

WITH this issue we are beginning to put into the magazine more material of the kind that we believe is useful in the everyday work of the architect's office—drafting room information of practical value. In these articles and in those of a similar character which are to follow the men who prepare this material are making an effort to get right down to brass tacks, to make as concise and clear a statement as possible of the essential points and to supply practically all the data needed on the particular subject of which the article treats in each case.

From the time we started PENCIL POINTS we have wanted to supply more of this kind of reading than the limits of the magazine would permit. Now, with its growth we are able to expand a little in this direction without doing so at the expense of the other types of material of which PENCIL POINTS has been largely made up in the past and of which the readers have expressed general approval, namely: matters treating of the design side of architectural work, and of rendering and sketching; reproductions of plates from standard books useful in the drafting room and of examples of unusually good technique in rendering in pencil, watercolor, and other mediums; news items and portraits of interest to the field.

We are not departing from our established policy but are developing a part of it which we have had to hold in abeyance until now. In Mr. Van Pelt's articles for the past year, we have been presenting practical data about building materials and their use, from the standpoint of their æsthetic effect, combining the practical and the design side of the subject of architectural detail. In this issue we present the first installment of an article that will be made up of a mass of information on motion-picture theatre design, from the standpoint of satisfying the practical requirements in a way to accord with the latest practice. Mr. Mlinar in this article will pass along the data he has gathered from his unusually thorough experience in connection with architectural work on motion-picture theatres. How the various parts of such a building are designed to-day, why they are so designed, will be clearly stated; and the article will be packed full of useful data.

In this issue also will be found an article in which typical details of concrete-and-steel construction are presented with a brief statement of the important points of each detail. Mr. Seelye, consulting engineer, who prepared this article, has purposely kept

it elementary in character, and avoided going into details designed to meet the special conditions of some particular problem. We believe that presenting the typical details commonly used in this kind of construction, condensed in this manner, will prove a service to many of the younger men, particularly, and to students of architecture.

Mr. Gaertner this month, under the heading "The Specification Desk," gives a mass of data on swimming pool design. Details of a well-designed porch for a house of medium size are reproduced from a sheet of the architect's working drawings. The finished porch built from these drawings is shown by a small photograph.

Mr. Harbeson's article on "The Study of Architectural Design" is only temporarily discontinued, as it will begin appearing again at the end of the summer season. The installment of Mr. Valenti's article on "Perspective Drawing," which has been omitted from this issue, will appear in the next following issue.

We are endeavoring to make PENCIL POINTS even more attractive than in the past, to show more reproductions of fine pencil drawings, etc., while presenting more drafting room information from men who are especially well qualified by experience to get down to brass tacks on the subjects assigned to them.

#### ASSOCIATION OF COLLEGIATE SCHOOLS OF ARCHITECTURE

THE Ninth Annual Meeting of the Association of Collegiate Schools of Architecture will be held in Chicago, on Monday and Tuesday, June 5 and 6, 1922. The preliminary notice called for meetings on June 6 only, but in response to a call for more time, the program has been advanced to include June 5.

The meetings and headquarters of the association will be at the Chicago Beach Hotel, at East Fifty-first Street (Hyde Park Boulevard) and Lake Michigan. This hotel will also be headquarters for the Convention of the American Institute of Architects on June 7, 8, and 9.

While the meetings of the Association are open to all who are interested in architectural education, a special invitation is extended to schools of architecture to send representatives who will be accorded all the privileges of the floor in the discussion of educational problems.

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*Detail of House for Allan Lehman, Esq., at Tarrytown, N. Y. John Russell Pope, Architect.*

## ARCHITECTURAL DETAIL PART XIV

BY JOHN VREDENBURGH VAN PELT

*This is the fourteenth instalment of an article in which Mr. John Vredenburg Van Pelt, formerly Professor in Charge of the College of Architecture, Cornell University, Architecte Diplômé par le Gouvernement Français, and author of "Essentials of Composition," will discuss the designing of good architectural detail and point out the means by which the ability to produce good detail can be developed. Reproductions of detail drawings from some of the best architectural offices will accompany this article and the publication of this series of drawings will be continued after this discussion of the subject has been completed—making a valuable feature of this journal indefinitely.*

IN AN earlier article of this series, we touched upon slate roofs, but the texture of this interesting material depends so much on a thorough knowledge of its technique that a detailed review is necessary in order to give any measurable grasp of the way the different effects may be obtained. In America the great supply of slate comes from Maine, the territory on the joint boundary of Vermont and New York, Pennsylvania, and a limited supply from California. The last is used only locally, I believe.

The colored slates practically all come from the Vermont-New York section and bear the name of the former state. Black slates are useful for certain types of roof and notably for commercial buildings. The Pennsylvania slates are prized for blackboards on account of their even texture. More beautiful roofs are made of the colored varieties and these divide into two groups, unfading and weathering. The unfading greens, reds, and purples make a cold roof so that it is considered good practice to mix with them a proportion of weathering slate and thus give warmth to the final effect. The principal colors are green, purple, variegated purple (mottled with greenish portions), grey, brown, yellow and red. Weathering

green often changes to brown and yellow and "sea-green" to a veritable rusted-iron color. The change takes place in six months if the roof is laid in the spring, in about a year if laid in the fall. It is important to use slate that will not disintegrate, split or break, but the better known brands are safe.

The original standard mixture of colors twenty years ago was unfading purple 80 per cent and unfading green 20 per cent. This is antiquated and all colors are now used together in certain kinds of

work. To determine the mixture is an art by itself as the proportion of weathering slate required to give the desired final color scheme brings into play knowledge of the slate that must be supplemented by real sensitiveness to color harmony. As may be surmised only a very few of those in the business possess this rare combination. It is of interest to remember that although the weathering slates change as above noted nearly all retain an underlying note of the original tone. Sea-green is the one that loses it to the greatest degree.

Even for commercial work the thinnest slates that may be used are  $\frac{3}{16}$  of an inch thick. These should not be larger than 24 in. x 12 in. laid  $10\frac{1}{2}$  in. to the weather. For a good class of work slate should not be less



*Detail of House for C. Bai Lihme, Esq., at Watch Hill, R. I.  
Mott B. Schmidt, Architect.*

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*Detail of House for Arthur Williams, Esq., Glen Head, L. I. Harris V. Hartman, Architect.*

than  $\frac{3}{4}$  in. The other extreme is two or two and a half inches for the heavy portions of the roughest graduated roofs.

In the roof each slate has three parts, the portion exposed "to the weather," the "middle lap" under the exposed part of the course above it, and the "head lap" covered by two slates. Slate roofs may be laid as flat as 25 degrees with a 3-inch head lap unless very rough. Below this pitch use a 4-inch head lap down to 22 degrees, and below this cement the covered portion of the joints and nail holes with slater's elastic cement or for very rough slate, bed the whole slate in slater's cement. Do not lay slate flatter than 14 degrees under any circumstances.

Although a 3-inch head lap may be specified, the roofer must be watched, as one manner of "skinning the job" is to reduce this to 2 inches.

A good illustration of a piece of heavy slate work is the John Dodge residence at Detroit, where the individual slates, one-half inch thick, are 40 inches long and laid  $18\frac{1}{2}$  inches to the weather which leaves the proper 3-inch head lap. Of course in all cases the vertical joints in succeeding laps must be carefully broken or staggered.

Slate are usually laid on a boarded roof of  $\frac{7}{8}$ -inch sheathing. For slate over  $\frac{3}{4}$ -inch thick,  $1\frac{1}{8}$ -inch sheathing ought to be substituted. They may be laid on  $1\frac{1}{2}$  inch x  $2\frac{1}{2}$  inch cleats but this would be impossible in a graduated roof. Fireproof work can be carried out with steel angles, wiring the slate instead of nailing. On concrete, strips may be bedded in the slab or for graduated roofs one inch of nail-code may be placed on the concrete or sawdust concrete may be used for the slab. Gypsum slabs may also be utilized for such work.

Nails should be solid copper, copper-clad only for commercial or the cheaper grade of work. The rule for nail lengths to hold slate up to  $\frac{3}{4}$ -inch is twice the thickness of the slate plus one inch. Add  $1\frac{1}{4}$  inch to the double thickness for heavier slate and  $1\frac{1}{2}$  inch if the slate are very rough or uneven. In valleys or where the slates do not lie flat on each other real spikes come into play.

Curved or "weaved" valleys are measured by the length of the chord or "segment" of the arc of the circle between the two points where the straight portions of the sheathing stop. Actually the sheathing is run straight on to the mitre of the valley so this segment is the width of the wood or other filling that is placed on top of it in the valley. On wood sheathing a series of blocking, wood plank cut in an angle to fit the mitred sheathing and with a concave curve to fit the sweep or weaving curve of the slate, support a number of narrow flooring strips that run up the valley. Such valleys may begin at a point at the top and broaden out to a curve at the bottom or for certain effects may have the point at the eaves and run to a broad curve at the top as in certain dormers where the ridge of the dormer itself curves back into the roof or as in the charming Gate Lodge by Griffin & Wynkoop, for the F. N. Potter estate, see page 13, where the intersection of the cornices requires a right angle at the eaves. The last, an English style, can also be seen in restrained form in the full-page illustration on page 10, of the beautiful roof of the Allan Lehman house designed by John Russell Pope. The valleys of the dormers of the Arthur Williams house, page 12, have the same sweep all the way up and the result is broadly curved eaves dying into the

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main roof. Segments are not usually made sharper than six inches, as below this the slate can be bridged across and thirty inches is about the maximum.

There are three kinds of valleys, the open valley, the closed mitred valley, and the sweep. Open valleys are a practical solution, a flashing about 20 inches wide (7 inches under the slate on each side) being run straight up the roof. But they are ugly, a gash, a foreign material that cuts up through the slate mass. Closed, mitred valleys should have strips of "shingle" or "blind" flashing set into each course. A woven valley can be made without flashing but it is at least safe to cement it carefully with elastic cement. Copper, 16 oz., is the most common flashing material in high-grade work. Where sheet lead is used, 4 lb. is a good weight. Zinc is another excellent material for this purpose. Long lines of lead laid up a roof will "crawl" in time or become thick at the bottom and correspondingly thin at the top, turning the upper nail holes into slots. This is obviated by resorting to shorter pieces of lead, lapped. If hard lead is used, it is said, that it may be employed in long continuous strips without "crawling." In hard lead the weight most often employed is 2 lb. The choice of one or another of these materials depends on the special conditions including cost. In "blind" flashing each strip should be large enough to extend from a point just above the bottom edge of the slate it is under, up to the upper edge of the

slate it covers. This means that it will be as high as the number of inches the slates are to the weather plus the 3-inch or 4-inch head lap. Another point that will bear watching is the tendency of contractors to substitute cementing for metal flashing that has been specified. As a matter of fact, in hips and ridges, careful cementing and mitring may safely be required in place of metal flashing.

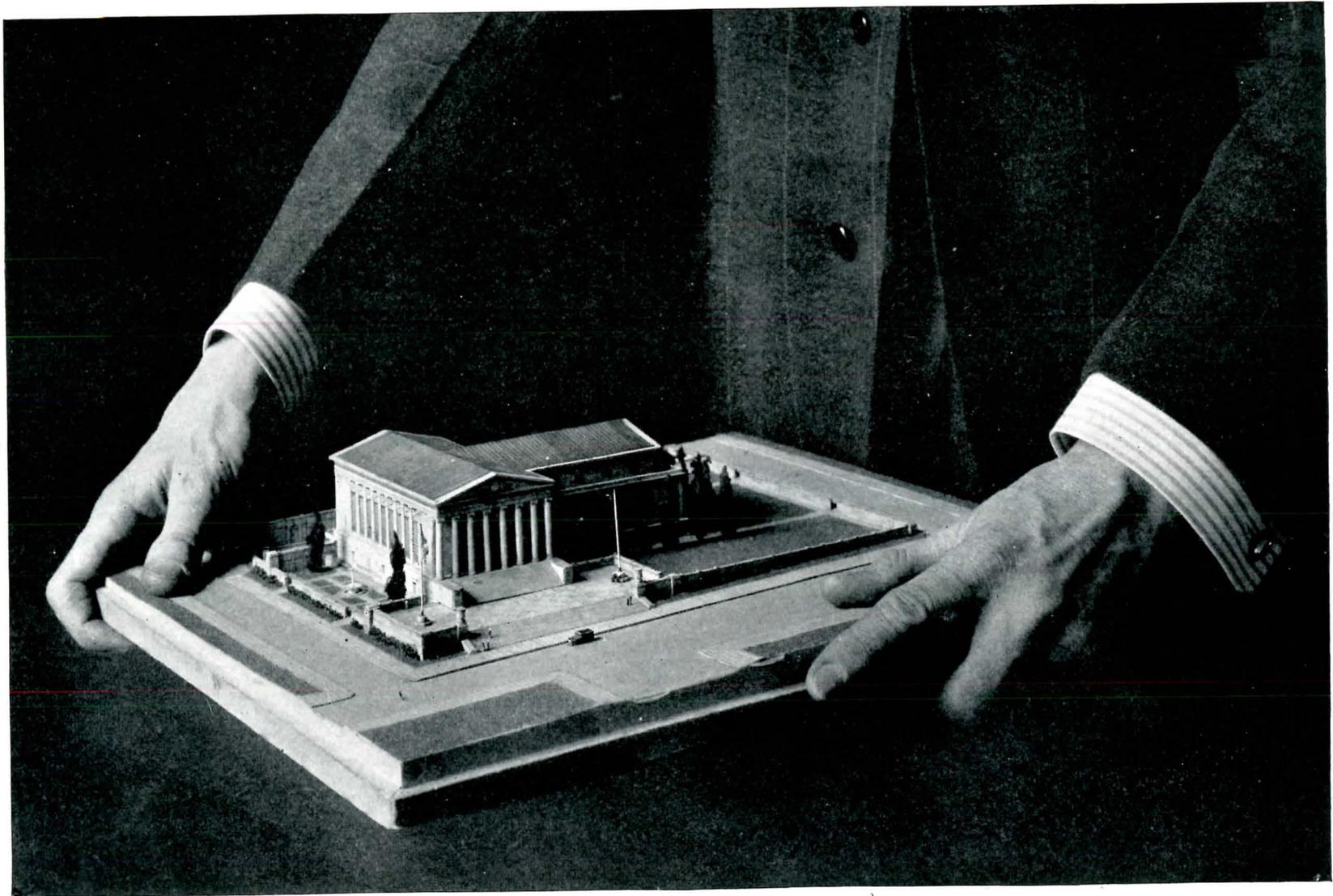
There are three kinds of hips and ridges, the ridge roll or metal ridge or hip, the Boston hip, and the mitred hip or ridge. The first presents the same objection as the open valley, a noticeable obtusion of an extraneous material. See the dormer of the C. Bai Lihme house on page 11. Here an avoidance of mechanical smoothness of the metal saves the appearance. The second is in general disfavor among slate lovers and experts. It is clumsy and the saddle of slate really offers little advantage as each piece must be nailed on and the nails cemented. Furthermore the holes do not correspond with the lining-up of the main roof slate. The mitred ridge or hip is made by bringing two thicknesses of slate on each side of the roof up to the top, first the lower layer on one side, then that on the other to the top of the first, then the second layer of the first side to the top of the first layer of the second side, then the second layer of the second side to the top of the second layer of the first side.

