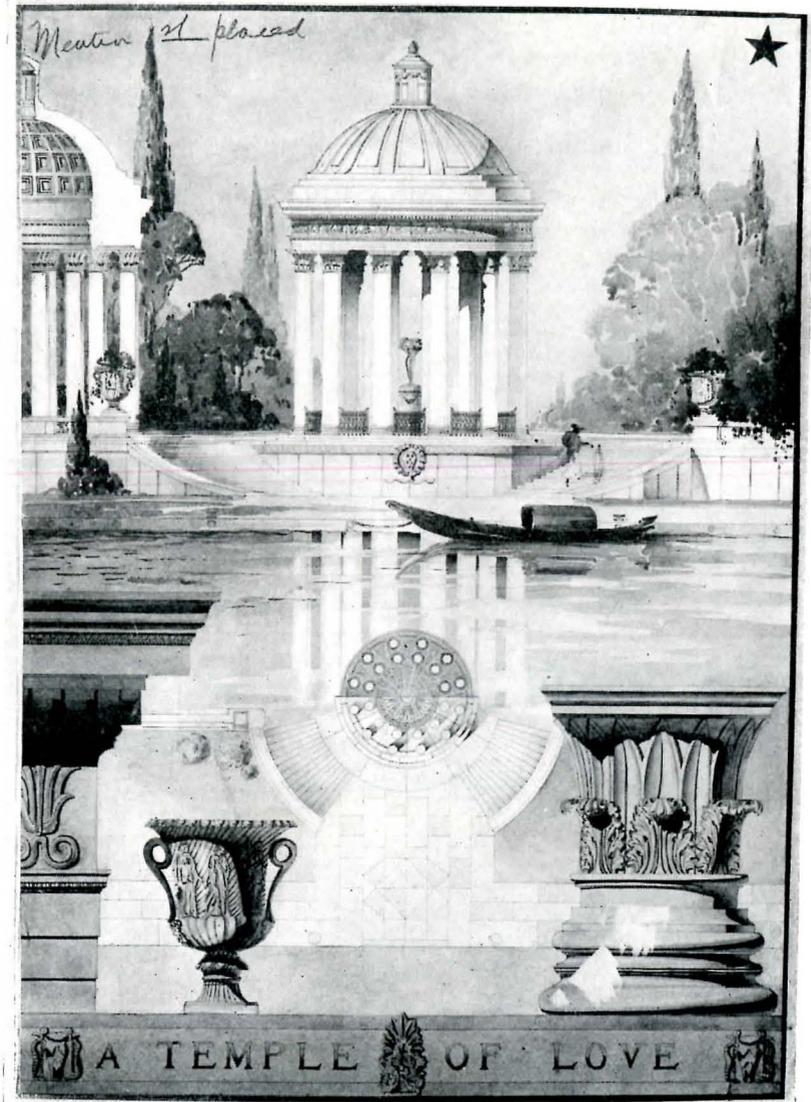


Figure 4. Analytique, "A Temple of Love,"  
G. Roth, Colorado University.

PENCIL POINTS

# PENCIL POINTS

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## T-SQUARE CLUB, PHILADELPHIA.

AT a meeting of the T-Square Club of Philadelphia on January 26th, 1921, Mr. George Howe gave a talk on the subject of "The Minor Architecture of France," which he illustrated by stereopticon slides of his recent photographs. Preceding the lecture, solutions of the following interesting sketch problem were judged.

*House and Garden for an Architect.*

*Size of Drawing 16"x20" including mount.*

An architect of peaceful mien was happily married to a most beautiful and loquacious lady named Victrola. This architect was also possessed of a level piece of ground with a frontage of fifty feet along the north side of a pleasant street and extending to a depth of one hundred feet to a rear line. The only restrictions were that buildings must keep back ten feet from the street line and five feet from each side lot line. This lot was not on a corner.

Contemplating the erection of a small house and garage he mentioned that fact to his wife who immediately proceeded to advise him exactly what she desired.

Having vainly endeavored for several days to pry a few of his own words into the monologue he finally abandoned the attempt and rushed off to the solitude of his studio where he transferred to paper a perspective of the domicile which he dreamed of erecting together with a couple of thumb-nail sketch plans.

