PENCIL POINTS

VOLUME II AUGUST 1921 NUMBER 8

THE SAME MEN

THOUGH the name of the firm publishing PENCIL POINTS from this issue on is new, the men who are publishing and editing this journal are the same. PENCIL POINTS, with the help of draftsmen, architects and educators everywhere, has achieved a circulation that warrants the creation of a separate corporation devoted to its publication, to its further development, and to the publication of books of interest to its readers. This organization now bears the name of The Pencil Points Press, Inc. This change of name, but not of personnel, takes place at the same time as the consolidation of *The American Architect* and *The Architectural Review,* which will be issued as a single publication under the title *The American Architect and The Architectural Review,* beginning with the issue of August 31, 1921.

It will now be possible to put into effect more fully the plans we outlined from the first for the development of PENCIL POINTS as a journal for the drafting room. Appreciating the fact that the many interests that centre in the drafting room must be given due attention, we shall make the subject matter as varied as space permits, increasing the amount of reading matter as fast as we can. A feature of this program is the publication of reproductions of plates from standard works useful as a source of inspiration and of guidance in architectural design, a feature that was introduced in our first issue, a year ago last June, and has been continued. D'Espouy's "Fragments d'Architecture Antique" was chosen as the first book to be treated in this way because it is probably the most generally useful of them all in the drafting room. Plates from other books of equal authority, some of them so rare that few offices are fortunate enough to have them in their libraries, will be drawn upon in this way in future issues. To present matter of use in the every-day work of the drafting room is one of the main purposes of this journal and from month to month articles on methods of working, shortcuts that get results in drafting room work more quickly and easily than the usual method will be described. "Stunts" that have been tried out and found practical will be described briefly. If you have a good way of doing some particular part of the work that you believe is not generally known, won't you write us a letter describing your method? An exchange of ideas will be of benefit to all.

In the next issue Mr. Van Pelt will discuss the influence of the material on the design character of architectural detail and will show examples of stone, terra cotta, brick, and plaster detail, discussing the means of getting the best results in each, from a design standpoint. He will follow this with close-ups of details of many well-designed buildings, showing the different methods of tooling stone, combinations of textures, details of terra cotta and of brick. Many of these photographs have been especially made for this journal, with the greatest care, under Mr. Van Pelt's direction.

Matter on the study of architectural design has a very important place in this journal. Mr. Harbeson begins the Class B Plan Problem in the October issue, following the conclusion of his treatment of The Analytique in the September issue.

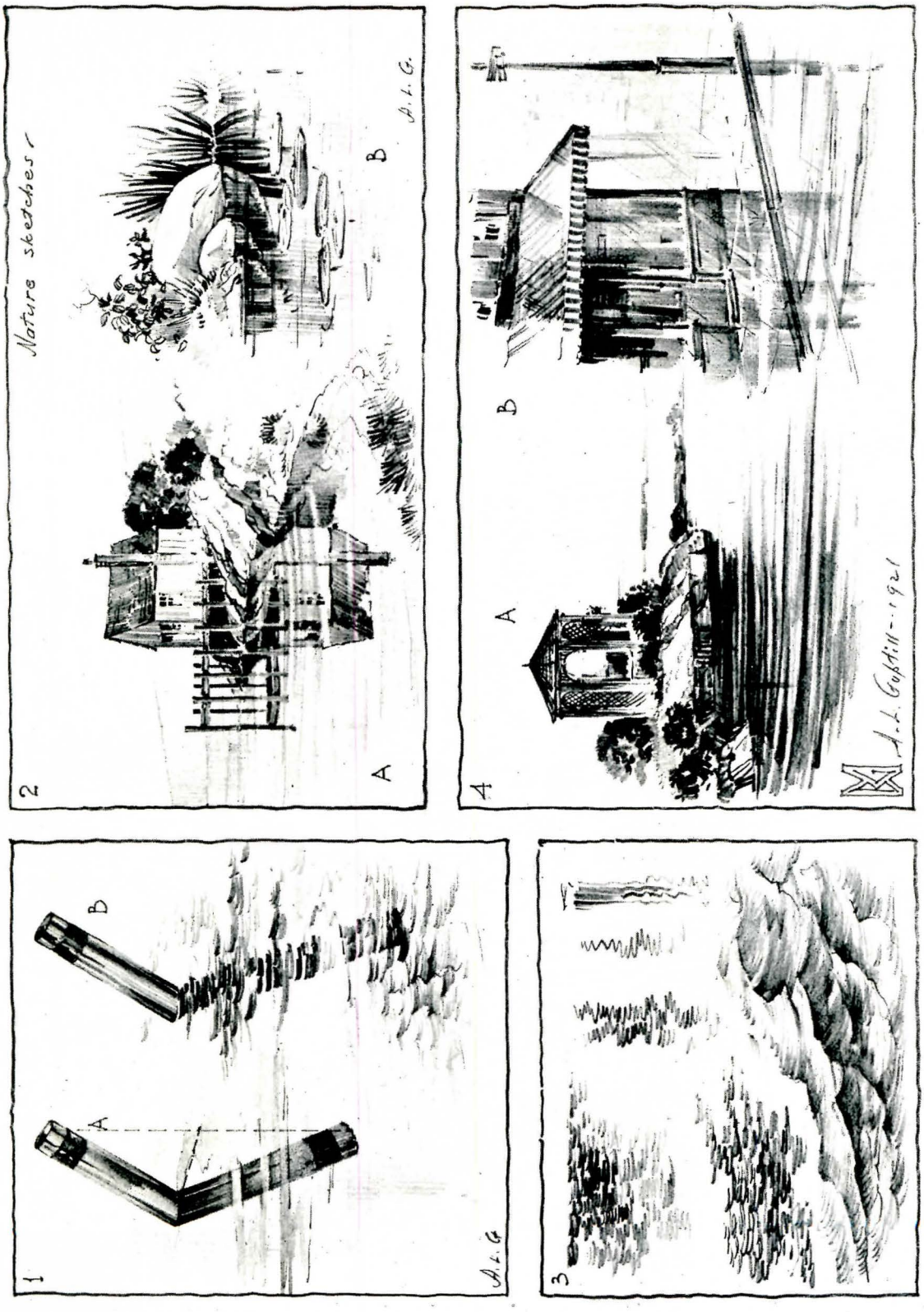
Mr. Guptill's articles will continue a few months more, until he has rounded out the treatment of his subject, then they will give place to a new series by another man—fully as interesting in its way, we believe, as Mr. Guptill's successful series.