*(Continued on page 36)*



*Gate Lodge for F. N. Potter, Esq., at Rome, N. Y.*

*Griffin & Wynkoop, Architects.*



*Photograph of Cardboard Model of Proposed Henry Stambaugh Memorial Auditorium, Youngstown, Ohio. Helmle & Corbett, Architects. This Photograph Shows the Small Size of the Model Compared with a Man. This is the Model Which Was Used in Making the Composite Photographs Shown on Page Ten of the April Issue of this Journal*

## ARCHITECTURAL MODELS OF CARDBOARD, PART III

BY HARVEY W. CORBETT

*This is the third installment of an article in which Mr. Harvey W. Corbett of the firm of Helmle & Corbett, Architects, New York, will tell exactly how he makes cardboard models of buildings; how he uses them for study in the process of designing and as a means of presentation. Mr. Corbett will go into the most minute details of the making of these models and will illustrate his descriptions with photographs showing the tools used and the various operations. There will also be numerous interesting photographs of models and of details of models. The making of landscape features, trees, hedges, lawns and other parts of the entourage will be described, also such incidentals as automobiles and figures.—Ed.*

**T**HOUGH the working of cardboard may seem a simple matter—and it is indeed simple—there are things about it that can give one a deal of trouble and can prevent the resulting model from possessing the accuracy and good workmanship that a model must have if it is to be of use either as a means of studying or of presenting the design for a building.

Models such as the one shown in the illustration on the opposite page are made almost entirely of mounted watercolor paper. In fact, the models illustrated in connection with the installments of this article in the April and May issues and all my other models are made from this material, with certain parts and accessories of other materials.

The cardboard must be cut accurately with true, clean edges, and I have found that the most satisfactory way to go about this is to make a preliminary or guiding cut in the face of the material with a keen blade that is sufficiently heavy to be firm and rigid. For this purpose, I use a knife that has a blade about

nine inches long, with a handle secured to the middle by means of screws. The hardware store clerk who sold it to me said that it is intended for cutting cloth and he called it a shirt cutter's knife. I keep it sharp by grinding it on a small carborundum wheel and honing it on an oil stone. There is enough of it so that I need not hesitate to grind it as often as necessary. The handle can be slid back along the blade by loosening screws at the side and clamped in a new place by tightening them. It is not necessary to have this kind of knife, the large blade of a heavy pocket knife will do. However, the knife described has the advantage of greater firmness and steadiness because of its rigidity and weight. It will last longer under frequent grindings. Also it is of an unusually fine grade of steel and takes a remarkably keen edge.

The use of this knife is shown in the photograph Figure 1 on this page. In this illustration it will be noted that I am cutting along a steel square, which I find a very convenient tool. One cannot use a wooden square or wooden straightedge because the knife

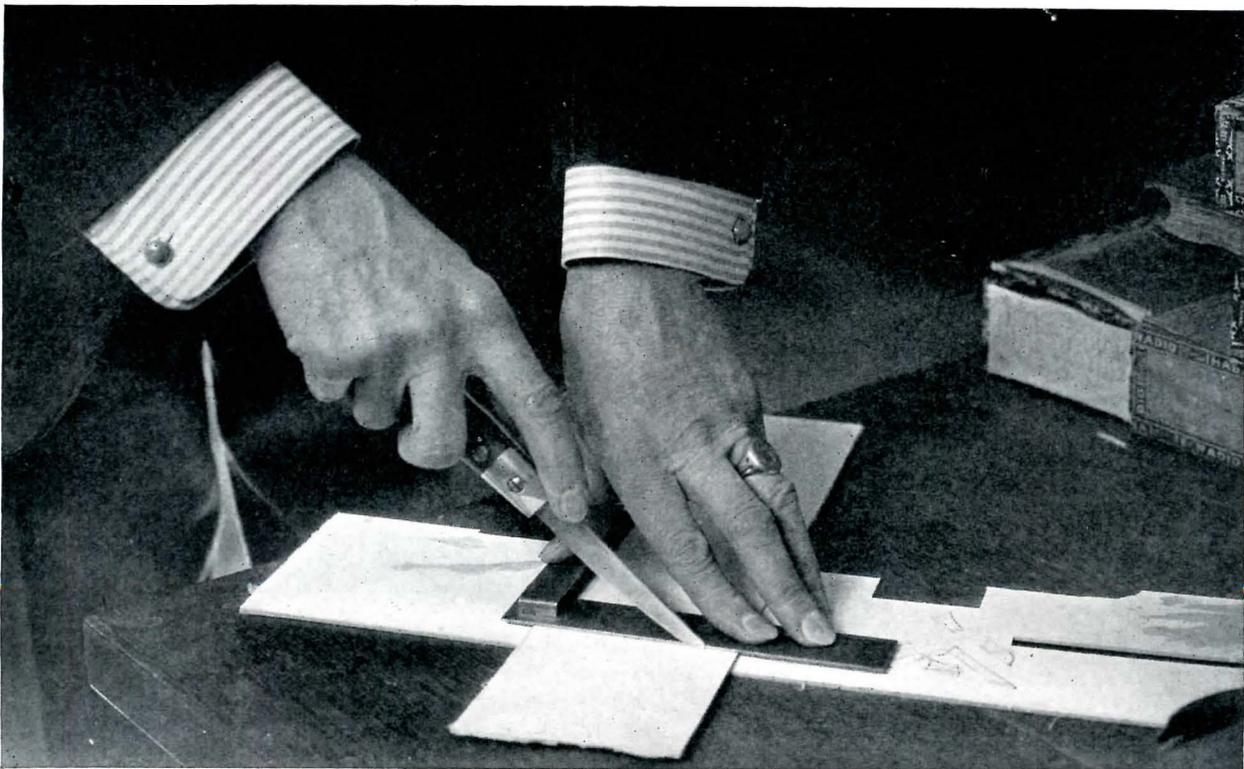
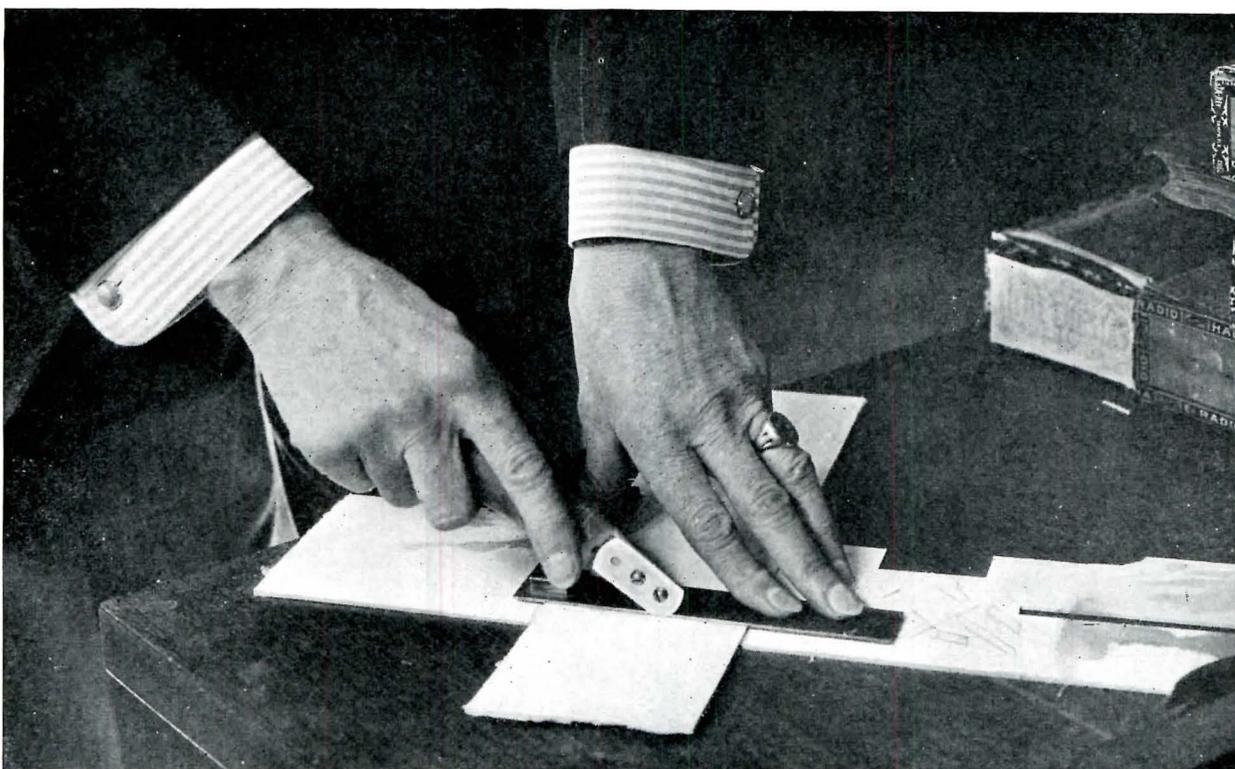
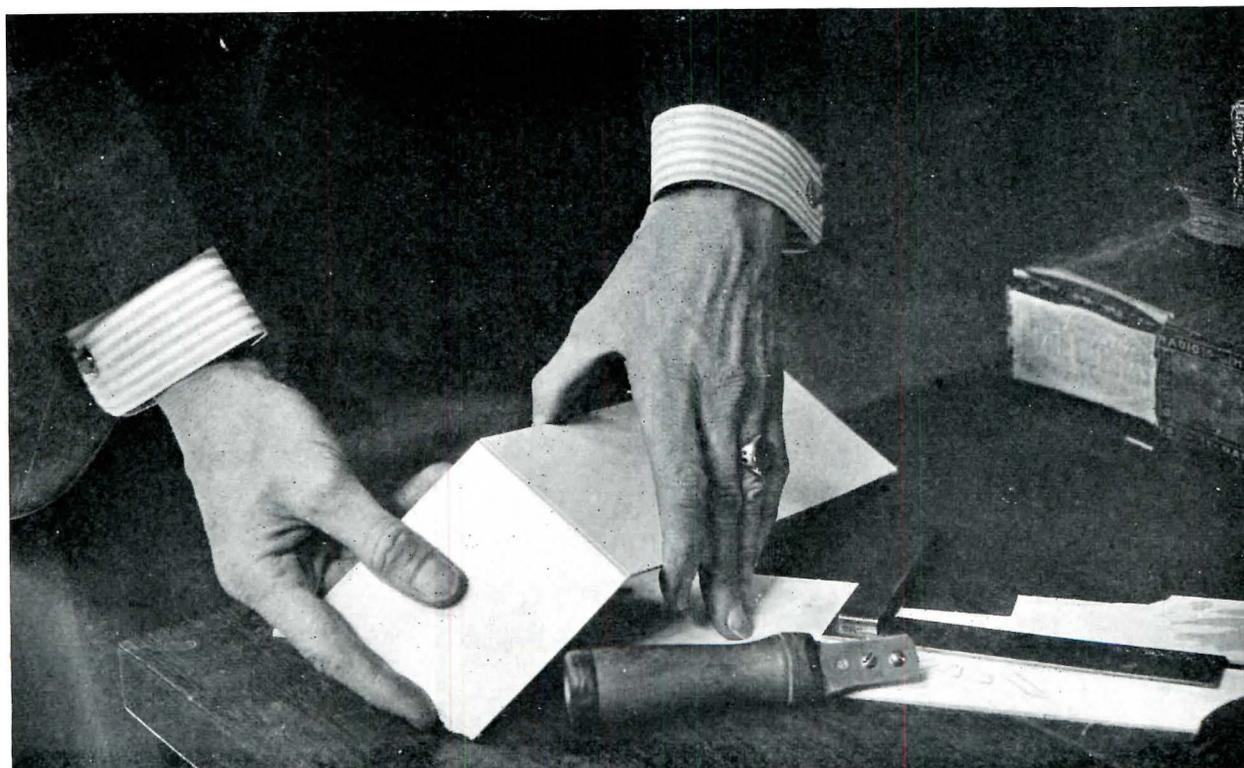


Figure 1. Making the Preliminary or Guiding Cut on the Face of the Cardboard with a Sharp, Heavy Blade.