Returning—he confronted his spouse with the sketch—the alluring beauty of which so paralyzed her vocal centers that she could only weakly nod her acquiescence to his ideas.

As domestic felicity is a most commendable condition, all causes which might lead to its disruption should be carefully avoided. Therefore, take this opportunity to make such a sketch in order to be prepared should YOU ever become the possessor of a 50x100 foot lot.

EDUCATIONAL COMMITTEE,  
Wm. C. Stanton, Chairman.

## A HAND-BOOK ON CONCRETE CONSTRUCTION.

A MOST useful and conveniently arranged book is the "Atlas Hand-book on Concrete Construction." It contains concisely presented information on concrete, including selection of materials, proportioning of concrete, quantities of cement mortar for brick and hollow tile work, the storing and handling of cement and stone, mix-

ing and placing concrete, water tight concrete, concreting in cold weather, concreting under water, bonding concrete or mortar to concrete already in place, curing concrete and surface finishes. There is also a chapter on reinforced concrete-covering concrete columns, steel for reinforcement, bending steel, bending circular steel and placing steel. Another chapter is devoted to forms for concrete, and there is a comprehensive chapter on concrete construction, covering reinforced concrete building construction, a typical small reinforced concrete building, a concrete garage, grain elevators, swimming pools, storage cellars, septic tanks, driveways, engine foundations, retaining walls and cement products.

The book opens with a statement of some of the possibilities in the use of concrete and concludes with material on estimating cost of reinforced concrete construction and on cement, etc.

This book is published by the Atlas Portland Cement Co., 30 Broad Street, New York City. It is neatly bound in cloth and is of a size that makes it convenient to carry in the pocket. Though this book has just been published and the publisher's price is two dollars, it will be sent without charge to readers of PENCIL POINTS who request it and indicate, by using their letter-head or otherwise, their connection with architectural work.

THE second regular meeting of the School Crafts Club was held at Hoboken, N. J., Saturday afternoon, January 15th. Since this was an inspection trip, two groups were formed, one group visiting a plant where drawing instruments, telescopes, transits, etc., are manufactured, and the second group going to Stevens Institute, where the museums, shops and laboratories were open for inspection.

A joint meeting of the Pittsburgh Architectural Club and the Pittsburgh Chapter, A. I. A., took place on January 18th at the General Forbes Hotel in Pittsburgh. The dinner was followed by an interesting talk, illustrated with moving pictures. The meeting was well attended by members of both organizations.

Carrère & Hastings have announced that Mr. R. H. Shreve, Mr. William F. Lamb, and Mr. Theodore E. Blake will in the future be associated with their office in the practice of architecture under the firm name of Carrère & Hastings, Architects—Shreve, Lamb & Blake, Associated.

Secretaries of Clubs and Associations are requested to send news items concerning members or matter relating to the activities of their separate organizations. Let PENCIL POINTS be your official journal. Remember,—PENCIL POINTS goes to press on the tenth of the month preceding publication. Matter for insertion should reach this office before that date.

## PERSONALS

LESTER S. MANNING, a graduate of Cornell, 1917, is now with B. C. Wetzell & Company, Architects, Detroit.

CLARENCE T. MYERS, Architect, and KENNETH D. COFFIN, Architectural Engineer, announce the formation of a partnership under the firm name of Myers & Coffin, Architects, with offices at 412 Traction Terminal Building, Indianapolis, Indiana.

WERNER E. MELINDER has opened an office for the practice of Architecture at 229 Metropolitan Bank Building, Corner Fifth and Cedar Streets, St. Paul, Minn.

DAMON, O'MEARA & HILLS, Architects, are now operating offices in Suite 1123-1124, Merchants National Bank Building, Saint Paul, Minn., and at 19 East Mason Building, Fort Dodge, Iowa.



# 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*—I would appreciate any information you have on Public Comfort Stations. N. J. C., Newark, N. J. *Answer*—Good references are the articles by J. K. Allen in *The Western Architect*, Vol. 12, pp. 16-19, 75-76; "The Plan for Comfort Stations," and "Standards for Public Comfort Stations," articles by J. C. Cosgrove, printed for the National Comm. of Confederate Supply Assns.; "The Comfort Station in America," Eng. Rev., Nos. 1, 2, 4, 6, 7, 8; "A Public Comfort Station," *American Architect*, June, 1914.