In this issue we are publishing first-hand matter on the organization and operation of some of the successful architectural clubs. We are going to publish more of this kind of information that will be useful to those contemplating the formation of new clubs and to those interested in clubs that are already in existence. Matter on the organization and conduct of architectural clubs, club news, school news, personals, will be features. We want more news—we depend on you for it.

PENCIL POINTS is not sectional in character, but national—at least so far as we have been able to make it so. The clubs in various parts of the country have responded so well to our call for news that we have been able to publish items of interest from widely separated points. We appreciate this co-operation, the drafting rooms of the country are the field of PENCIL POINTS—let us hear from you in order that your part of the field may be properly represented.

Books that will help in drafting room work and in the study of architecture will be published. We are working on some of them—not books merely to look at but to use.

It is going to keep us hustling to live up to our program but it's the only way to deserve the hearty support PENCIL POINTS has received and is receiving. It is our job and with your continued good will and co-operation we are going to carry it through.



Sketching and Rendering in Pencil. Figure 34.

SKETCHING AND RENDERING IN PENCIL, PART XIII

BY ARTHUR L. GUPTILL

In this series of illustrated articles, the first of which appeared in the issue for August, 1920, the technique of pencil sketching and rendering is being taken up step by step, carrying the architectural draftsman or student through a systematic course of study which has been gradually developed and put into practice by Mr. Guptill in his classes at Pratt Institute, Brooklyn, New York City. The illustrations are not merely copy plates, but each is drawn to illustrate some principle of composition or some suggestion for technique given in the text. Although these plates are primarily intended to assist the student in freehand work, they will prove helpful as well to those making pencil renderings of subjects prepared instrumentally.—ED.

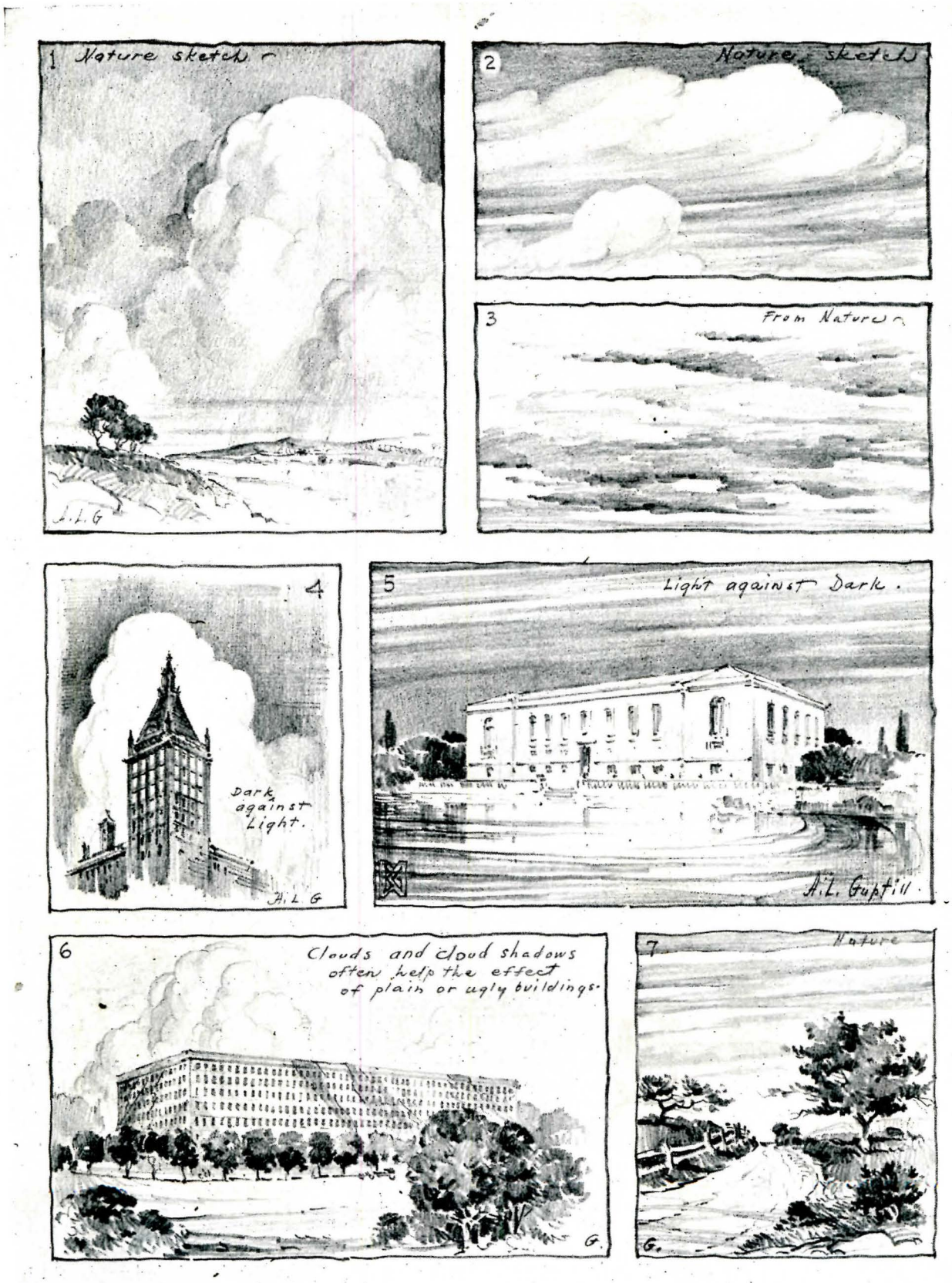
DURING the next few months we will consider in this series the rendering of large buildings, the decorative handling of architectural subjects, and the uses of tinted papers, colored pencils, etc., but before doing so it seems advisable in this issue and the next to round out our discussion of architectural accessories by touching upon the representation of water, skies, clouds, people and vehicles, repeating for the purpose of emphasis a few of the suggestions already given and adding such others as space permits.