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*Figure 2. Cutting with Razor Blade Mounted on Wooden Handle. A Succession of Light Strokes is Used.*



*Figure 3.—A True, Clean Cut Is the Result of This Method.*

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would cut it and the steel square should not be graduated, as a perfectly smooth true edge is needed. The cut made with this knife should be shallow—the purpose is only to prepare the way for the razor blade which will be used to do the actual cutting through the cardboard. I have found that without this preliminary cutting the razor blade bends and makes a wavy line.

In Figure 2, on the upper half of page 16, is shown the process of cutting. The tool is one I made by sawing a chisel handle and attaching a safety-razor blade to it by means of screws. This razor is drawn along the shallow cut already made by the heavier knife. One must not bear down on the razor, but draw it smoothly and lightly along the line repeatedly, with just enough firmness so that it will bite into the cardboard. It will eat its way rapidly downward. In Figure 2 it will be seen that I have laid the cardboard to be cut on top of a piece of similar cardboard in such a way that one end projects. The weight of the projecting end tends to open the cut, preventing the cardboard from pinching the blade.

The result of this method is a clean, true cut, as shown in Figure 3, where the card is seen bent so that the cut opens. This photograph also gives a better view of the cutting tool used. There must be sufficient flat surface back of the blade to keep it firm but the wood of the handle must be cut away enough to allow the corner of the blade with which the cutting is done to project at least as much as the thickness of the cardboard.

In forming the body of a model it is best to make the four walls from a single piece of cardboard, cutting V-shaped grooves in the back of the card and bending it at the corners of the building. This produces much neater corners than it is possible to make by mitering separate pieces and it is easier in the end. The method by which I form these corners is shown in Figures 4, 5 and 6. For the sake of clearness, the dimensions are exaggerated in these diagrams, the mounted watercolor paper being shown at four times its actual thickness. The corners having been marked on the face of the cardboard, a blunted V-shaped section, shown in Figure 4, is cut from the back of the board directly opposite by making two knife cuts at an angle of  $45^\circ$ , and lifting out the part between them with the point of a knife.

This leaves a small amount of material, as shown in Figure 5, to be removed with a rat-tail file or a small saw, working carefully until the back of the watercolor paper is reached. The cardboard should be held to the light from time to time to note the progress of the work.

The next step is to score the paper surface of the cardboard lightly along the line of the corner. Unless one does this the corner will be rounding instead of angular and more or less wavy instead of straight. The small blade of a pen-knife, not too sharp, serves well for scoring the paper.

Next, each section of the board must be backed with board of the same kind used in the reverse sense, that is, back to back, so that atmospheric changes will affect both sides alike and the board will not warp. This backing is glued on and the work kept under pressure till the glue is dry. I use an old-fashioned screw letter press for this purpose.

A corner formed in this way is shown in Figure 6, the white space between the double lines represents the watercolor paper, the dotted portion, the mounting board, and the black parts represent the glue.

Of course, one of the four corners must be made by mitering, but usually it can be hidden by some other part of the building. The four sides joined in this way are then glued down upon another piece of cardboard and a rectangle of cardboard cut to fit snugly inside is glued down in the bottom to stiffen the lower part. The roof section when in place will stiffen the top. Though

the body of a model is not always a simple rectangle, it is possible to apply this general principle, with necessary variations, in the construction of all models.

A word in regard to the use of glue will not be amiss, I think. I use prepared fish glue. I buy it in the small, wide-mouth bottles. I used to get it in the larger containers but have found it better to get small bottles, for then it does not dry out before I have used it up. Perhaps it is only a fancy, but the glue in the smaller bottles seems to me to be of a better quality. There is another reason for buying the glue in this form—a small metal spreader comes with each small bottle and one can never have too many of these spreaders. I have quite a collection of them. When I am using the glue I have a bowl of water at hand, also a towel. As fast as I use a spreader I drop it into the water and take up one that has been soaking, and wipe it dry on the towel. The bowl of water and the towel make it possible to free the fingers from glue at frequent intervals. This is important, for if glue gets on the paper surface it will catch dust and cause a dark spot, and it cannot be removed without injuring the rendering. If the fingers are moist (not wet, or even damp) I find that the glue does not adhere to them so tenaciously as when they are perfectly dry.

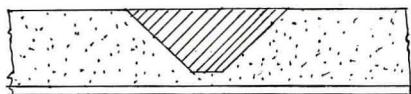


Figure 4.

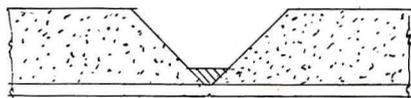


Figure 5.

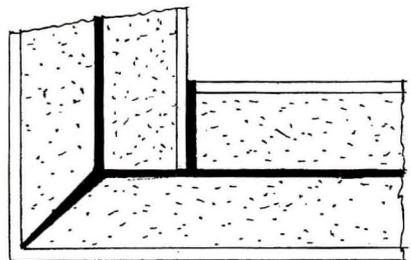


Figure 6.

*Forming a Corner. Diagrams  
Four Times Actual Size.*

# A VOCABULARY OF ATELIER FRENCH. PART III

BY RAYMOND M. HOOD

*This is the third installment of a vocabulary which Mr. Hood, Architecte Diplômé par le Gouvernement Français and Chairman of the Committee on Architecture of The Beaux-Arts Institute of Design, is preparing especially for this journal. It will be of special value to students in the ateliers in this country as well as to those who may later study at the Ecole des Beaux Arts in Paris, for there has been, we believe, no vocabulary published giving the special meanings of these words as used in the architectural atelier. As it is believed that an attempt to indicate the pronunciation would be futile, no such attempt is being made here; the pronunciation should be learned from someone who speaks French correctly.—Ed.*

## D (Continued)

- Décimètre: *n. m.*; a tenth of a metre, a scale or ruler of that length.  
 Devis: *n. m.*; *arch.*, specifications.  
 Diplôme: *n. m.*; diploma.  
 Diplômé: *n. m.*, and *adj.*; one who has received a diploma.  
 Dôme: *n. m.*; dome.  
 Double-décimètre: *n. m.*; the architectural and engineering scale in ordinary use, being twenty centimetres long.  
 Doubleau: *n. m.*; (a) one of the heavy beams in floor construction; (b) an arch ring.

## E

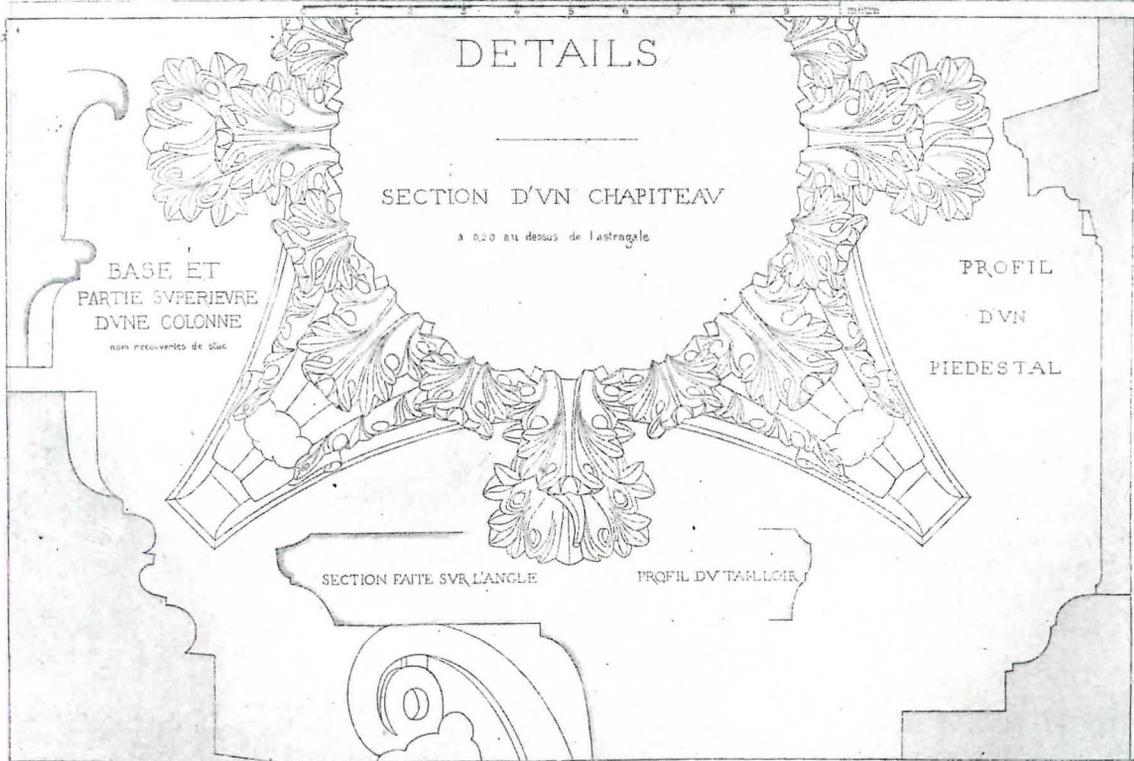
- Ebauche: *n. f.*; a first sketch, or a roughing out of an idea.  
 Ecarté: *n. m.*; a game of cards, played usually by two, occasionally by three or four.  
 Echaufaudage: *n. m.*; a scaffold.  
 Echappé: *n. m.*; a queer person, a lunatic; (literally, a person who has escaped).  
 Echelle: *n. f.*; (a) a ladder; (b) *arch.*, scale, as of a drawing.  
 Ecole: *n. f.*; school.  
 Emballer: *v.*; to do up, to box up; *s' emballer*; to be carried away by anger or enthusiasm.  
 Emballé: *n. m.*; an enthusiastic person.  
 Embêter: *v.*; to vex or annoy.  
 Embêtant: *adj.*; annoying, vexing.  
 Encre: *n. f.*; ink; *encre à poncer*, a special ink used for a drawing that is to be transferred by rubbing.  
 Engueulade: *v. f.*; *slang*, a balling out.  
 Engueuler: *v.*; *slang*, to ball out, to call down.  
 Enorme: *adj.*; enormous; *slang*, wonderful, extraordinary, interesting.  
 Entablement: *n. m.*; the projecting part of the cornice above the frieze.  
 Entourage: *n. m.*; environment, followers; *arch.*, the grounds immediately surrounding a building.  
 Entresol: *n. m.*; the mezzanine story between the ground floor and the first floor.  
 Envoi: *n. m.*; the action of sending, the thing sent; *arch.*, a drawing made by a scholarship student to be sent to his masters.  
 Epure: *n. f.*; *arch.*, a diagrammatic drawing of an architectural problem, as the "épure" of a vault, or a truss.

*Note.—We take this opportunity to correct typographical errors in the installment of this vocabulary which appeared in the May number as follows: Charette—not "charrette"; chef-cochon—not "chef-cochur"; costaud—not "costand."—Ed.*

- Esquisse: *n. f.*; a sketch.  
 Esquisse-esquisse: *n. f.*; a rough sketch, applied in the Ecole des Beaux Arts to the twelve-hour sketches.  
 Etranger: *n. m.*; a foreigner, a stranger.  
 Etude: *n. f.*; a study, a research.  
 Etudiant: *n. m.*; a student.  
 Etudier: *v.*; to study, to examine.  
 Evêque: *n. m.*; a bishop; *slang* of the Café des Deux Magots, a Manhattan cocktail.  
 Examen: *n. m.*; examination.  
 Exèdre: *n. f.*; an exedra.  
 Exposer: *v.*; to exhibit, to put on view.  
 Extrados: *n. m.*; exterior surface of a vault or arch.