*Question*—We wish to obtain published plans, etc., pertaining to Masonic buildings of the better class, especially those devoted to consistory work. E. J. T., Nashua, N. H. *Answer*—For a good deal of the data regarding consistory work, it would be best to get in touch with the "Masonic Voice Review," an illustrated magazine of Freemasonry. Some of the better Masonic Temples that have been shown by current architectural publications are the "Masonic Temple, Philadelphia, Pa.," in *Architecture and Building*, Vol. 47, pp. 289-294; "Some California Masonic Temples," in *Architect and Engineer*, San Francisco, Vol. 52, pp. 49-67; "Temple of the Scottish Rite, Washington, D. C.," published in the January issue of *The Architectural Review*, 1916; "Masonic Temple at Salem, Oregon," *American Architect*, May 21, 1913, June 24, 1914; "Masonic Temples, San Francisco, California," *American Architect*, March 25, 1914.

*Question*—Please provide me with references for bathing pavilions and baths. B. M. P., Stamford, Conn. *Answer*—"Public Baths and Swimming Pools," by H. R. Knight and M. P. Williams, Russell Sage Foundation, p. 36-37, "Public Bathing Establishments, Recent Work in American Cities," *Brickbuilder*, Vol. 24, pp. 13-16, 1915; "Newark Public Bath," *American Architect*, June 11, 1913.

*Question*—Can you give me the names and addresses of some firms in or near Philadelphia who manufacture or sell hardware for period furniture? I cannot seem to get in touch with any. H. B. C., Philadelphia, Pa. *Answer*—For information in this regard, it would be best to look up the last Boyd's Philadelphia Register, and follow by letter to the dealers listed there; this will lead most likely to the information you desire. A personal inquiry from some of the Philadelphia period furniture dealers may result in your obtaining the names of hardware concerns that deal in hardware.

*Question*—Can you give us any reference on general steel construction, and equipment relative to special buildings such as the Woolworth, Metropolitan Life, Municipal, Cunard, C. S. S., New York. *Answer*—The planning and construction of "High Office Buildings by Birkmire," published by J. Wiley & Sons; "Municipal Building," *American Architect*, No. 1891, year 1912; "The Woolworth Building," *American Architect*, No. 1944,

year 1913; "Metropolitan Life," *Architect's and Builder's Magazine*, Vol. 41, year 1909; "The Cunard Building," Oct., 1919, *Architectural Review*; "Singer Building Construction Monograph" by the Singer Manufacturing Company.

*Question*—Can you please give me any information regarding the "Hambidge Theory of Dynamic Symmetry?" A. C. K. *Answer*—The book under this name can be obtained from the Yale University Press, copyrighted, 1920.

*Question*—It is our intention to have a member of our organization make a trip through the North and East for the purpose of inspecting thoroughly modern college dormitories. We would be pleased to have you advise us, if possible, if you know of any dormitories that have been built recently that might interest our representative while on this trip. Thanking you for your assistance in this matter which is highly appreciated. H. M. G., Dallas, Texas. *Answer*—Washington University, St. Louis, Mo., Dormitory by Cope & Stewardson; University of Chicago, Ida Noyes Hall, work by Holabird & Roche and work by Shepley, Rutan and Coolidge; the Dormitory at John Hopkins University, at Homewood, Baltimore; Freshman Dormitories and Campbell Hall, at Princeton University, by Frank Miles Day; Pennsylvania University Dormitory by Cope & Stewardson; Milbank Hall, Barnard College, New York, by Lamb & Rich; Hamilton Hall, Columbia University, McKim, Mead & White; The Union Theological Seminary, New York, by Allen & Collens (1910); Military Academy, West Point, New York, by Cram, Goodhue & Ferguson; Dormitories at Cornell University, Prudence Risley, by Miller, and the Baker Dormitories, Ithaca, N. Y.; Williams College, Berkshire Dormitory, Williamstown, Mass., Allen & Collens (1905); Wilder Hall, Wellesley College, Wellesley, Mass., by J. A. Schweinfurth; Dunbar Hall, Phillips Exeter, New Hampshire; Hubbard Hall, Bowdoin, Brunswick, Maine.