Needless to say these accessories are of sufficient importance to deserve a more exhaustive treatment than this, but the student who is interested in obtaining additional information can find many special treatises devoted entirely to these and similar subjects. There are Government bulletins, for instance, describing the different kinds of clouds, and numerous books on figure drawing and anatomy; the recent book on figure drawing by Mr. Bridgeman, "The Human Figure" by John H. Vanderpole, "Figure Drawing and Composition" by R. G. Hatton, as well as volumes on composition with chapters on the arrangement of groups of figures. The student is advised to consult books of this sort, and it seems hardly necessary to add that the knowledge thus acquired should be supplemented by sketching all these things directly from nature or from the object, taking a course in life drawing (if this is possible) as a means of acquiring not only an understanding of the human figure but excellent training in drawing as well.

Now let us turn to a brief consideration of the representation of water, and suppose we liken it in appearance, for a moment, to window glass.

We have mentioned in a former article the complicated effect of glass, but if that offers difficulties to the student, so indeed does water, in fact, the latter is even harder to draw well, for whereas the former has the two important characteristics of transparency and power to reflect images of objects, water not only has these but adds to them a new peculiarity in that its surface is constantly changing in form, being smooth one moment, rippled the next, and disturbed a little later, perhaps, into large waves. Smooth water often gives as perfect a reflection as does a mirror, yet under slightly altered conditions the images are distorted or destroyed or the surface becomes like a transparent pane of glass, the bed or bottom below being plainly visible. Again such water sometimes seems opaque and lifeless, the surface alone being visible. Such appearances and changes are due in part to three conditions: First, the depth, color and purity of the water; second, the point from which it is viewed, and lastly, the angle at which the rays of light reach its surface. Deep, pure water, for instance, is usually, if still, an almost perfect mirror, especially if we look along it rather than straight from above, but in a shallow or muddy stream or pools the reflected images are often merged or blended with the tone of the water itself and with that of the bottom showing through, distorted by refraction. If we look directly down upon water it seems far more transparent, as a rule, than when viewed in a more-nearly horizontal direction and this is true whether it is smooth or rather rough. It is true, too, that when the light rays reach the surface at some angles, reflections which otherwise exist, wholly or partially disappear, and the effect of transparency is lost also, the surface becoming apparently opaque. This refers to calm water. Let the slightest breeze ruffle the surface and the complications are still greater. And each change in the force or direction of the wind causes a still different effect. These things all show the impossibility of giving definite rules as to how water should be rendered and make it plain that only personal observation and practice will bring any real proficiency in its treatment.

There are, however, a few suggestions that may be of help to the student, one of which is that the greatest care must be exercised to have the lines bounding any body of water correctly drawn, for unless this is done distortion may appear, the water seeming to slope or bend in an unnatural manner. It may be well to point out that in a large lake or sea where the farther shore is invisible because of distance the horizon line for the water will coincide with the eye level for any visible buildings. Occasionally, however, this line is "faked," up or down a bit, if a better composition can be obtained thereby. In smaller bodies the distant shore lines, unless viewed from a very high point, also appear practically horizontal. Once the outline is correct it is well to block in whatever definite reflections there may be, drawing them with the greatest care. If the water is smooth the reflection of an object will appear very much as the object itself would if suspended in an inverted position. If the water is rough the reflection will be more or less elongated and distorted, for the waves will act like a series of convex and concave mirrors, the amount of elongation depending on the size and shape of the waves. This is illustrated at 1, Figure 34, where at *A* the reflection practically duplicates the object, while at *B* the waves in the foreground show bits of reflection thus elongating the whole image. Such images are often slightly darker than the object reflected though the reverse is sometimes true, and



Sketching and Rendering in Pencil. Figure 35.

they are usually quite definite near the object and more and more broken and interrupted by contrasting values as the distance from the object increases.

Another very important point is that in representing a large body of water account should be taken of the fact that nearby waves appear larger than those in the distance; consequently larger pencil strokes are often employed in their indication. Remember, too, that the distant shore is usually rather indistinct, therefore it should be shown so, with all detail subordinated.

The general tone of water often depends on its reflective power. If a sky is light, for instance, the water will be quite light also, as a rule, especially if smooth, and *vice versa,* though there are many exceptions to this.

So great is the variety in the effect of water that every sort of line is needed for its indication when it is smooth, whereas those of a generally horizontal direction are sometimes better when it shows ripples or waves. The sketches in Figure 34 offer a number of suggestions, for water using different strokes. Perhaps the only one of these needing special comment is that at *B* sketch 4, showing the wet streets. This has been presented because delineators of architectural subjects sometimes show wet streets and sidewalks in their renderings, mainly for the purpose of introducing a little interest and preventing a hackneyed result, and such sketches as this offer suggestions for that kind of work. On wet sidewalks and streets as well as where water is of greater depth it is usually well to combine with the lines suggesting reflection, others, generally opposite in direction, indicating the surface itself.

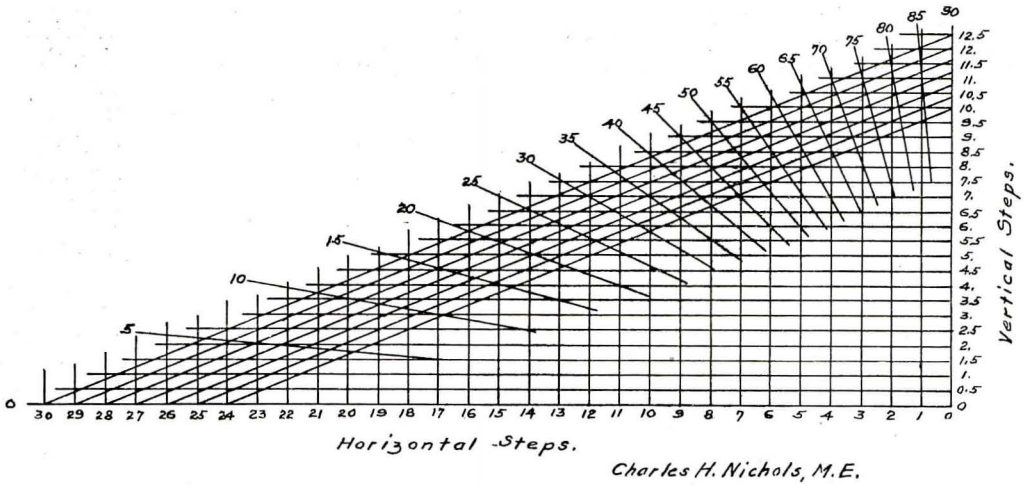
Before leaving this subject it may be well to mention that shadows are often cast upon water by various objects, the dark tone having a tendency to cause the water to appear still darker, this is simply another of the many complications that make a thorough study of the whole matter essential.