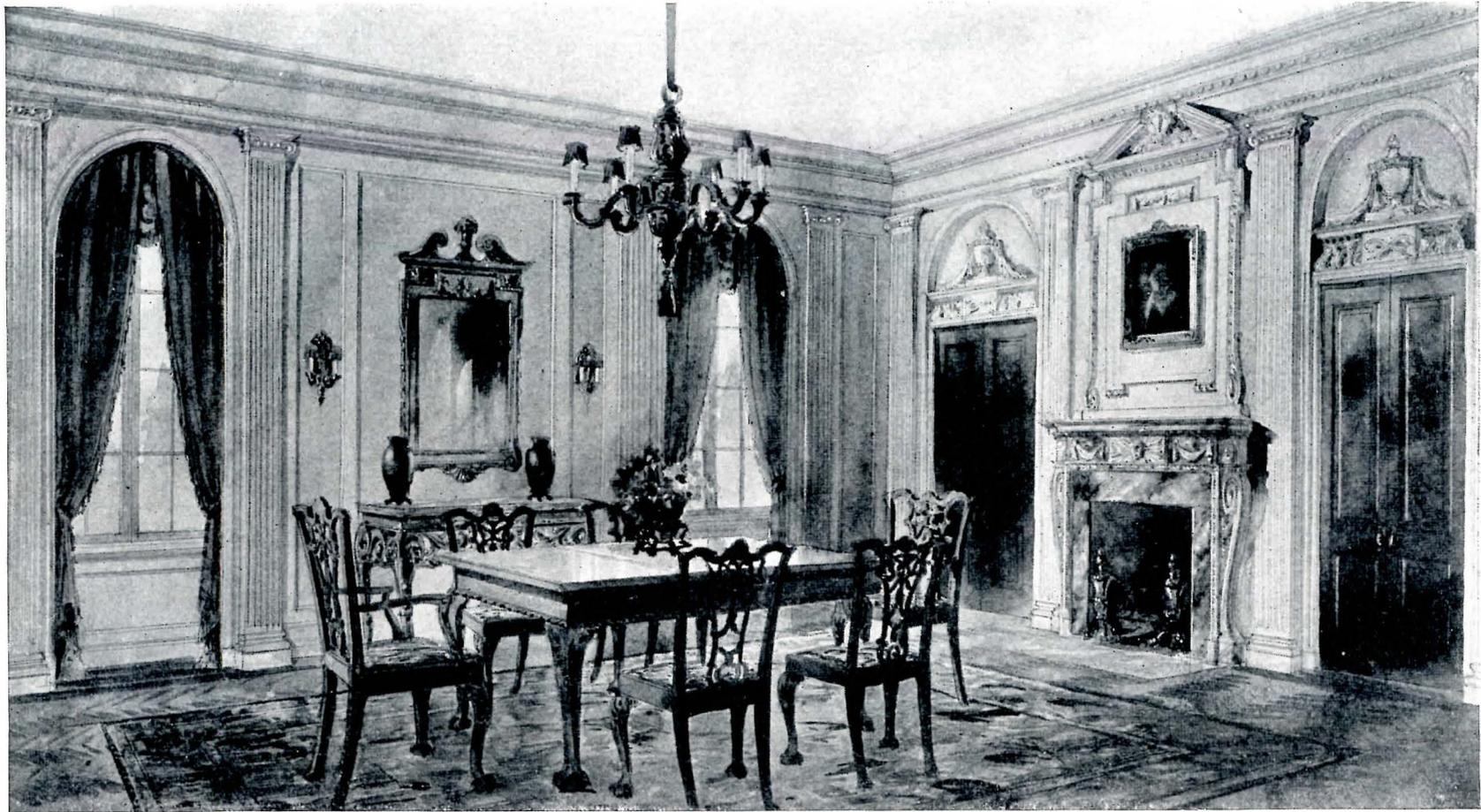
## F

- Façade: *n. f.*; facade.  
 Faculté: *n. f.*; (a) faculty; (b) a department of a university, or a group of professors forming a department.  
 Faîtage: *n. m.*; the piece of wood or iron forming the ridge.  
 Fauteuil: *n. m.*; an arm chair; *arriver dans un fauteuil*, to finish easily.  
 Fenêtre: *n. f.*; a window.  
 Fer: *n. m.*; steel; *arch.*, a piece of steel, i.e., a column or a beam.  
 Ferme: *n. f.*; a truss.  
 Ficher: *v.*; to force to enter by the point; *se ficher de*, to make fun of, to have no regard for; *ficher à la porte*, to throw out.  
 Fichu: *adj.*; poor, badly done; *slang*, lost, ruined.  
 Filer: *v.*; to thread; *of a lamp*, to smoke; *slang*, to go away, to go rapidly.  
 Filon: *n. m.*; a clever robber.  
 Fiston: *n. m.*; *slang*, a son.  
 Fixatif: *n. m.*; fixative.  
 Flaner: *v.*; to loaf.  
 Flaneur: *n. m.*; a loafer.  
 Flanquer: *v.*; to throw, to place; *flanquer à la porte*, to throw out.  
 Flèche: *n. f.*; (a) an arrow; (b) the spire of a church.  
 Flémard: *n. m.*; a lazy, stolid person.  
 Flème: *n. f.*; *slang*, the desire to do nothing, stolidity, laziness.  
 Foncer: *v.*; (a) to dig down; (b) to darken or make deeper in value or color.  
 Fou: *n.* and *adj.*; crazy, idiotic.  
 Four: *n. m.*; an oven; *slang*, a failure.  
 Foyer: *n. m.*; (a) home, hearth side; (b) the part of the theatre where the public congregates during the entre-actes; (c) the focus of an ellipse.  
 To Be Continued.



DETAILS OF THE TEMPLE OF MINERVA AT ASSISI.  
FROM D'ESPOUY'S "FRAGMENTS D'ARCHITECTURE ANTIQUE"

*The restoration by Louis Bernier reproduced on the other side of this sheet shows interesting detail of the Temple of Minerva at Assisi. It may be noted that in this building the columns were just over fifteen meters in height and that the intercolumniation is just under four and one-half meters from axis to axis of the columns. The entablature was light for the order, being only about one-fifth the height of the column.*



RENDERING IN PENCIL AND WATER COLOR.

AN INTERIOR IN THE GEORGIAN MANNER. THEO. HOFSTATTER & CO., DECORATORS.

*The rendering of an interior shown on the other side of this sheet is an example of the effective presentation of a scheme of decoration and furnishing for the purpose of making the proposed treatment clear to the client. It is drawn in pencil and rendered with washes of watercolor, the pencil work serving to give the detail and the watercolor to suggest the color scheme.*

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PLATE XXIII



CARMONA.  
AUSTIN WHITTLESEY.

PENCIL SKETCH, CARMONA, BY AUSTIN WHITTLESEY.

*Bridging across a cleft between two hills in the centre of the town of Carmona, in Spain, is the old Moorish citadel, under which passes the street shown in the admirable drawing by Austin Whittlesey reproduced on the other side of this sheet.*

PENCIL POINTS

VOL. III, No. 6

PLATE XXIV



*Courtesy of Kennedy & Co.*

PENCIL STUDY FOR A DECORATION BY TROY KINNEY

*The pencil drawing by Troy Kinney reproduced on the other side of this sheet, at the same size as the original, is one of the artist's studies for the figures in his mural decorations in the Miss Louise Le Gai School of the Dance in Philadelphia. These decorations consist of two paintings each about nine feet square. One represents the early development of the dance, the dance of Classic times, while the other represents the later development, typified by a dance characteristic of the French court in the Eighteenth Century. The study which is reproduced here is for one of the figures in the Classic panel. Each of these paintings shows a group of three or four dancing figures. Both panels are painted in light, soft tones like those seen in old tapestries.*

# ELEMENTS OF CONCRETE AND STEEL CONSTRUCTION

BY ELWYN E. SEELYE

In this article Mr. Seelye, C. E., Consulting Engineer, Member of the American Society of Civil Engineers, American Concrete Institute, and the Society of Terminal Engineers, presents the principal typical details of the method of construction treated and points out the more important structural points in each case. Mr. Seelye acts in the capacity of consulting engineer to architects on structural work, and has won recognition, particularly in the progressive use of steel and concrete in combination.—Ed.

IN THE diagrams shown here are represented typical details of concrete-and-steel construction and the following notes briefly indicate the more important points in relation to each detail.

Figures 1 and 2. There are some essential elements of strength in the lintels shown in Figures 1 and 2, which should be pointed out as follows: There should be reinforcement in the bottom of concrete lintels and of tile lintels filled with concrete. Shelf-angles to carry face brick on wide-span lintels should be anchored to the concrete. As shelf-angles cannot be easily anchored to tile lintels the angle should be of such a size as to carry the face brick below the bond course. The five-cell tile shown is a stock window-head section which permits bonding the face brick to the tile and also relieves the load of the face brick on the shelf angle. Note that in all these sections, excepting those for interior walls, an offset for weathering at the window-head is provided. To meet this requirement in the case of a tile wall without face brick another stock block is provided. Where fireproofing is called for in steel lintels they should be wrapped with mesh to reinforce the concrete or cement plaster which forms the fireproofing.

Figure 3. There are two general methods of supporting cornices. One is by means of anchor bolts and the other on outriggers. The outrigger generally fulcrums on the wall and is held down by being con-

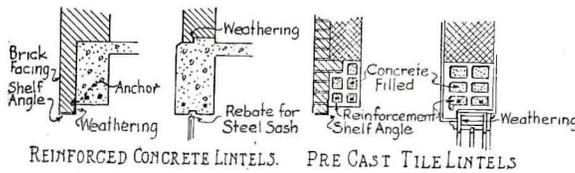


Figure 1.

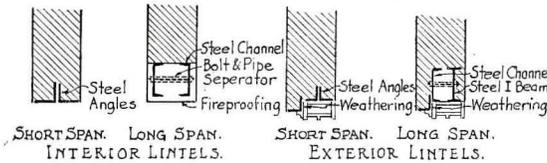


Figure 2.

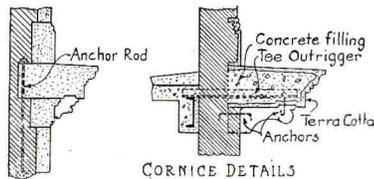


Figure 3.

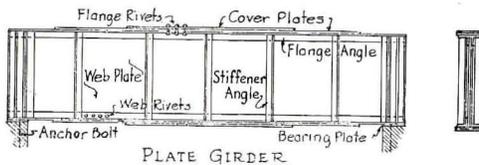


Figure 4.

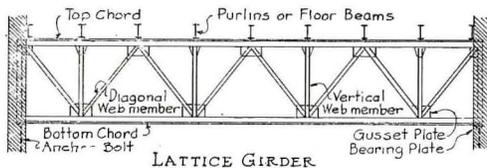


Figure 5.

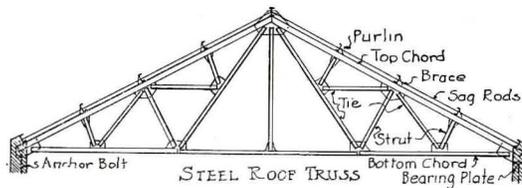


Figure 6.

nected to the steel framing as shown in the section. The anchor bolts should never be used without first determining whether there is a possibility of the wall overturning at the point below the bottom of the anchor bolt shown in left-hand diagram in Figure 3.

Figure 4. The plate girder depends for its strength not only on proper sizes of its component parts such as web plates, cover plates, and flange angles, but upon a proper spacing of the web rivets and flange rivets. These rivets make the component parts act together as a unit and the stresses in them should be carefully analyzed so that the rivets may be proportioned in accordance with the work they have to do. Attention is also called to the importance of bearing plates and anchor bolts where plate girders rest upon walls.

Figure 5. Here is shown a lattice girder and attention is called to the fact that purlins should be placed over panel points and that all members should be connected with gussets with the proper number of rivets to develop the stress in the different members.

Figure 6 shows a typical steel roof truss. Attention is called to the necessity of sag rods for the purlins, braces for the purlins, anchor bolts, bearing plates and gussets with proper rivetting.

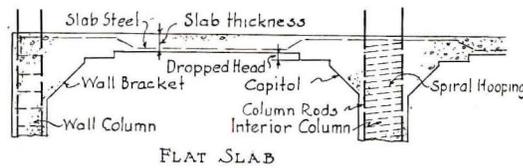
In Figure 7 is shown a section through typical reinforced concrete flat slab construction. This construction being of cantilever type requires steel to be bent up over column

## PENCIL POINTS

heads and wall brackets. Steel at wall brackets should be hooked down. Column steel in this construction should be carried up into the column above. The interior columns are generally round or octagonal and reinforced with spiral hooping, whereas the wall columns are generally rectangular and reinforced with individual hoops.

Figure 8 indicates a fireproofed steel floor and a metal lumber floor. Note particularly that the fireproofed steel floor requires soffit reinforcement for the fireproofing and that the mesh reinforcement for the slab should be bent up over supports. At an end support it should be hooked around the I-beam. In the case of the metal lumber floor, metal lath for the floor should be of deep-ribbed type with stone concrete on top of it. The metal lath for ceiling should be a rib lath. It is preferable to use bridging on this type of work and special strength should be provided under partitions. The construction shown may be varied so as to permit the use of wood sleepers laid directly on top of the metal lumber for the purpose of nailing a wood floor to same.

Figure 9 represents typical beam and slab reinforced concrete construction. It is to be noted that where a beam or a slab passes over a support, reinforcement in the top must be provided to prevent the occurrence of reverse bending cracks. This top reinforcement may be provided in the case of beams either by bending up part of the bottom steel from each side and lapping it, or by the use of short straight rods which are sometimes called floating rods. The stirrups should be accurately spaced and wired in place in accordance with the detail plans. In the case of the slab steel, all rods are usu-



FLAT SLAB  
Figure 7.

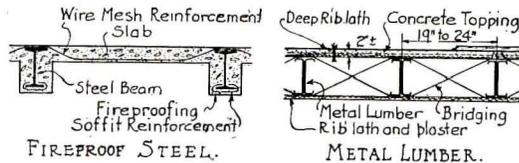


Figure 8.

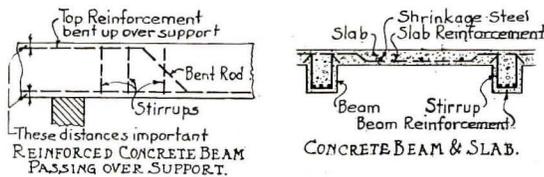


Figure 9.