*Question*—Can you refer me to any late treatise with example illustrations on Spanish Mission Architecture as applied to small house work such as is commonly used in our Southwestern Cities and Mexico of "adobe." C. F. C., Indiana, Pa. *Answer*—There are no special treatises issued on the small standard Mission house, text books being available on the larger types of houses as illustrated in "The Picturesque Architecture of Mexico" by L. A. Beaume, "Franciscan Mission Architecture of Alta," by Rexford Newcomb, "Mission Architecture" by Prentice Duell. The monthly magazine called *The Architect and Engineer* published in San Francisco, often shows the type of architecture which you describe. Their address is Foxcroft Building, San Francisco. *The Western Architect*, a monthly magazine, also publishes architecture of this type. Their address is 215 South Market Street, Chicago, Ill.

# ARCHITECTURAL ACOUSTICS

## CHAPTER VII

FROM what has been said in our previous chapters regarding the acoustics of auditoriums, it is evident that the majority of defects arise from too small an amount of absorption of sound. Reverberation, echo, resonance and interference can all be corrected or modified by the introduction of absorptive material in the proper amount and location. If the design of the auditorium can be made such that the furnishings and the clothing of the audience meet these necessary conditions, all will be well. If, on the other hand, architectural or other considerations prevent the desired elasticity in the design, then it may be, and most generally is, necessary to provide additional absorption by the placing of materials devised for this purpose over some portion of the interior surfaces.

It is naturally desirable that such materials should be structural in character and appearance. To this end, AKOUSTOLITH and RUMFORD TILE have been created, the one being an artificial stone and the other a ceramic material. Both have intercommunicating pores of uniform size which gives them a high degree of absorption for sound, many times in excess of any other building material, as will be noted from the accompanying figure which shows the absorbing power of AKOUSTOLITH as compared with such standard substances as brick and plaster. The efficiency is particularly noteworthy over the upper half of the scale of pitch, where the major intensity of most sounds is located and where absorption is therefore the most essential.

Examples of buildings which have been treated in this way, and, as always, with marked success, are the churches of St. Bartholomew and of St. Vincent Ferrer in New York City, the First Congregational Church in Montclair, N. J., the Hennepin Avenue Methodist Church in Minneapolis, the Temple B'Nai Jeshurun in Newark, N. J., and the Museum Auditorium of the University of Pennsylvania in Philadelphia, all of which have been finished with RUMFORD TILE, and the Church of All Nations in Boston, the Chamber of Commerce auditorium in Rochester, N. Y., the theater

of the Goodyear Tire & Rubber Co., in Akron, O., and the Eglise de Notre Dame in New York City where AKOUSTOLITH has been used. In some of these it was necessary only to use the absorbent tile on domes, pendentives and ceiling vaults. In others, the walls alone were treated, while in the majority a combination of walls and ceiling was used.

As we have seen, the majority of auditoriums require such additional absorption to remedy defects inherent in the design or finish. Sometimes, however, the opposite extreme is encountered, where there is too great an absorption of sound. In these cases, there is, of course, no trouble from reverberation, but, on the contrary, there is not sufficient loudness or carrying-power to the sound. Further-

more, the overtones of musical notes almost completely disappear, resulting in diminished tone quality. In order to overcome such a condition, a sounding-board may be used to reflect an added amount of sound towards the audience. For speaking, this may take the form of a single plane surface hung immediately over the rostrum, while for orchestra or chorus, the surrounding walls and ceiling should be designed to play this part. In no case should a sounding-board be curved.

It must be remembered that the amount of reverberation is not affected by the use of a sounding-board. It is therefore practically useless to employ this device except for the purpose mentioned. The stringing of wires is of no value whatsoever for any kind of acoustical trouble.

The acoustics of any auditorium depends wholly on size, shape and material. If the first two of these are fixed, correct results can be attained only by the use of suitable materials. The choice and extent of such material can, and always should be, determined in advance of construction by consultation with an expert acoustical engineer.