Now let us give a few moments' thought to the indication of skies and clouds, which are, perhaps, as easy to handle in pencil as any of the accessories. A few suggestions on essential points should prove sufficient for it is by no means necessary to attempt more than a simple sky treatment in the average architectural drawing. It is, in fact, often possible to allow the white of the paper to remain untouched or to cover it with a uniform tone of gray or to grade it in the simplest manner from dark above to light at the horizon. The value selected usually depends on the tone of the building illustrated; when it is dark in color or has a dark roof the sky is left light, but if light it is sometimes shown against a dark sky, in order to secure a satisfying contrast as in sketch 5, Figure 35. These simple treatments are especially appropriate in renderings of formal buildings where many clouds might prove distracting. Picturesque buildings permit greater freedom, for the accessories should have a character similar to that of the building,—but even these informal structures may be left with white paper for the sky if there is foliage and the like to add interest to the whole. It is perhaps in the representation of very plain buildings with a rather monotonous setting that clouds serve the best purpose, for even though restrictions prevent the use of trees or other accessories, there is seldom an exterior drawing in which clouds cannot be employed if one wishes, and nature gives us so many kinds and arranges them in so many ways that there is always opportunity for an appropriate selection. A building of awkward proportion or displeasing contour can be so disguised by skilful sky treatment as to take on a far different aspect, and perspective distortion can likewise be hidden in many cases, or made less conspicuous, while the shadows cast by clouds can also be used to great advantage, thrown across a monotonous roof or wall surface or upon the ground. Clouds, like other accessories, should never be made too prominent, however. Some students draw the masses so round that the curves fail to harmonize with the straight lines of the architecture while others form such "wooly" strokes or such rough textures that no sense of distance is obtained, the clouds seeming nearer perhaps than the architecture itself. Each line and tone should quietly take its place. So unless a drawing is large or done with a very bold, vigorous technique rather light but firm strokes would seem best, using a medium or hard pencil and striving for a silvery-gray line, for smoothness suggests distance. Again, as skies seem softer in effect and the individual clouds smaller in size and less definite as they recede towards the horizon, it is best, as a rule, to have the boldest strokes and the largest and most definite masses near the zenith. Storm clouds, especially those showing strongly contrasting forms and values, are seldom desirable in architectural work and sunrise or sunset effects detract, unless skilfully handled, from the architecture itself.

In the actual representation of clouds two methods are common, one being the simple indication of the forms by outline alone; the other a naturalistic rendering of the full tone. As the former obviously requires less time it is often the more desirable one, though the choice really depends on what seems demanded by the remainder of the drawing. Avoid too mechanical an outline in any case, but work instead for a suggestion of the variety of mass and edge found in nature, giving special care to the suggestion of modelling, remembering that clouds are not the flat disks that students sometime represent them to be.

Figure 35 shows a number of sketches from nature such as the student should make for purposes of study, and several others showing sky treatments applied to architectural subjects. We should perhaps remind the reader, before going on, that clouds are possibly the one thing in nature least affected in appearance by man, for though he may destroy forests and alter shore lines, they continue to go their own way uninterrupted.

Note—In the next issue Mr. Guptill will take up the drawing of figures of people in a way suited to the purposes of the architectural renderer, also the representation of vehicles.—Ed.



Charles H. Nichols, M.E.

Table of Risers for given Treads and Steps.

Width of Tread.	Length of Horizontal Step. 30.5	30.	29.5	29.	28.5	28.	27.5	27.	26.5	26.	25.5	25.	24.5	24.	23.5
	Height of Vertical Step. 12.71	12.5	12.29	12.08	11.88	11.67	11.46	11.25	11.04	10.83	10.63	10.42	10.21	10.	9.79
24.	2.71	2.5	2.29	2.08	1.88	1.67									
22.	3.54	3.33	3.13	2.92	2.71	2.5	2.29	2.08	1.88	1.67					
20.	4.38	4.17	3.96	3.75	3.54	3.33	3.13	2.92	2.71	2.5	2.29	2.08	1.88	1.67	
18.	5.21	5.	4.79	4.58	4.38	4.17	3.96	3.75	3.54	3.33	3.13	2.92	2.71	2.5	2.29
17.	5.63	5.42	5.21	5.	4.79	4.58	4.38	4.17	3.96	3.75	3.54	3.33	3.13	2.92	2.71
16.	6.04	5.83	5.63	5.42	5.21	5.	4.79	4.58	4.38	4.17	3.96	3.75	3.54	3.33	3.13
15.5	6.25	6.04	5.83	5.63	5.42	5.21	5.	4.79	4.58	4.38	4.17	3.96	3.75	3.54	3.33
15.	6.46	6.25	6.04	5.83	5.63	5.42	5.21	5.	4.79	4.58	4.38	4.17	3.96	3.75	3.54
14.5	6.67	6.46	6.25	6.04	5.83	5.63	5.42	5.21	5.	4.79	4.58	4.38	4.17	3.96	3.75
14.	6.88	6.67	6.46	6.25	6.04	5.83	5.63	5.42	5.21	5.	4.79	4.58	4.38	4.17	3.96
13.5	7.08	6.88	6.67	6.46	6.25	6.04	5.83	5.63	5.42	5.21	5.	4.79	4.58	4.38	4.17
13.	7.29	7.08	6.88	6.67	6.46	6.25	6.04	5.83	5.63	5.42	5.21	5.	4.79	4.58	4.38
12.75	7.40	7.19	6.98	6.77	6.56	6.35	6.15	5.94	5.73	5.52	5.31	5.10	4.90	4.69	4.48
12.5	7.5	7.29	7.08	6.88	6.67	6.46	6.25	6.04	5.83	5.63	5.42	5.21	5.	4.79	4.58
12.25	7.60	7.40	7.19	6.98	6.77	6.56	6.35	6.15	5.94	5.73	5.52	5.31	5.10	4.90	4.69
12.	7.71	7.5	7.29	7.08	6.88	6.67	6.46	6.25	6.04	5.83	5.63	5.42	5.21	5.	4.79
11.75	7.81	7.60	7.40	7.19	6.98	6.77	6.56	6.35	6.15	5.94	5.73	5.52	5.31	5.10	4.90
11.5	7.92	7.71	7.5	7.29	7.08	6.88	6.67	6.46	6.25	6.04	5.83	5.63	5.42	5.21	5.
11.25	8.02	7.81	7.60	7.40	7.19	6.98	6.77	6.56	6.35	6.15	5.94	5.73	5.52	5.31	5.10
11.	8.13	7.92	7.71	7.5	7.29	7.08	6.88	6.67	6.46	6.25	6.04	5.83	5.63	5.42	5.21
10.75	8.23	8.02	7.81	7.60	7.40	7.19	6.98	6.77	6.56	6.35	6.15	5.94	5.73	5.52	5.31
10.5	8.33	8.13	7.92	7.71	7.5	7.29	7.08	6.88	6.67	6.46	6.25	6.04	5.83	5.63	5.42
10.25	8.44	8.23	8.02	7.81	7.60	7.40	7.19	6.98	6.77	6.56	6.35	6.15	5.94	5.73	5.52
10.	8.54	8.33	8.13	7.92	7.71	7.5	7.29	7.08	6.88	6.67	6.46	6.25	6.04	5.83	5.63
9.5	8.75	8.54	8.33	8.13	7.92	7.71	7.5	7.29	7.08	6.88	6.67	6.46	6.25	6.04	5.83
9.	8.96	8.75	8.54	8.33	8.13	7.92	7.71	7.5	7.29	7.08	6.88	6.67	6.46	6.25	6.04
8.5	9.17	8.96	8.75	8.54	8.33	8.13	7.92	7.71	7.5	7.29	7.08	6.88	6.67	6.46	6.25
8.	9.38	9.17	8.96	8.75	8.54	8.33	8.13	7.92	7.71	7.5	7.29	7.08	6.88	6.67	6.46
7.5	9.58	9.38	9.17	8.96	8.75	8.54	8.33	8.13	7.92	7.71	7.5	7.29	7.08	6.88	6.67
7.	9.79	9.58	9.38	9.17	8.96	8.75	8.54	8.33	8.13	7.92	7.71	7.5	7.29	7.08	6.88
6.5	10.	9.79	9.58	9.38	9.17	8.96	8.75	8.54	8.33	8.13	7.92	7.71	7.5	7.29	7.08
6.	10.21	10.	9.79	9.58	9.38	9.17	8.96	8.75	8.54	8.33	8.13	7.92	7.71	7.5	7.29
5.	10.63	10.42	10.21	10.	9.79	9.58	9.38	9.17	8.96	8.75	8.54	8.33	8.13	7.92	7.71
4.	11.04	10.83	10.63	10.42	10.21	10.	9.79	9.58	9.38	9.17	8.96	8.75	8.54	8.33	8.13
3.	11.46	11.25	11.04	10.83	10.63	10.42	10.21	10.	9.79	9.58	9.38	9.17	8.96	8.75	8.54
2.	11.88	11.67	11.46	11.25	11.04	10.83	10.63	10.42	10.21	10.	9.79	9.58	9.38	9.17	8.96