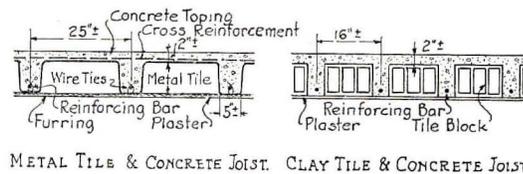


Figure 10.

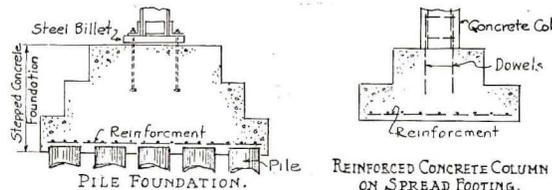
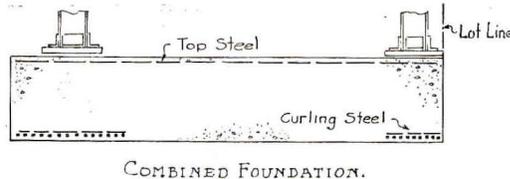


Figure 11.



COMBINED FOUNDATION.

Figure 12.

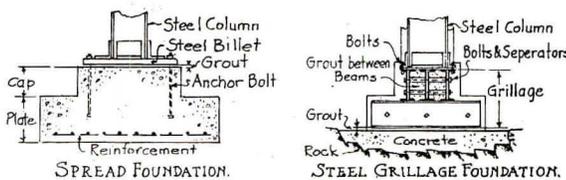


Figure 13.

ally bent up over supports. It is important to provide spacers to keep the bottom steel up a fixed amount above the forms in accordance with the detail plans. In the same way the top steel should be held up on chairs or other devices and all should be rigidly wired so that it will not become displaced during spading. Accurate spacing of reinforcing steel is an extremely important matter and should receive careful attention by the architect in the field.

Figure 10 indicates two types of reinforced concrete cored floors. The first shows what is commonly known as the metal tile and joist and important features to look out for here are the placing of galvanized wire ties to hold the metal lath in place, the use of cross reinforcement, and the proper spacing and alignment of the metal tile. In the case of the clay tile floor, proper spacing and alignment of the blocks is important and in both cases care should be taken to see that the bottom steel is held rigidly in place and not allowed to drop too far down or to become placed too high in the joist.

Figures 11, 12 and 13 illustrate common types of footing. It is to be noted that in the ordinary footing which is not joined to another column, the reinforcement is placed in the bottom, whereas in the combined foundation the main steel is placed in the top and transverse steel, sometimes called "curling steel," is placed in the bottom to prevent the earth pressure from curling the footing about its long axis. In the case of a concrete column, dowels are required to be cast in the footing. In the case of the steel column, anchor bolts are required to connect the steel column to

(Continued on page 36)

## MOTION PICTURE THEATRE DATA

BY EMIL M. MLINAR.

*In this series of articles Mr. Mlinar, who is the New York associate of C. Howard Crane, Architect, Detroit, Michigan, will go thoroughly into the practical considerations in motion-picture theatre design, presenting the data indispensable in designing and making drawings for such theatres. Mr. Mlinar specializes in theatre work and was formerly of the office of Thomas W. Lamb.—Ed.*

THE practical requirements that govern the size and arrangement of the various parts of a motion-picture theatre and the nature of its equipment are so special in character and such great advances have been made in this field during the past few years that a concise statement embodying the data required in designing such buildings should, it seems, serve a useful purpose. With this thought in mind, I shall endeavor to present in the course of these articles the considerations and facts that I have found must be taken into account if a motion-picture theatre is to prove satisfactory to the public that uses it, to the owners whose money is invested in it, and to the neighborhood of which it forms one of the architectural features.

It is my practice to prepare the program in each case from the information recorded in the answers to a questionnaire which I present in printed form to be filled out in consultation with the client. This questionnaire serves as a reminder of all the points that should be covered in the program.

The first consideration that requires the attention of the architect, naturally, is the site, including the character of the neighborhood in which the motion-picture house is to be built, for upon its suitability to the locality the success of the design depends very largely. Not only should the building provide the right kind of accommodations for the right number of people, but it should be so planned and of such design character that it will serve its purpose and be an attractive addition to the street architecture of the section for at least a period of ten years after it is built, for this is the period most often arranged for the amortization of the loans that are usually required in financing the building operation. I do not hesitate to say, as the result of my own observation, that the value of a well-arranged and beautiful interior in attracting and holding patrons for a theatre can hardly be over-estimated.

The planning of the entrance is of great importance, both from the standpoint of providing ample and well-arranged facilities for handling the crowd and for the display of advertising and other features that attract people to the theatre. In the case of the smaller theatre, say, up to a capacity of two thousand two hundred seats, the entrance consists of an entrance vestibule and lobby. In the larger theatre the entrance consists usually of an entrance vestibule, outer lobby and grand foyer.

Ordinances in some cities define the minimum width of the lobby at twenty-five feet in the clear of exits, or five pairs of doors five feet in the clear or five feet six inches between jambs each. Where such a law is in force, the lobbies are usually very spacious and in addition to serving their primary purpose as a means of entering and leaving the

theatre, their spaciousness makes them attractive and affords opportunities for the effective placing of advertising.

I shall first endeavor to point out the main facts governing the design of the entrance vestibule, the outer lobby and the grand foyer in a theatre of the larger type, assuming that the theatre is of a capacity over two thousand two hundred seats.

The vestibule, as is the case in any other public building, should be attractive, and the vestibule of a motion-picture theatre should have selling power. Not infrequently vestibules are made very shallow and this is a great mistake. In the first place, it means a failure to provide proper space for handling the crowds going in and out of the theatre. In the second place, it fails to attract passersby into the theatre. In the third place, it does not provide the necessary wall surface for advertising the performances. When possible, the vestibule should be at least fifteen feet deep, measuring back from the building line. This gives ample room for the building of the ticket booth which, in itself, is an important feature. As a basis for estimating the size and number of ticket booths, one must keep in mind that such a booth should contain space enough for two ticket sellers for a theatre having a capacity up to two thousand five hundred people, and for three ticket sellers for a theatre where the capacity is above this number, excepting where there are interior booths opening upon the lobby to serve for the advance sale of tickets. If this rule is followed in providing facilities for the public to purchase tickets, there will be no crowding. Personally, I feel that an inside ticket office is of no particular value as the tendency of people is to follow the crowd, and the crowd will be found, naturally, in line for the ticket booths at the front of the lobby. Where there is an inside ticket office in addition to the ticket booth at the front, there is, naturally, confusion and annoyance caused by people who are endeavoring to reach the inside ticket office by breaking through lines formed for the outside ticket booths.

In figuring the size of ticket booths, one should allow at least six square feet per person in the booth. This figure is based on the assumption that during the rush hours the ticket sellers are standing and that at other times only one ticket seller is likely to be on duty. The other requirements of the ticket booths include provision of the necessary space for the electrically-operated ticket selling machines, which require a space of approximately twelve by twenty-four inches each; also space for the money tills and for the ticket reels.

The vestibule should be brightly lighted and as a help toward this end the marquise, with its rows of electric bulbs, is important. I shall describe fully

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the marquee in later installments of this article when dealing with electric wiring in connection with the theatre.

Provision for effectively displaying the advertising must not be overlooked or slighted, for, as we have already pointed out, one of the functions of the entrance is to attract people to the theatre.

In providing space for frames in which the advertising is to be displayed, it is well to consider the best practice in the use of such advertising in order that the requirements in this respect may be met. In a large motion-picture theatre the best display of advertising often consists of two three-sheet posters in frames in the lobby, one on the wall at either side, also small frames on the jambs of the entrance piers for photographs, programs or insert cards. The insert cards measure fourteen inches wide by thirty-six inches high. They usually contain a portrait of the star and pictures of scenes from the play. A three-sheet poster measures forty by eighty inches, paper size. Frames for these posters should have a glass front that swings open like a door, for convenience in changing the posters. The posters are held in place by thumb tacks. There is about an inch margin on each poster outside of the picture. The frame should lap partly or entirely over this margin. The size given is that of the extreme measurements of the poster. In addition to the advertising mentioned, it is sometimes desirable to place frames of three-sheet size on the face of the piers. In the vestibule of a large theatre an excellent display can be made with three insert frames on the walls at either side. If space permits, frames for one-sheet posters may be placed between these insert frames. Sometimes it is desirable to place a three-sheet frame on the face of the building at either side of the entrance. A one-sheet poster is twenty-eight by forty-two inches, paper size.

The design character of the vestibule is a matter upon which I need not touch here. I may say, however, in regard to the choice of material that I believe that it is best to use marble for the walls and floors of the vestibule. In the next installment of this article, I shall show several illustrations of vestibules of the larger motion-picture theatres and discuss the relation of the vestibule to the other parts of the theatre.

The next feature of the entrance for consideration is the outer lobby, the purpose of which is to serve as a meeting place for patrons, also as a "lock-out" in case of a crowd. The fire department regulations in the larger cities govern the forming of waiting lines and as stated before, no vestibules or lobbies should be made less than twenty-five feet in width. In cases where the width is less than this, the lines are kept in single file which does not allow the proper handling of a good standing sale crowd awaiting the closing of a performance.

My own observation has led me to regard as especially well planned, from the standpoint of efficient handling of the crowd, the lobbies of the following theatres: Strand Theatre, Capitol Theatre and State Theatre, New York City; the Tivoli and Chicago Theatres, Chicago; the Capital Theatre in Detroit,

and the Allen Theatre in Cleveland. The outer lobbies in these theatres are from twenty-five to sixty feet in width and are designed in good taste. Most of them have marble walls with large mirrors and pilaster treatment. The mirrors are, in most cases, surrounded by ornate metal frames. Below these mirrors are usually placed the radiators which are hidden by richly ornamented metal enclosures. The height of the lobbies in these cases varies from fourteen to eighty feet, depending on the use made of the space above them. In connection with the next installment of this article I shall show views of various lobbies and shall also point out the chief requirements to be met in the design of the grand foyer of a theatre of this kind.

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### SAGE FOUNDATION LEADS IN DEVELOPMENT OF CITY PLAN FOR NEW YORK.

**T**HE method by which a comprehensive city plan for New York and its environs is to be developed at the instance of and with the leadership of the Sage Foundation was explained at a meeting held May 10.

Mr. Robert W. de Forest, President of the Sage Foundation, outlined the scope of the proposed work. He emphasized the fact that the Foundation will be dependent upon the co-operation of others to carry out the initial plan it purposes to outline and that such a plan can only be carried out with the co-operation of the proper public authorities to whom it must ultimately be presented for modification, acceptance or rejection. Mr. de Forest made plain the fact that while this project will not ignore the element of beauty, its emphasis will be laid, according to the Foundation's charter, on "The Improvement of Social and Living Conditions"—upon a plan designed to make the city a better place to live in and to work in. While the project does not ignore congested Manhattan and Brooklyn, it involves a regional plan of New York and includes not only Greater New York but its environs, on the basis that with present methods of transportation the real New York includes every locality within easy commuting or motor distance and embraces parts of the states of New Jersey and Connecticut.

Mr. Charles D. Norton, Chairman of the Committee on Plan of New York and Its Environs, outlined the method of procedure. He stated that for more than a year the physical survey has been under way. Mr. Nelson P. Lewis, with a staff of engineers, has been studying the density and trends of population, mapping the whole area and going deeply into the various branches of this side of the matter.

With the aid of a special group including William Adams Delano, Jules Guerin, George D. Pratt and Sherman Fairchild, Mr. Lewis will endeavor to develop a new type of map for city planners, in which the painter with his mastery arrangement of color, will be guided by the accurate contours of the engineer and the viewpoint of the aerial photographer.

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## CINCINNATI ARCHITECTURAL SOCIETY.

THE Cincinnati Architectural Society held its regular monthly meeting at the club rooms, 128 West Fifth Street, on Monday, May 8. This meeting was especially well attended because of the exhibition of sketches selected from among those submitted in the Birch Burdette Long Sketch Competition for 1921. The sketches, about sixty in number and done in various mediums, were greatly admired by the members and their friends. By special arrangement these sketches were on exhibition in the galleries of the Crafters' Shop at 304 East Fourth Street, for the remainder of the week.

On May 27 the society will hold its annual outing, and everyone is expected to make a special effort to attend, for two of the oldest and most faithful members are leaving. They are Bill Ward, who is going to Los Angeles to take up the practice of architecture, and Gus Linder, who is taking a position in a town in the Tennessee mountains for a time on account of his health. They both go with the best wishes of the Club.

## T-SQUARE CLUB, PHILADELPHIA.

THE members of the T-Square Club, Philadelphia, and their friends have been invited by Mr. Samuel B. Fleisher to meet at the Graphic Sketch Club on the evening of May 31. This will be a ladies' night. There will be an exhibition of æsthetic dancing by the girls' dancing class; "Stories in Rhythmic Pantomime," followed by general dancing. The Graphic Sketch Club is holding its annual exhibition, and the adjoining church which has recently been restored, is open for inspection. This building is of interest to architects.

The Joint Exhibition at the Art Alliance will be open till May 27. The Sternfeld Exhibition is still on the walls of the Club House.

## UNIVERSITY OF PORTO RICO.

AFTER being on leave for a year Mr. Frederick W. Revels, Director of the Department of Architecture at Syracuse University, is returning to take up his work, having spent the time in organizing and putting into operation a Department of Architecture in the University of Porto Rico. Mr. Revels will return to this country in June. Two men will be employed in the new department at the University of Porto Rico for next year, one to take Mr. Revels' place as Professor of Architecture, and an instructor. The selection of men for these posts has not yet been made. Mr. Revels feels that this is a good opportunity for the right men to do some good service.