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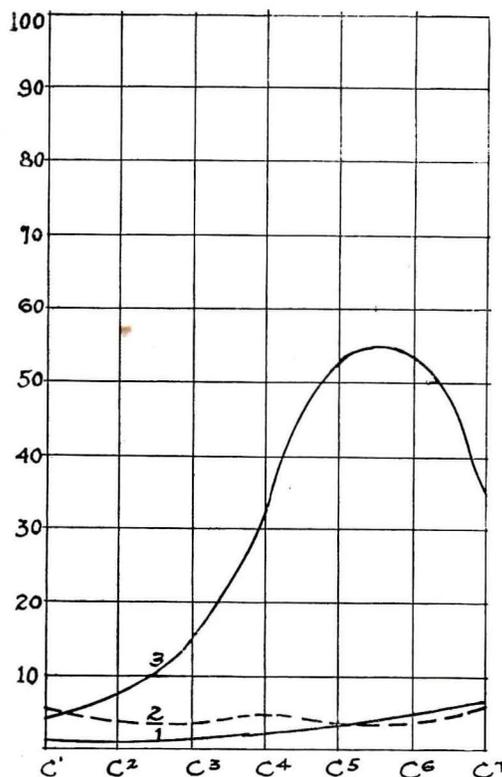


FIGURE 1

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, C<sup>3</sup> being "middle C." Most of the audible energy of the voice, as well as other sounds, lies in overtones above C<sup>4</sup>. 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 SPECIFICATION DESK

## A Department for Specification Writers

### THE SPECIFICATION WRITER, AND THE MANUFACTURERS' LITERATURE, PART VII.

By LOUIS R. HOLSKE.

**Incinerators**—For the purpose of this article the gas burning incinerator only will be considered, and from the point of view of what the architect wants to know. There are two forms, portable and built-in, and in many sizes. The architect will first require the capacity of the different sizes in order to determine the proper size for the installation in mind. This having been determined, he will require the outside dimensions of the portable type, including height, and the size of the recess in the masonry necessary for the built-in type. He will then require the size of the flue and its position in the wall; the size of the gas connection and its position. As to the machine, he will want to know the time required for the consumption of a charge, and the cubic feet of gas consumed in burning it; the type of burner used and its position; the manner of disposing of the water in wet garbage; the construction of the walls of the machine, are they properly insulated? Further he will be interested in the disposition of the ashes, whether by chute or pan.

**Rolling Shutters and Partitions**—These are made both in steel and wood, but the principles involved are the same in either case. The architect will want to see a full size section of the slat to determine its stiffness and to know the manner of connecting slats together. He will want to know all about the mechanism of the coil; its size when the shutter is fully coiled in order to provide the necessary space; the size of the groove or track, its position and of what material is it made. In the case of rolling partitions are they sufficiently rigid when opened fully? In the case of large openings having rolling steel shutters the architect would like to know about the operation. If hand operated, he should know something about the gearing and the size of the transmission shaft. If electrically operated, the horse power of the motor, its position and support.

**Lockers and Shelving**—The architect would be interested in the size of the unit, the height of single and double tiers and the space occupied by gangs, both single and double faced. He would like to know further the gauge of metal used in the different parts and the manner of securing the parts together; the manner of ventilating the interior; the arrangement of hooks and shelf in the interior, and the provision made for an umbrella. The hardware will interest the architect; its quality and method of attachment; the type of lock and the security it affords, and the number of key changes possible. Finally, he will want to know about the finish; the number of coats, the material and the baking temperature. Regarding steel shelving, the architect would like to know the size of the units, the spacing of the shelves, the gauge of the metal in all parts, the form of the shelf, its maximum carrying capacity, and the anchorage of the cleats carrying the shelves.

**Elevator Guard Gates**—The architect will be very much interested in the manner of accomplishing automatic operation. He will want to know the strength of the gate itself, the material of which it is made, the method of balancing it, and the space required in the shaft. He will require large scale details showing clearly all of the above points.