Charles H. Nichols, M.E.

Proportioning Risers and Treads of Stairways. *See Text on Opposite Page.*

PROPORTIONING THE RISERS AND TREADS OF STAIRS

BY CHARLES H. NICHOLS

In this article, Mr. Charles H. Nichols, M. E., Vice-President of the Graff Engineering Corporation, Consulting Engineers, New York City, presents a practical and scientific method of proportioning the risers and treads of stairs in place of the rule-of-thumb methods commonly used in practice.

THERE have been several rules used for determining the proportions of riser to tread, which have been derived from the risers and treads most commonly used and which had been found by experience to be satisfactory, but these rules have not been adaptable to stairways more or less steep than those from which the rules were derived. The formula presented herein, being derived from the lengths of horizontal and vertical steps, is logical and is applicable to all stairways regardless of their inclination. Though most stairways have an inclination of between 35° and 40°, there are many that have much less inclination, such as those in buildings of public assembly and the outside approaches to many buildings, and there are some that have a greater inclination, principally in power plants. For such stairways, designers have used their own judgment, with a resulting wide variation in proportion.

The first rule known to the writer was riser plus tread to equal 18″, which was derived from an 8″ riser and a 10″ tread. Experience proving this too hard a stairway, the rule was changed to riser plus tread to equal 17.5″, derived from a 7.5″ riser and a 10″ tread. Changing the riser and tread 1″ either way, however, made a hard stairway, and the rule was again changed to twice the riser plus the tread to equal 25″, which also was based on 7.5″ riser and 10″ tread, but would allow of a greater variation from those dimensions without causing too hard a stairway. However, as the inclination of the stairway approached either the horizontal or the vertical, the proportions according to the rules were perceptibly inaccurate. To allow a slightly greater leeway, the 25″ was sometimes changed to from 24″ to 26″.

The formula given herein is based on the length of horizontal and the height of vertical steps naturally taken by men and women. The length of the military step is 30″ and most men naturally take a step of 29″ or 30″. The corresponding natural vertical step is 12″ or 12½″. There are, of course, some men who take a longer or a shorter step. Women generally take a horizontal step of 25″ or 26″ and a vertical step of approximately 10½″. Men and women together will generally take steps between these, of 27″ or 28″, with proportional vertical steps, and children will, of course, take shorter steps. The ratio of the horizontal to the vertical step is as 2.4 is to 1, or, the horizontal step divided by 2.4 equals the vertical step. Steps on an incline, whether on stairways or on ramps, are proportional to the horizontal and vertical steps.

From the above, the following formulae are derived. The tread equals the horizontal step, minus 2.4 times the riser, and the riser equals the horizontal step minus the tread, divided by 2.4.

Let s = horizontal step, v = vertical step,
t = tread, r = riser,
R = vertical distance between floors,
T = horizontal distance between bottom and top risers,
n = number of risers and d = double tread.

(1) $s = 2.4\,v$ (2) $v = \frac{s}{2.4}$

(3) $t = s - 2.4\,r$ (4) $r = \frac{s-t}{2.4}$

(5) $s = t + 2.4\,r$ (6) $n = \frac{R}{r}$

When the distance from floor to floor fixes the value of r, the proper value of t is determined by formula 3, and when the total height is variable, as in the outside steps to a public building, and the value of t is arbitrarily chosen, the proper value of r is determined by formula 4. These formulae will give the proper dimensions for any inclination, and, if the proper value of s is chosen, for a stairway for any service. It is, however, important to choose s to suit the class of building and the use for which the stairway is intended.