## BASEBALL GAME BY MEN OF MR. GOODHUE'S OFFICE.

THE annual baseball game between married and single men of the staff of Bertram Grosvenor Goodhue's office was played on Saturday, May 13. The single men were victorious, the final score being 7 to 4. It is notable in connection with this victory for the single men that there are very few of them in Mr. Goodhue's office and in order to make up a full team it was necessary to fill in with office boys. On the other hand, there is ample material for a team among the married men of the force.

## TIME OF COMPETITION EXTENDED

IT IS announced that the time of the Competition for Meritorious Designs of Entrance and Screen Doors for Homes and Retail Stores being conducted by The Victor Parting Bead Company, Inc., Reading, Pa., which was to close on May 30 has been extended thirty days.

The prizes offered are as follows: Design Placed First, \$100; Design Placed Second, \$50; Design Placed Third, \$25; All Honorable Mentions, \$5. The Jury of Awards is composed of the following architects: Frederick Ehrsam, Reading, Pa.; Alexander F. Smith, Reading, Pa.; Claude B. Mengel, Wyomissing, Pa.

All wishing to enter the competition should write for program to The Victor Parting Bead Company, Inc., Reading, Pa.

## A. I. A. CONVENTION.

THE Fifty-ninth Convention of The American Institute of Architects will be held in Chicago, June 7, 8, and 9.

The program of the Convention this year differs somewhat in kind from the programs of recent years. It will not feature special subjects. It is hoped, by the procedure planned, to have a Convention which will do justice to the administrative business of the Institute and at the same time satisfy the desire for good fellowship and the discussion of those things which have to do with architecture.



From a Painting by Mary Foote.

Thomas Hastings whose portrait is shown above, is to receive the Royal Gold Medal for 1922, his nomination for this honor by the Royal Institute of British Architects having received the approval of His Majesty, George V. The medal will be presented to Mr. Hastings at a meeting of the Institute, June 26.

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### THE STATION POINT IN PERSPECTIVE

A WELL-KNOWN architect recently declared his belief that in a perspective drawing the assumed distance between the observer and the picture plane should be equal in actual measurement to the distance a person will naturally stand from the finished perspective to view it. For example, if the drawing were one that a person would step back six feet from in order to get a satisfactory view of it, the distance between the picture plane and the station point would be six feet, without regard for what that distance may represent at the scale of the drawing.

This contention seems reasonable for if a person looking at a drawing does not stand at the assumed station point the picture can hardly seem correctly drawn. A person cannot see the whole of a drawing clearly unless the distance between him and the drawing is at least as great as one-and-one-half times the greatest dimension of the drawing. One must stand six feet away from a four-foot picture. This is due to the fact that the extreme angle of vision of the eye is only about 45 degrees and that everything outside of a visual cone of that angle is cut of the field of vision. This basic fact was clearly set forth in Mr. Valent's article in the issue of this journal for June, 1920.

Now if the assumed distance between the observer and the picture plane is less than one-and-one-half times the greatest dimension of the picture, an impossible condition is represented. If on the other hand the assumed distance of the station point is too great, the person looking at the picture will feel troubled, the perspective will seem flat, the lines will not converge as rapidly towards the vanishing points as he feels they should. If he happens to step back far enough to place himself at the assumed station point he will find that he is too far from the picture to see it comfortably.

It is probably much more often that one finds the station point assumed too close to the picture plane than at a great distance. The result of this error is the too rapid convergence of the lines to the vanishing points, giving a representation of the building akin to the kind of photograph one sometimes sees that has been made with a lens of extremely wide angle. The bad effect of such photographs is recognized by many photographers, who are practically compelled to use lenses of extremely wide angle occasionally by customers who, as one photographer expressed it, "want the picture to take in everything in front of the camera and behind it too." There is little excuse for this fault in photography and none whatever for it in perspective drawing.

Assuming that the rule stated at the opening of this article is a good one, and recalling what has been said about the distance one must stand from a picture to see it comfortably, the whole matter seems to come to this—that the assumed distance between the observer and the picture plane should be not less than one-and-one-half times the greatest dimension of the drawing, including any landscape or other surroundings of the building that may be shown in the drawing.

This raises an interesting question upon which we shall be glad to have expressions of opinion from readers.

A new level for the architect and construction engineer has just been placed on the market by the Warren-Knight Co., 136 North Twelfth Street, Philadelphia. It has been designed with the purpose of making it convertible into a transit with the greatest speed and ease and back again, without the use of detachable parts and without throwing the instrument out of level. It also includes many patented improvements. This level is described in an illustrated folder just issued by the makers.

The code of ethics of the architectural profession is discussed in an issue of the "Annals" just published by The American Academy of Political and Social Science, Philadelphia. This issue of the "Annals" is largely devoted to outlines of the codes of ethics of different professions.

### CITY PLANNING CONFERENCE.

The National Conference on City Planning will hold its fourteenth annual meeting at Springfield, Mass., June 5-7, in conjunction with the Convention of the Massachusetts Federation of Planning Boards, and at the invitation of His Honor, Mayor Edwin F. Leonard, The City Planning Board, and the Springfield Chamber of Commerce. All sessions open to the public. An interesting program has been arranged.

### ROBERT A. LOCKWOOD

ROBERT A. LOCKWOOD, one of whose excellent drawings was reproduced in the January issue of this journal, was born in San Francisco.

Mr. Lockwood received his architectural and artistic training in the offices of Messrs. Reginald Johnson, Carleton Monroe Winslow and Myron Hunt, in Los Angeles, and in the local atelier of the Beaux-Arts Institute of Design, supplementing this work with sketching out-of-doors, and with life-class work.

In 1913 Mr. Lockwood won the Spiering Prize and was placed in the Loeb Prize. In 1914 he won the Beaux-Arts Esquisse Medal, and he was placed second in the Birch Burdette Long Sketch Competition for 1921.

During the war he served in the Camouflage Corps, in the organization of which Mr. Frank Chouteau Brown was head. After the armistice was signed he remained in France for some time, making sketches and drawings, many of which have been placed in the official records of his Company.

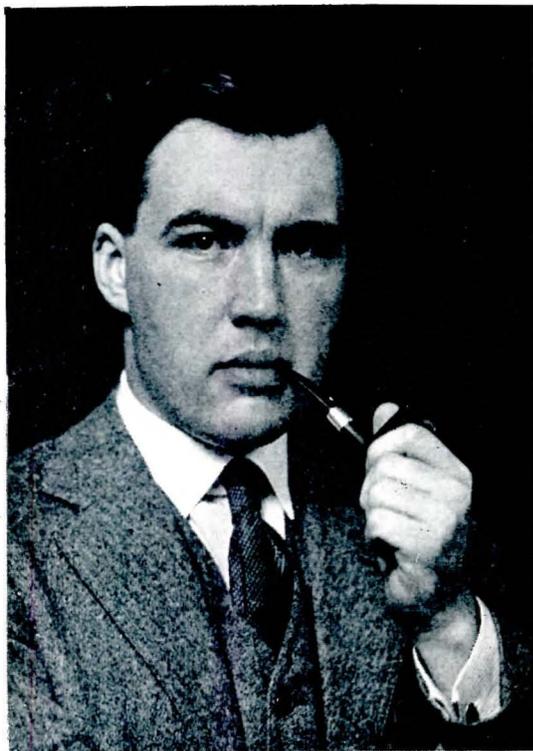
Since the war he has been in the office of Mr. Myron Hunt, Los Angeles, until recently, when he left to take a position with Messrs. Holabird & Roche, Chicago. Mr. Lockwood's renderings of architectural subjects have individuality and force and show a mastery of technique that comes only with earnest study.

The esteem and friendship of his former comrades in the office of Mr. Myron Hunt are evident in their good wishes for his success in the East.



Robert A. Lockwood

## PENCIL POINTS



AUSTIN WHITTLESEY.

AUSTIN WHITTLESEY, one of whose pencil drawings is reproduced on a plate page in this issue is a member of the staff of Mr. Bertram Grosvenor Goodhue's office. His early training was with his father and other architects in San Francisco, including Mr. Lewis P. Hobart. He early reached the conclusion that Mr. Goodhue was the only man who could give him the training in architecture he wished and he came to New York when he was twenty years old with the fixed purpose of entering Mr. Goodhue's office. It was, however, two years before Mr. Goodhue would take him on, and in the meantime he worked in various architectural offices in New York and for a time in Cleveland, O. For the past seven years Mr. Whittlesey has been with Mr. Goodhue, excepting the time he spent in the army and in travelling abroad. He won the Le Brun Travelling Scholarship in 1916 and elected to go to Spain and North Africa to study.

Both in San Francisco and in New York, Mr. Whittlesey belonged to ateliers, following the course of the Beaux-Arts Institute of Design. The example and criticisms of a number of his artist friends in California aroused in Mr. Whittlesey an interest in sketching out of doors, a practice which he has continued more or less intermittently, and with results that are suggested by the reproduction of the example of his pencil to be seen in this issue.

### ELEVATOR INTERLOCK REPORT

A REPORT that gives the results of a field survey of several thousand elevator landings equipped with various types of mechanical and electro-mechanical interlocks and contact devices has been prepared by C. E. Oakes and J. A. Dickinson under the title "Results of a Survey of Elevator Interlocks and an Analysis of Elevator Accident Statistics." It is known as No. 202 of the Technologic Papers of the Bureau of Standards and copies may be obtained for five cents each from the Superintendent of Documents, Government Printing Office, Washington, D. C.

The statistics show that 73.8 per cent. of all fatal accidents might be prevented by well-designed interlocks.

### ARCHITECTURAL DETAIL, PART XIV.

(Continued from page 13)

A metal flashing may be laid under the two outer layers of slate or the slate may be cemented and the nail holes filled as well. However, ridges and hips of steep roofs may be mitred without cement save for the filling of the nail holes.

Dormers present no special features other than those incidental to the treatment of valleys, hips and ridges. It is very usual to slate the cheeks and in such an event better in the opinion of many experts to use smaller and thinner slate for the cheeks than for the main roof. This is a matter of design appreciable when one considers that the dormer is naturally a smaller element than the main roof itself. Furthermore, as can be seen in the Arthur Williams house, if the horizontal lines of the roof are run into and continued along the dormer cheeks, the inclination of the roof slate requires a greater dimension than does the verticality of the cheek slate. The dormer of the C. Bai Lihme house has a less number of courses on the cheek than the corresponding run of the main roof, and may be studied as an example of the opposite method.

Eye-brow windows have been much in vogue with certain architects. They are hard to lay. Perhaps the best way to make an inexpert roofer understand the problem is to tell him that they are really a slit in the roof pulled out and up. One of two things happens: either the exposure to the weather is increased and longer slate must be used, or extra lines of slate have to be inserted.

English methods of weaving slate valleys were shown in a diagram by Mr. D. Wynne-Thomas in the January, 1922, issue of PENCIL POINTS. The illustrations in the present number show excellent American examples that will repay examination.

Gables present problems of which we have not yet spoken. Where half-timber walls or decorative wood barge-boards form an integral part of the design, a wood mould under the slate seems reasonable. On the other hand designers unfamiliar with the use of slate sometimes seem at a loss when confronted with the finishing of a stone or stucco gable wall, and resort in a somewhat inexpert manner to the introduction of a wood mould that is as foreign to the other materials involved as is the gash of metal in an open valley. A better solution is to cement up under the projecting slate (the slate may project an inch and a half or so) using in this case Portland cement mortar slushed under the edge of the slate after it is laid. A building with cut-stone mouldings would naturally have a stone mould or cornice so that all difficulties would disappear. If a stone gable wall rises above the roof be careful to flash well into the stone, perhaps quite through the wall as the stone is likely to be porous and give rise to leaks. Portland cement must not be substituted for the uses for which slater's elastic cement has been advised. Portland cement cracks under such conditions.