*Note*—The purpose of this department is to afford an opportunity for the discussion of matters of interest to specification writers and to stimulate such discussion. Letters of a helpful nature from readers are wanted, relating either to the "Specification Writer and the Manufacturers' Literature" or to any other subject of interest to specification writers.

### PUBLICATIONS OF INTEREST TO SPECIFICATION WRITERS.

*Any publication mentioned under this heading will be sent free, upon request, to readers of PENCIL POINTS by the firm issuing the publication.*

**What Adequate Ventilation Means**—This booklet published by The American Ventilating Co., Pittsburgh, Pa., gives diagrams and illustrations, which explain the fundamental principles of proper ventilation, and the advantages of the American-Larson Suction Ventilator, and includes information regarding the various types for large establishments, used in connection with power ventilation. Method for determining number and sizes of such ventilators, drawings and tables, are of interest to detailers and to specification writers. The booklet numbers twenty pages and measures  $8\frac{1}{4} \times 10\frac{3}{4}$  inches in size.

**The J. Whatman Sample Booklet** is obtainable now upon request by our readers from The H. Reeve Angel Co., Inc., 7-11 Spruce Street, New York. This booklet is helpful in the selection of drawing papers for special uses.

**Slipping and Tripping, the Most Serious Public and Industrial Fire Hazard**—Is an interesting booklet by H. Weaver Mowery, Safety Engineer, of The American Abrasive Co., 50 Church Street. The real hazard of slipping and the necessity for active concentrated effort to eliminate this hazard is outlined. Some of the various causes of slipping and tripping, and the unsafe material conditions are given. The problem is explained and the solution is suggested by illustrations, drawings and text. The size of the booklet is  $6 \times 9$  inches and numbers sixteen pages.

**Questions Answered**—A booklet whose purpose is to answer questions regarding Atlantic Terra Cotta, and to relate its uses for exteriors and interiors. Besides explaining the meaning of the various terms and processes connected with the working drawings for the builder's guidance, it answers the questions of shipment and estimation of cost. The booklet is well illustrated showing the structural and decorative possibilities of terra cotta. The size is  $5\frac{1}{2} \times 7\frac{1}{2}$  inches and it contains thirty-two pages. Issued by The Atlantic Terra Cotta Company, 1170 Broadway, New York.

**Kyanize Measured Drawings**—A series of twelve genuinely useful plates of notable details of Colonial houses containing details of mantels, china-closets, main stairway, window and doorways. This collection of excellent types of architecture, measured and drawn by Edgar and Verna Cook Salomonsky, is very well presented, on sheets  $8 \times 11$  inches, showing photographic illustration, elevations, details and profiles, with dimensions. Issued by The Boston Varnish Co., Everett Station 49, Boston, Mass.

**Home Color Harmonies**—Color schemes for the various rooms of a house of moderate size and for the exterior treatment as well. Unusually attractive illustrations in colors show the derivation of the color schemes from nature, and the text describes the harmonizing of wall-color, draperies, furniture coverings, and rugs. Size  $9 \times 12\frac{1}{4}$  inches. Thirty-two pages, fully illustrated. Published by the Lowe Brothers Company, Dayton, Ohio.

**Roddis Flush Veneered Doors**—The booklet of the Roddis Lumber and Veneer Co., Marshfield, Wis., is a very thorough treatise on veneers and of this firm's doors. It shows by many illustrations the various types of doors that are obtainable, and is especially directed to the specification writer and detailer, offering practical information for their use. The size of the booklet is  $6 \times 9\frac{1}{4}$  inches and it contains one hundred pages.



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Mr. Price was born at St. Louis, Mo., and grew up there. He received his preliminary education in the public schools of St. Louis and entered the office of Mauran, Russell & Garden as a "cub-draftsman," studying design at the atelier of Washington University.

He won the 1906 traveling scholarship of the Architectural League of America and spent a year abroad. He returned to St. Louis after a short stay in New York, and practiced architecture in southeastern Missouri.

In 1911 Mr. Price came to New York and entered the office of Mr. Donn Barber. While connected with Mr. Barber's office he studied design in ateliers.

Mr. Price went to Montreal to take charge of design work for Messrs. Ross & MacDonald and Mr. Hugh G. James on the Toronto Terminal and the Halifax Ocean Terminal.