For power houses and factories for men only, and for office buildings where the stairway is an emergency exit only, the value of s should be between 30.5″ and 28.5″. For factories for both men and women, public buildings and railway stations, office buildings where the stairways may be used every day, and for the average hotels and residences, the value of s should be between 28.5″ and 26.5″. For theatres and department stores, fine hotels and residences and for the outside steps to public buildings, the value of s should be between 26.5″ and 24.5″. For schools for children in the primary and grammar grades, the value of s should be between 24.5″ and 23.5″. Outside steps are sometimes made with treads so wide that a person takes two steps on each tread. In such cases the height of the riser and the width of the tread should be such that the additional width will be approximately a mean between the single tread and the horizontal step upon which it is based. The dimensions of the risers and treads will be determined by the formulae,

(7) $d = 2s - 3.6r$ (8) $r = \frac{2s-d}{3.6}$

In some cases, the location of the bottom and top risers as well as the height from floor to floor may

be fixed, from which the most suitable proportion of step will be determined by the formulae,

$$(9)\quad n = \frac{T+t+2.4R}{s} \qquad (10)\quad s = \frac{T+t+2.4R}{n}$$

$$(11)\quad r = \frac{R}{n} \qquad (12)\quad t = \frac{T}{n-1}$$

As t in formula 9 is unknown, an approximate value must be assumed when calculating n, and as n from formula 9 may have a decimal, either the next lower or next higher whole number must be chosen, and r and t figured by formulae 11 and 12. With this correct value of t and the chosen value of n, used in formula 10, the corrected value of s is found, and if this varies too much from the assumed value of s, the other value of n should be used.

In the diagram herewith, the parallel diagonal lines show the height of vertical steps corresponding to the several horizontal steps, and the intersection of the vertical and horizontal lines on the diagonal lines show the heights of risers and widths of treads corresponding to the horizontal steps. The radial lines show the degree of inclination of stairways having the given risers and treads. The table gives the height of vertical steps corresponding to horizontal steps and the height of risers for various treads and steps, for preliminary study. The exact height of riser will usually be determined by the distance from floor to floor.

When the inclination is less than 8° or 10°, a ramp is frequently preferable to a stairway. When it is necessary to have an inclination of more than 70° or 75°, a ladder will be preferable, and if over 50° or 55°, a right and left stairway in which each step is only half the width of the stairway, and alternately for the right and the left foot will usually be preferable to a stairway in which each step overhangs the step below. The risers between landings should never be less than three in stairways used by the public, and winders should be avoided if possible, and never employed in stairways used by the public. When, in residences, it is necessary to use winders, the winder treads, about 16″ from the inner rail, should have a width approximately equal to the width of the straight treads. All risers and treads in the same flight should have the same height and width.

COMPETITION FOR THE DESIGN OF A GARDEN TREATMENT FOR TYPICAL SUBURBAN BACK-YARD.

OPEN to all who are able to present their ideas by means of a plan and perspective conforming to the simple requirements stated in the program. The Competition for the Design of a Garden Treatment for a Typical Suburban Backyard should bring forth a large number of interesting designs from architects, draftsmen, students, and others. Three prizes are offered, namely, $150, $100 and $75. The competition is being conducted by The Society of Little Gardens.

Information and copies of the program can be had upon application to Mrs. Charles Davis Clark, 2215 Spruce St., Philadelphia, Pa. Those desiring to enter the competition must signify to Mrs. Clark, in writing, their intention to submit designs. The request for a program will not be construed as a declaration of such intention.

The designs will be judged by a jury composed of three architects: Messrs. Wilson Eyre, Jr., Warren P. Laird, and Horace Wells Sellers, who have prepared the program and are acting as the professional advisors of the society. The program has been approved by the American Institute of Architects. Drawings are to be delivered at the address given in the program not later than noon of Saturday, October 15, 1921.

The purpose of the Society of Little Gardens is to procure one or more designs which may be presented to the public to stimulate and guide the development of the out-of-door space of the average American dwelling house and bring it clearly within the meaning of the word "home," now too generally limited to the space within four walls. The problem is an interesting one and calls for the exercise of much good taste, knowledge and ingenuity in order to secure the best possible effect with a limited area and limited expenditure. The society and those who co-operate by submitting designs in this competition will be doing a good work in helping to replace the unsightliness of the average back-yard with beauty and a home-like quality.

THE ST. LOUIS ARCHITECTURAL CLUB.

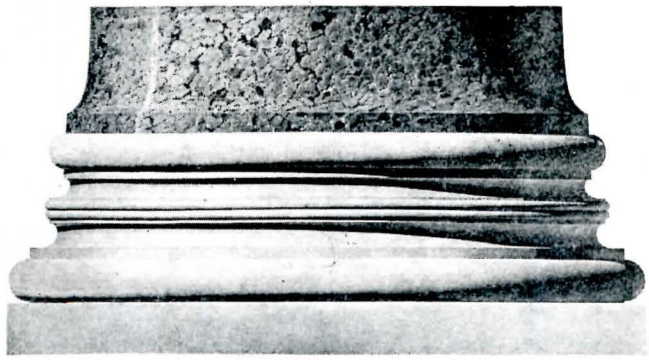
THE Annual Meeting held in April resulted in the following election of officers for the coming season: President, H. H. Lynch; 1st Vice-Pres., Fred Hammond; 2nd Vice-Pres., Herman Frauenfelder; Secretary, F. Ray Leimkuehler; Treasurer, Herbert Reinhardt; Executive Board, Robert Rosebrough and Carl J. Trebus; Trustee, Louis La Beaume.

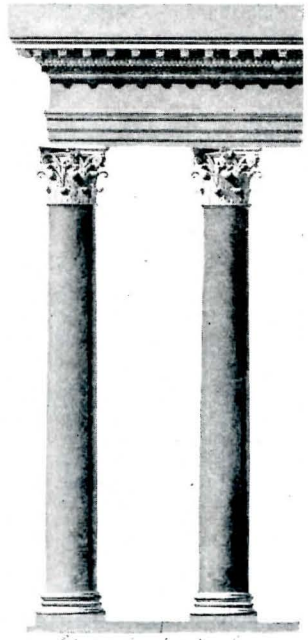
The Hydraulic Press Brick Company donated One Hundred dollars to be given as prizes in a "Small Brick House" competition held between the students of intermediate design at Washington University and the Club's Atelier. In the judgment held June 2, 1st prize of $75 was given to Louis Bewig, vocational student at Washington University; 2nd prize of $25 to John Noyes, Club Atelier; mentions, Fred Kramer, Atelier; Alfred Norris and Aloysius Higgins of W. U. Eighteen problems were submitted, fourteen from the University and four from the Atelier.