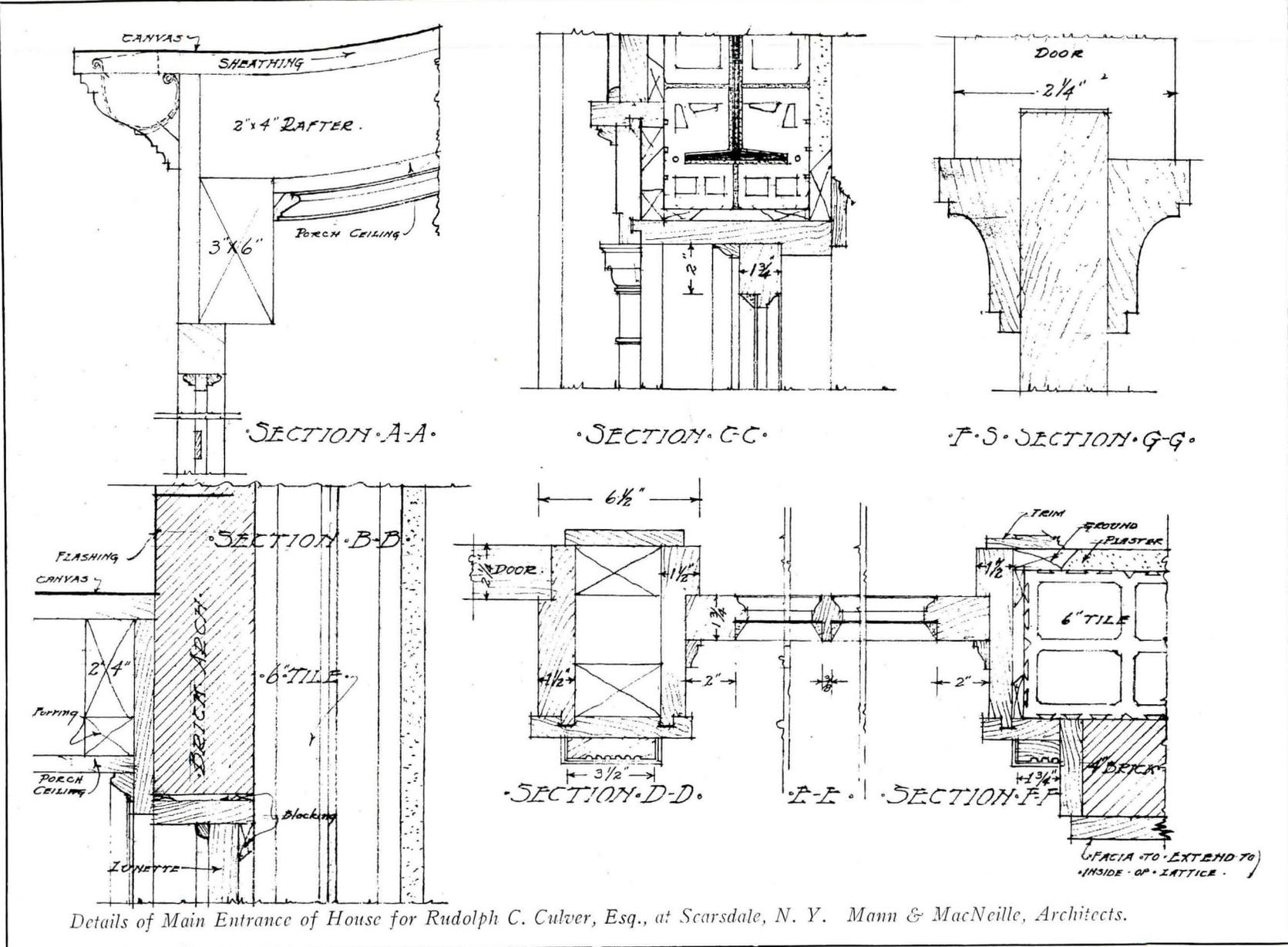
Graduated slate roofs present most interesting problems and of late years have crowded out the evenly coursed roof. When stone roofs were used in Tudor times the large blocks were left in the fields during the winter weather and in the spring were found to have split up into layers of varying thickness and size. The builder thus had at hand large and small pieces for the roof he might need to cover and squaring them off roughly, laid the larger, heavier pieces close to the supporting walls and the thinner pieces over the middle of the span. The latter were usually the smaller ones, often the left-overs. Thus a fashion in graduation has been set.

Today there is no logical reason for a graduated rough roof except that it has beautiful texture and variety of effect.

A good custom for an average size roof is to graduate it in five more or less equal parts as regards length of exposure. This regularity of diminution does not hold for the thickness of the slate and it is quite good practice to adopt three general thicknesses, lay three of the upper divisions of exposures of the thinnest group, and increase the thickness more rapidly toward the bottom of the roof. Thus there will be more thin than thick

(Continued on page 36)





Details of Main Entrance of House for Rudolph C. Culver, Esq., at Scarsdale, N. Y. Mann & MacNeille, Architects.

PENCIL POINTS



# 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 The Editor, PENCIL POINTS, Metropolitan Tower, New York City.

*Question*—I would appreciate information as to books of building details—I mean books with drawings, data, etc., regarding different types of windows, doors and miscellaneous parts of a building in detail, with measurements. C. H. E. *Answer*—In reply to your inquiry relative to books on building details, we suggest the following: Radford's "Building Details." Martin's "Details of Building Construction." Hoole & Johnson's "Building Construction." Frank M. Snyder of 463 First Street, Pelham, N. Y., has published a very full collection of details of public buildings that have been constructed by the best architectural offices, under the title of "Building Details." It consists of twelve volumes, four of which, we believe, are out of print. The Architectural Service Corporation of 140 North 6th St., Philadelphia, has published a series of service details which can probably be obtained by writing to them. Sweet's Catalogue Service, Inc., publishes "Sweet's Architectural Catalogue" and that contains detail drawings of many specialties.

*Question*—I would like to know the names of a few books on water-color rendering. Will you recommend some books? A. C. *Answer*—Making reply to your inquiry we have to say that we believe H. Van Buren Magonigle's book on "Architectural Rendering" is the latest and most comprehensive work on this subject. It is published by Charles Scribner's Sons, 597 Fifth Ave., New York City, and we believe the price is \$5.00.

*Question*—Can you kindly furnish me a list of books on Spanish Renaissance, specially on detail? W. H. B. *Answer*—We would suggest the following: Prentice, "Spanish Architecture"; Uhde, "Baudenkmaeler in Spanien und Portugal"; Byne and Stapley, "Spanish Iron Work and Spanish Ceilings." Also Byne and Stapley, "Spanish Interiors and Furniture," now being published by William Helburn, 418 Madison Ave., New York, in four parts. There is a reprint of the Prentice that might prove entirely satisfactory. The original is out of print and rare. The German book is an excellent one and can be bought cheaply on account of the low value of marks.

*Question*—I am interested in Old English Architecture, will you please refer me to books showing designs in this style? I. T. C. *Answer*—Relative to works on Old English architecture, we would recommend: Uhde, "Baudenkmaeler in Grossbritannien"; Garner & Stratton, "English Tudor Architecture." There is a series of books on old farm houses in different counties of England, but these books are, unfortunately, out of print.

*Question*—Will you please recommend a book on interior decoration that describes the various period styles and shows typical designs in each style? J. C. V. *Answer*—The book that will probably meet your requirements best is the one by C. R. Clifford, published by Clifford & Lawton, New York City.

## ARCHITECTURAL DETAILS, PART XIV.

(Continued from page 33)

slate in the roof. Furthermore the cost is somewhat decreased by this process. Too close adherence to such a rule will give a flat roof at the top with a sudden bursting out of roughness at the eaves. Some thicker or medium slate should be run into the middle or upper parts of the roof and the whole carefully balanced.

A very good graduated roof can be made with slate varying from  $\frac{3}{4}$ -inch at the eaves to  $\frac{1}{4}$ -inch at the ridge, thirty-inch slate perhaps for the lower courses and sixteen-inch for the top. On the other hand, slate an inch and a quarter or inch and a half do not look too heavy for a rough or rustic piece of work and two-inch slate can be introduced successfully to give special notes. Some of the slate in the Potter Gate Lodge appear to be as thick as that.

It is possible to graduate the color of a roof as well as the length of the slate or their thickness. This is less usual but I have been told of one job in which the appearance of height in a building, perched on a knoll, with requirements that prescribed a certain number of feet from ridge to ground was reduced by graduating the color of the roof from dark at the ridge to a light tone at the eaves.

One general recommendation, the most important, should be left with you who would use slate to good advantage. It may be summed up in the single word "Character." How many buildings, in other respects excellent, have been ruined by the texture of the roofs that extinguish them. Be the slate graduated, or evenly coursed, it must not be woolly or rugged if it covers a trim, perchance smug Colonial mansion, and a smooth, straightly-trimmed, even slate will seem hard and flat on a rustic stone cottage or above the roughly-carved Tudor of a Mediaeval manse.

## ELEMENTS OF CONCRETE-AND-STEEL CONSTRUCTION.

(Continued from page 28)

the foundation. In the case of the steel grillage, the space between the beams should be carefully grouted with a grout thin enough to insure that no voids are left where water may collect and corrosion start. The top grillage is bolted to the steel column, but there is usually no connection between the bottom and top grillage. The bottom grillage is designed to spread the pressure to a certain bearing medium and this medium may be either rock, concrete, soil or masonry. In order to save concrete the spread footings are usually stepped down or provided with a cap, or they may be battered in place of being stepped. In all cases where a steel column rests on a concrete foundation it is necessary to have a steel base larger than the column section in order to reduce the intensity of the stress on the concrete.

## PENCIL POINTS

### THE AMERICAN ACADEMY IN ROME

FROM a letter recently received by Mr. C. Grant LaFarge, Secretary of the American Academy in Rome, from Mr. Gorham P. Stevens, Director, we quote the following: "Sculptor Jones has completed a figure for the fountain which he has taken for his last year's work. He has just been in talking with me about his plans for the future. He goes to Northern Italy in a few days for a trip of about a month, and then he returns to complete many odds and ends before he returns to America. As he already has several commissions promised him, I do not believe he will have any difficulty in starting out in New York in his practice. Painter Lascari has made two remarkable drawings in color, one of a Vatican ceiling and the other of the famous chapel of S. Zino in S. Prassede, Rome. He is delighted with the prospects of being permitted to look after the mosaics which Mr. Blashfield has designed for your church in Washington—Mr. Lascari has made a careful study of the best mosaic work in Italy and Mr. Blashfield's mosaics should be well executed under his care. Architect Smith has left for Northern Italy and a flying trip to Paris. Sculptor Cecere is in Greece. I received an enthusiastic letter from him a day or two ago, in which he shows that he appreciates the extraordinary vigor and beauty of Greek sculpture. A number of our visiting students have gone as far east as Constantinople. Some of them travelled third class on the boat, sleeping out on deck; but they state that the inconveniences were more than counterbalanced by what they found in Greece and Constantinople. Painter Ciampaglia has returned from the hospital, where he successfully underwent an operation. He is hard at work again.

A new Rotch man has registered with us, likewise the holder of a Fellowship in Painting from the Philippines. The latter has three years in Europe (one year in Madrid, one year in Rome, and one year in Paris). The American Government is doing splendid work in the Philippines, so I understand.

I have succeeded in finding four people willing to contribute \$50 apiece toward the purchase of materials for fresco painting, and in a few days our painters and architects are going to tackle that interesting problem.

Two excursions have been undertaken, one to the French Embassy to see the famous flat wooden ceilings, and the other to the Villa Albani. On the latter excursion the students of the French, Spanish and English academies joined with us, and Senator Lanciani explained the collections.

We have already begun to prepare for the annual exhibition. We have asked the King and Queen to honor us with their visit on the 18th of next month (May) and we expect to have our public exhibition three days later. Composer Hanson is at work upon an original piece which is to be played in honor of the King and dedicated to him. We are going to present His Majesty with a bound copy of the composition. The exhibition comes rather late this year on account of the Conference of Genoa, at which the American Ambassador is to act as an official observer. The conference starts in a few days and will last probably a month, so our exhibition could not be placed at an earlier date, as the Ambassador wishes to be on hand to receive Their Majesties.

I can add but little to what I told you last month in regard to the Banca Italiana di Sconto, except that it seems now likely that the bank will come to some definite conclusion within a week as to its payments.

I received a drawing from Mr. Kendall of the McKim-Morgan Memorials. The design is most attractive and should add greatly to the beauty of the building; to say nothing of the fitness of the memorials for these two public spirited gentlemen.

We have planted all the trees (except five) which Mr. Kendall and Mr. Vitale are giving and toward which the trustees have contributed \$200. The new tall cypress trees in the court look especially well.

I have prepared two reports during the last month, one upon the advisability of establishing an atelier in Rome under the auspices of the academy for students not connected with the academy, and the other upon the possibilities of housing all the members of our staff, thirty men

students and ten women students. These reports have been sent to Mr. Mead. Mr. and Mrs. Mead are in Venice for a week.

Senator Phelan of San Francisco, one of the counselors of the Academy, is in Rome. He has shown considerable interest in the work."

### SOUND-PROOF PARTITIONS.

AN INTERESTING report of experiments conducted for the purpose of studying the relative efficiency of different kinds of partitions in insulating against the passing of sound is "*Sound Proof Partitions*" by F. R. Watson. It is known as "Bulletin No. 127, Engineering Experiment Station," and is published by the University of Illinois, Urbana, Ill. The price is forty-five cents.

Although, as the introduction to this bulletin states, the present knowledge of this subject is incomplete, it has been thought desirable to collect and present the available information in a systematic way, and set forth recommendations that may be applied where sound-proofing is desired.

Though little was known about this subject previous to 1915, much has been accomplished by scientific investigators since that time, and this bulletin contains interesting and useful reports on the study of this matter.

This report contains many tables showing comparative results obtained in experiments with partitions of different materials and different construction, photographic illustrations of apparatus used in testing, diagrams of apparatus, photographic views and diagrams of different types of partitions as well as descriptions of tests.

The information contained in this bulletin is very useful in designing hospitals, hotels, office buildings, and all other structures in which insulation against the passage of sound from one part of the building to another is desirable.



Detail of Main Entrance of House for Rudolph C. Culver, Scarsdale, N. Y. Mann & MacNeille, Architects. See Detail Drawings on Pages 34 and 35.

# THE SPECIFICATION DESK

## A Department for Specification Writers

### MISCELLANEOUS ITEMS OF CONSTRUCTION PART III.

By OTTO GAERTNER

*In this series of notes Mr. Gaertner of the staff of McKim, Mead & White, Architects, will treat of a number of the minor matters of construction that are troublesome unless the architect happens to have met a similar problem previously—matters of a more or less special nature.—Ed.*

*Interior Swimming Pools*—It is impossible in an article of this length to go into all the different phases of swimming pool construction and mechanical equipment, but the writer will endeavor to touch upon such items as may be of help to the man who is preparing the working drawings, and as will lead him on to other phases of construction and design enabling him to solve his own particular problem.