He returned to New York and became connected with the office of Warren & Wetmore. During the war he was in charge of design work on Hilton Village, a housing development at Newport News, Va.

Mr. Price became interested in rendering for its own sake while designing, in which he studied his designs largely in perspective. He did very little rendering outside of office work, preferring to spend his free time in studying and sketching. He opened his own studio in New York in 1919 and his progress has been rapid.

### THE ART STUDENTS' LEAGUE OF NEW YORK ANNUAL COMPETITION FOR SCHOLARSHIPS.

**A** SCHOLARSHIP Competition open to all Art Students in the United States, with the exception of those in New York City, will be held at the Art Students' League of New York on March 25th, 1921.

Ten Scholarships will be awarded to that work showing the greatest promise. Work in any medium, from Life, the Antique, Landscape, Etching, Portrait, Illustration, Composition, also photographs of Sculpture, may be submitted. All work should be forwarded so as to reach the League not later than March 19th, and must be sent with return express or parcel post charges prepaid.

Students entering for this competition are urged to send the most comprehensive exhibition possible, to facilitate the work of the Jury. It will be readily understood that the work covering the widest field of Art expression will best enable the Jury to judge of the individuality and promise of the prospective student. The League wishes to emphasize that the Jury will be guided in making their awards, not by the degree of proficiency displayed by the applicants, but by an effort to find interesting individuals whose strength the League desires to add to its own.

The Scholarships so given will entitle the holder to free tuition in any two classes of the League during the season of 1921-1922, or in the classes of the Woodstock Summer School of Landscape and Figure Painting for the season of 1921. The Jury will consist of the following instructors of the League: George B. Bridgman, A. Stirling Calder, Arthur Crisp, Guy Pene Du Bois, Frank B. Du Mond, Andrew Dasburg, Thomas Fogarty, Fred W. Goudy, Robert Henri, Leo Lentelli, George Luks, Wallace Morgan, Kenneth H. Miller, Edward Penfield, Charles Rosen, Boardman Robinson, John Sloan, Max Weber, Mahonri Young.

All students interested are invited to enter this competition. All letters and packages should be addressed: For Scholarship Competition, Art Students' League of New York, 215 West 57th Street, New York City.

### A COMPETITION FOR SCHOLARSHIPS AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY.

**A** COMPETITION open to citizens of the United States, of good character, between the ages of twenty-one and twenty-eight years, who have had at least three years' office experience, and have a knowledge of descriptive geometry, is to be held for two scholarships at the Massachusetts Institute of Technology.

Applications should be addressed to Professor William Emerson, 491 Boylston Street, Boston, Mass., and should reach him before May 1.

The two scholarships referred to are of three hundred dollars each in the scholastic year 1921-22 for special students in the fourth year in the course in Architecture.

### THE ARCHITECTURAL REVIEW,

*Dear Sirs:* I have your classified catalogue addressed to my son who died in the U. S. Service, 1918. He was a subscriber to THE ARCHITECTURAL REVIEW. I have fifty-one issues unsoiled in any way (clean) that I would like to dispose of. The issues are: 1912, June, July, Sept.; 1913, Jan., Mar., April, May, Oct., Nov., Dec.; 1914, Jan., Feb., Mar., April; 1915, Aug., Sept., Oct., Nov., Dec.; 1916, Jan., Feb., Mar., April, May, June, July, Aug., Sept., Oct., Nov., Dec.; 1917, Jan., Feb., Mar., April, May, June, July, Aug., Sept., Oct., Nov., Dec.; 1918, Jan., Feb., Mar., April, May, June, July, Aug.

*Note—Anyone wishing to buy any or all of these numbers may apply to the publishers of this journal, and their inquiries will be forwarded to the writer of the above letter.*

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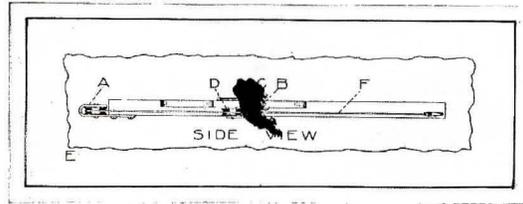
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## ANNOUNCEMENT

### Competition for Two Scholarships

**T**WO scholarships of three hundred dollars each are offered in the scholastic year of 1921-22 for special students in the fourth year of the course in Architecture at the Massachusetts Institute of Technology. They will be awarded as the result of a competition in design under the direction of the Committee on Design of the Department of Architecture.