As a finale to the season the Club gave a dance on June 2nd. Tiny T-squares, lollypops, toy balloons and whistles were given as favors. Cooling refreshments were served, while the dancers retired between dances to the garden decorated with lanterns. The University crowd attended in a body.

The final meeting before closing the season was held on June 16th, when prizes were awarded and the matter of enlarging the club was discussed. In the near future the atelier on the second floor will be enlarged taking in the roof garden to accommodate the large number of students.

CHAPITEAU-BASE
ET DETAIL
AU QUART
DE L'EXECUTION

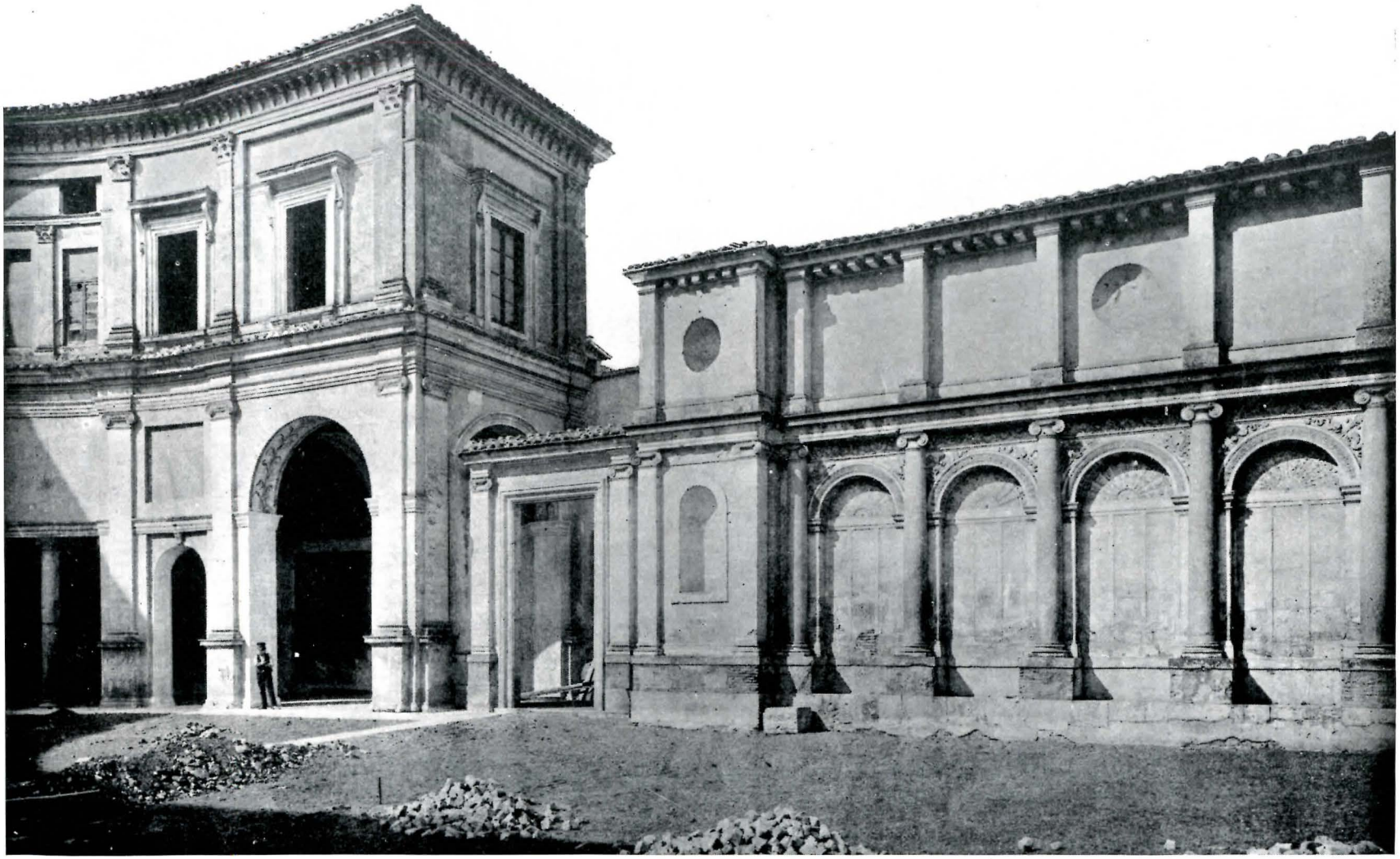




DETAILS OF PORTICO OF THE PANTHEON, ROME

FROM H. D'ESPOUY'S "FRAGMENTS D'ARCHITECTURE ANTIQUE"