The first important considerations for the swimming pool are sunlight and cleanliness. Its location should be selected with care. A well lighted pool always proves popular. If necessary, the sunlight may be subdued, but the less sunlight reaching the pool the higher the percentage of bacteria in the water. Most pools are placed in the basements of buildings, without adequate ventilation, and without sunlight or even daylight. Such a pool gives one a confined and depressed feeling which cannot be overcome even if the utmost care is taken for cleanliness and good artificial lighting. Therefore, if possible, place the pool outside the remainder of the building so that it can have a skylight roof. If it must be placed under one of the upper stories, place it on the sunny side of the building. Often the conditions and the appropriation available will permit the pool to be placed on the top story so that it can have a skylight, and often the building can be planned with a large light-court so that a skylight can be placed over a large part of the pool below. The pool should be placed near the bath and shower rooms, and it should be entered through the latter, except in the case of spectators for whom there may be galleries at the sides of the pool on the same level but preferably at a higher one. Everyone using the pool should be required to take a thorough bath or shower before entering the pool.

The sizes of pools and the adjoining floor spaces vary according to the requirements and the conditions of each individual problem. There should be a floor space of at least five feet at each side and at one end of the pool, and twelve feet from the deep end of the pool, where the springboard is placed, to the wall; ten feet at the sides and at one end, and fifteen feet at the deep end is nearer the ideal. These dimensions are often increased, and sometimes only five feet is left at one side and at one end while the others are increased to accommodate the swimmers. Most pools are now made about sixty feet long and from twenty to thirty feet wide, these dimensions being increased when possible. A pool that is less than forty feet long is too short for practical purposes in an athletic club or Young Men's Christian Association where the sixty-foot pool is made the standard. Some swimming rules demand a pool at least twenty feet wide by at least sixty feet long, in order that the records may be counted as official.

The depths also vary according to the requirements. One end can be shallow for children and those learning to swim, and the remainder can be deep enough for diving. Where there is a spring board, or where one is likely to be installed in the future, the water should be deepest twelve or fifteen feet from the deep end of the pool. The rules for championship events require a depth of water of at least seven feet at the deep end of the pool, and not less than three feet at the shallow end. Some pools are made only six and one-half feet deep at the deep end and three feet deep at the other, but the

majority are from seven and one-half to ten feet at one end and three and one-half to four and one-half feet at the other. They are also generally made nine or nine and one-half feet at a distance of twelve or fifteen feet from the deep end, from which point they slope upward to a depth of five or six feet at a distance of about twenty-five feet from the corresponding end of one sixty feet long. From there they slope upward to the shallow end. This makes what is known as the spoon-shaped bottom, and is generally found most serviceable with a minimum of water required for filling. The next best shape is obtained by sloping the bottom upward from the nine or nine and one-half feet deep point direct to the shallow end. Probably the most favored dimensions for a pool are twenty-five feet wide, sixty feet long, four feet deep at the shallow end, seven feet deep at the deep end, nine and one-half feet deep twelve feet distant from the deep end, and six feet deep thirty feet distant from the deep end. The floor must also pitch to the one or more drains for emptying the pool. For water polo matches the regulation length of the playing space is sixty feet and it must be at least six feet deep. For this purpose a pool that is seventy-five feet or more in length is generally preferable.

A swimming pool should be laid out in units of three or fifteen feet, so that the distances can readily be computed for competitive events. For such purposes, lines should be placed every five feet, running vertically on the walls of the pool, and running lengthwise and crosswise on the floor. They serve as direction as well as distance lines and can be formed by a contrasting color in the tile or other finish of the pool. The depth of the water should also be indicated every five feet around the pool at the edges where it can be seen by those in the water as well as those standing on the floor adjoining it. There is a large variation in the amount of marking, and often the vertical and crosswise lines are omitted except such as are needed for official swimming and turning lines, jackknife limit, and the official playing lines for water polo and water basketball.

The ceiling height of the room in which the pool is located should be at least twelve feet, and the higher it is the better, especially if there is to be a spectators' gallery.

There are so many various methods of constructing the pool that it is impossible to do more than to touch upon this phase of the work, each case presenting a problem of its own. If the pool is in the basement, ground-water conditions must be overcome by waterproofing to keep it out, and the walls must resist it when the pool is empty, the stresses being equalized when the pool is full. The thickness of the walls and bottom are based upon hydrostatic pressures, and if they are made of reinforced concrete the reinforcement must be strong enough to suit the stresses. Sometimes steel tanks or pans lined with concrete are used, their chief advantages being less and more even settlement where unequal bearing soils occur, and their water-tightness. Steel tanks are sometimes used where the pool is located on an upper story, the thickness of the steel being determined by the conditions and the concrete lining being made sufficiently thick to give it additional rigidity. In many cases steel tanks are giving place to reinforced concrete, even in the upper stories of buildings where vibration, wind pressure, expansion and contraction, and the weight of the water when the pool is filled must be taken into consideration.

The waterproofing of the swimming-pool is the most difficult part of the work, and special care must be taken around the piping extending through the walls below the water line. The pool may be made watertight by several methods, depending upon the problem involved, and one or several of them may be used at the same time. Usually the membrane and the integral method are used together, and also the metal pan with either the membrane or the integral method. The membrane method consists

## PENCIL POINTS

of applying hot asphalt or pitch to the masonry and then from three to six layers of strong fabric or felt with hot asphalt or pitch between, finishing with an additional coating of hot asphalt or pitch. The integral method consists of mixing a waterproofing compound into the setting mortar, into the concrete, or into a one inch thick layer of mortar applied to the masonry. It is well to apply such a layer between the membrane waterproofing and the finishing material of the pool, or to take some other precaution to prevent the possible staining of the latter. The metal pan may be of steel, four or five pound lead, or eighteen ounce copper, the last two being placed between two thicknesses of masonry. Sometimes the membrane is applied directly on the metal pan. The waterproofing should always be protected by masonry, which should be rigid enough to resist water pressure behind it when the pool is emptied quickly. If a steel pan is used there should be waterproofing between it and the finish, and if the pool is built into the ground the pan should be waterproofed on the outside, if ground water occurs.

The finished surface of the pool may be enameled brick, glass tile, glazed or vitrified tile, glazed terra cotta, marble, or any material having a smooth impervious surface with a minimum of joints. All corners and angles should be generously rounded. Tile may be glazed for the walls and unglazed for the floors. Ceramic mosaic is especially adapted for this work, and lends itself for the lines and markings. If terra cotta is used, the joints should be ground and fitted at the shop to insure uniform three-sixteenth inch joints, and the markings can be made with underglazed colors. The pool should have a combined hand rail and recessed scum gutter so as to eliminate the projecting ropes and rails which are difficult to keep clean, interfere with the proper use of the pool, and are dangerous for the swimmers. This gutter should be about four inches wide, and have a vertical front about two inches thick and at least three inches high with a rounded top absolutely level, to act as a uniform overflow for removing dust and other matter from the surface of the water. Any unevenness will be apparent as soon as the pool is filled. On the back of this vertical front there should be a groove to serve as a finger grip when using it as a hand rail, and if recessed steps or ladders of tile or similar material are used, there should be a similar groove in the floor above. The steps and groove should be pitched or provided with weep holes for draining off water. The bottom of the gutter must be pitched at least one-eighth of an inch to every foot, and be provided with drains protected with strainers. The most satisfactory and economical method has been found to be that where the drains are placed twenty feet apart with the gutter pitching toward them. The recess of the gutter must be made deeper at the drains to accommodate the strainers. The upper part of the scum gutter should form the edge of the pool. It should be well rounded and set back two inches from the faces of the four walls to aid in keeping water from the floor above from finding its way into the pool. The two inches should not be exceeded as a greater setback might prove injurious to someone slipping into the pool. The top of the gutter should be from ten to eighteen inches above the surface of the water, the latter being the official requirement of the swimming rules. It should also be flush with the floor of the room and not raised. The floor must pitch away from the pool at least one-eighth of an inch to the foot toward floor drains placed to suit the plan, floor mats, and so forth. This floor is preferably made of vitrified tile, and eighteen-inch wide strip at the edge of the pool having a non-slip surface. Fountain cuspidors and a drinking fountain should be recessed in available locations.

The walls and ceiling of the room should be of tile, enameled brick, or any other non-absorbent material. In a room of this kind there is much condensation which quickly attacks wood, paint, and plaster, making repairs frequent, expensive and inconvenient. While non-absorbent material may be more costly at first, it will prove the cheapest in the end and results in a more cheerful and sanitary room, the walls of which can readily be washed free from dust adhering to the condensation. There is no limit to color schemes that can be used.

*To Be Continued.*

## PUBLICATIONS OF INTEREST TO THE SPECIFICATION WRITER.

*Any publication mentioned under this heading will be sent free, unless otherwise noted, upon request, to readers of PENCIL POINTS by the firm issuing the publication. When writing for any of these items please mention PENCIL POINTS.*

**Ripolin Specifications**—Complete specifications showing methods of applying Ripolin Enamel to all surfaces. 12 pp. 8 x 10½ in. The Glidden Co., Cleveland, Ohio.

**Ceiling Sockets for Electric Work**—Booklet describing improved type of concrete insert for ceiling fixtures, etc. 12 pp. 6 x 9 in. Security Insert Co., Hope and Norris Sts., Philadelphia, Pa.

**Artists' Supplies**—Catalogue showing Winsor & Newton line of supplies for artists, architects and draftsmen. 120 pp. 6 x 9 in. Winsor & Newton, Inc., 31 East 17th St., New York.

**Stage and Theatre Lighting Apparatus**—Catalogue K showing complete line of lighting equipment for theatrical and similar uses. 130 pp. 6 x 9 in. Universal Electric Stage Lighting Co., 321 West 50th St., New York.

**Milcor Sheet Metal Building Products**—Condensed catalogue and price list of sheet metal building specialties. Profusely illustrated. 100 pp. 4 x 8 in. Milwaukee Corrugating Co., Milwaukee, Wis.

**Complete Water Systems**—Bulletins describing water systems for isolated buildings. Small isolated power plants and sewage disposal plants, specifications. 48 pp. 8½ x 11 in. Kewanee Private Utilities Co., Kewanee, Ill.

**The Ventilighter System**—Illustrated booklet showing application of Ventilighters in many types of buildings. Modern lighting and ventilation. 16 pp. 8½ x 9½ in. Simon Ventilighter Co., Inc., 101 Park Ave., New York.

**Speakman Showers and Fixtures**—Catalogue H. Complete illustrated catalogue of showers and other plumbing fixtures with roughing-in measurements, etc. Bound book. 251 pp. 4¼ x 7¾ in. Speakman Co., Wilmington, Del.

**The Minneapolis Pressure Regulator. Leaflet No. 70**—Describing and illustrating apparatus for control of pressure on vapor or steam heating systems and installations. 2 pp. 6¼ x 10 in. Minneapolis Heat Regulator Co., Minneapolis, Minn.

**How to Build a Better Home**—Illustrated booklet treating various phases of home building with chapters on roofing, plumbing, hardware, heating, etc. 30 pp. 8 x 10¼ in. Copper and Brass Research Association, 25 Broadway, New York.

**The Lamp of Hospitality**—Illustrated booklet showing exterior lighting fixtures for streets, estates, public buildings and private homes. 16 pp. 4¾ x 7¼ in. Smyser-Royer Co., York, Pa.

**A Better Summer Business**—Addressed to proprietors of motion picture theatres but of interest to architects designing such theatres. This booklet describes the Monsoon Cooling System. An illustrated booklet. 32 pp. 6¾ x 8¾ in. Monsoon Cooling System, Inc., 71 North 6th St., Brooklyn, N. Y.

**The Heart of the Home**—Illustrated catalogue of Deane's French kitchen ranges, showing types to meet various requirements. 31 pp. 6 x 9 in. Bramhall, Deane Co., 261 West 36th St., New York.

**Bishopric—For All Time and Climate**—Illustrated book showing finished buildings, details of construction and giving working specifications and details, together with much other interesting matter. 52 pp. 7¾ x 10½ in. The Bishopric Manufacturing Co., 110 Este Ave., Cincinnati, Ohio.

**Eldorado Pencil Drawings**—A portfolio of plate reproductions of interesting pencil drawings of architectural subjects by Earl Horter. 12 plates. 8½ x 11½ in. Joseph Dixon Crucible Co., Jersey City, N. J.

**Formula for Determining Proper Telescopic Ash Hoist**—A simple yet complete formula for use in preparing specifications to indicate the type of machine best suited to the conditions of each case. 1 p. 8½ x 11 in. Gillis & Geoghegan, 548 West Broadway, New York.

**The Electric Glog**—A descriptive sheet 6¼ x 10¼ in., giving dimensions and other data concerning this electric heating apparatus for installations in fireplaces. Strait & Richards, Inc., Fabyan Place, Newark, N. J.

**International Austral Window**—Detail drawings and views of buildings showing installations. 24 pp. 8¾ x 11¼ in. International Casement Co., Inc., Jamestown, N. Y.

**Corrugated Wire Glass**—Bulletin illustrated with 12 plates of detail drawings, standard specifications and full engineering data, covering the application of this material for various types of buildings. 24 pp. 8½ x 11 in. Pennsylvania Wire Glass Co., 1507 Chestnut St., Philadelphia, Pa.

## PENCIL POINTS

# THE MART

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