The competition is open to citizens of the United States of good character, who are between twenty-one and twenty-eight years of age, and who have had at least three years' office experience. Competitors must, however, present satisfactory evidence of a knowledge of descriptive geometry.

The competition will be held in July, 1921. Competitors are allowed to prepare their drawings wherever conditions conform to the requirements of the Committee, but these drawings must be sent to Boston for judgment.

**Applications should be received before May 1,  
addressed to Professor William Emerson,  
491 Boylston Street, Boston, Mass.**

## THE "ANALYTIQUE" OR ORDER PROBLEM.

*(Continued from page 31)*

Figure 5 shows a number of different ideas that would answer the program. There are many other possible combinations, of course, but a beginner probably would not think of a greater number of variations, though each man's efforts would show a different assortment of ideas. In this case a line was drawn across the paper marking the bottom of the doorway, the width of door was laid off, and the sketches were made, extending above and below this line. After the first is drawn, time is gained by making the others over it, on tracing paper, thus avoiding the necessity of repeating the laying-off of dimensions. A rough sketch of plan is frequently worth the trouble of making it, as it shows up faults of design not seen in elevation. A human figure jotted down, say six feet high, is of value in visualizing scale. Indicating the conventional shadows will help to show projections.

The important thing at this time is not to settle on any one idea, nor to think of the merit of any one idea, but to indicate as many different solutions of the problem as possible.

Having arrived at this stage, it is well to re-read the program to see that no specification has been overlooked that would have an influence on the solution, and then to eliminate from the different ideas those that are least interesting, or least satisfying. In making an esquisse for more advanced work this operation of passing judgment on one's own work becomes very important.

Having finally decided which of the solutions is most satisfying to his own mind, the student should spend the rest of his time in "studying" it, using tracing paper, and making rapid drawings, one over the other, of changes in proportion and arrangement, and at this time the plan and section should be drawn and studied for the general outline of projections and reveals.

Now we are ready to draw the "esquisse" itself. This also is done on tracing paper, and as it is usually the size of the sheet on which the program is printed, the size can be laid out by simply placing the tracing paper over the program, drawing at the same time the single line border required.

This sheet can now be placed over the last study of the selected scheme, which is then traced to show all the essentials, but no details. Figure 6, page 31, is such an esquisse made over the last sketch in Figure 5. Note that the ornament is indicated only, and that in a conventional manner, showing a "gray" tone. The caps of the columns are indicated in similar fashion, so that when the student starts to study his problem he is free to choose among any of the "Corinthian" or "Composite" types. The paneling in the door, and the sculpture, are merely suggested.

But certain things are absolutely fixed. The student in working from this esquisse would have to have his doorway enclosed with a semi-circular form, that, in turn, surrounded by engaged columns supporting an entablature with a broken pediment, with some sculptural form between. The return of the cornice at each side of each column is also clearly indicated and could not later be omitted.

A word or two should be said here as to the draftsmanship used in the esquisse. It should be neat and workmanlike, and should not attempt to cover an indecision on the part of the maker as to two different schemes, leaving him free to choose which he wishes to do. Such an esquisse or a careless esquisse may cause a problem to be thrown by the jury, just as will a change from esquisse.

In Figure 7 and 8 are shown esquisses for analytiques made by Paris Prize winners. The first was done by Grant M. Simon (Paris Prize, 1913) for "A Window With a Balcony," and the other by Donald M. Kirkpatrick (Paris Prize, 1912) for "A Loggia."

Having made his esquisse the student is now ready to prepare for his first criticism.

*Note—Information in regard to existing schools and the organization of new ateliers, the "circular of information" mentioned in this article, and other information can be had by writing to Mr. R. M. Hood, Chairman of the Committee on Architecture, Beaux-Arts Institute of Design, 126 East 75th Street, New York, N. Y.*