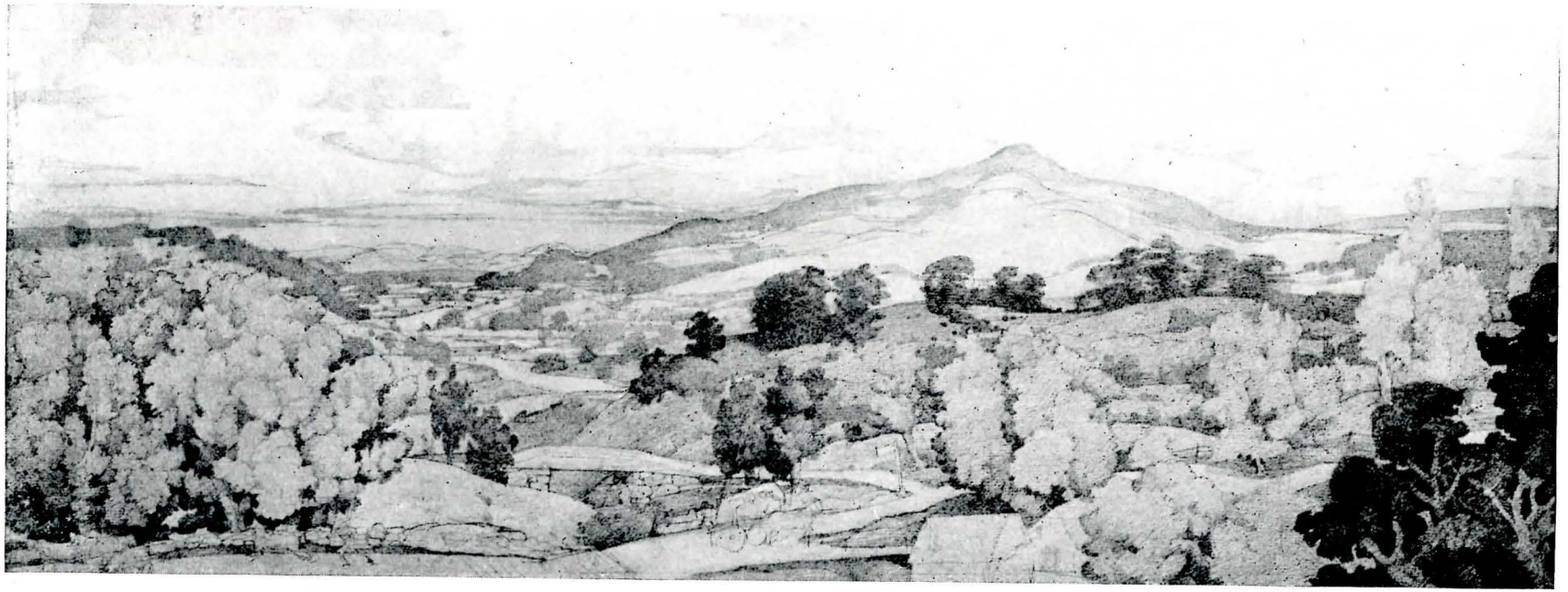
On the other side of this sheet are shown details of the portico of the Pantheon at Rome, from restorations by M. Daumet. The portico was erected probably about A. D. 166 by M. Aurelius Antonius and completed about A. D. 202 by Septimius Severus. The columns are 47 feet 3 inches high. The order is vigorous in conception and well executed. The circular body of the Pantheon was built, probably, about the time of the Republic. The oldest portion is believed to have been part of the baths of Agrippa.



NORTH SIDE OF THE FORECOURT

VILLA DI PAPA GIULIO, FROM STRACK'S "BAUDENKMAELER ROMS"

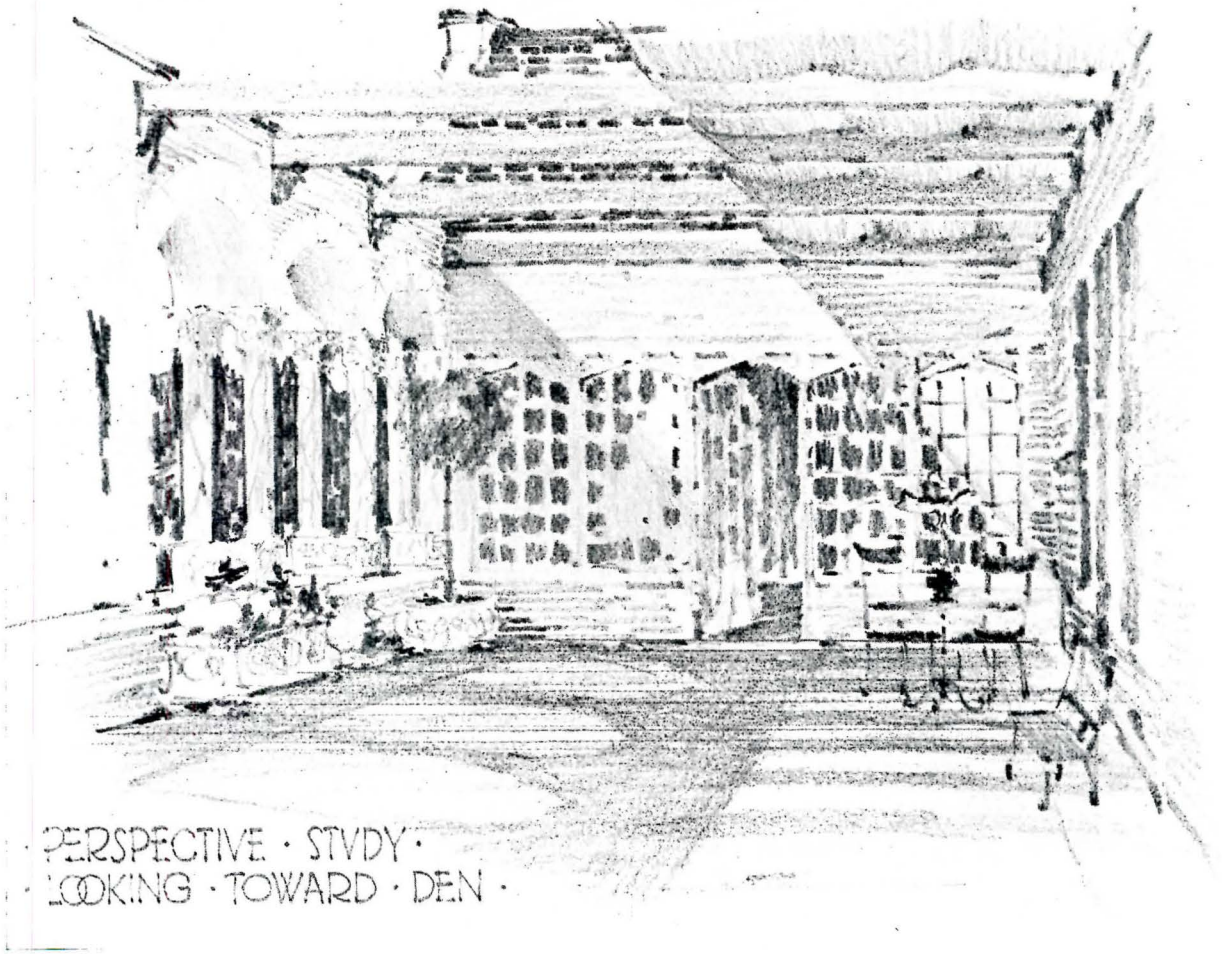
The photographic view reproduced on the other side of this sheet represents a portion of the villa of Pope Julius III, outside of the Porto del Popolo, Rome. The portion here shown is attributed to Giacomo Barozzi da Vignola. This villa was built about 1550. The general arrangement is attributed to Michelangelo. A part of the building is attributed to Ammanati. Before Vignola was called in Vasari had been consulted.



PENCIL STUDY FOR A MURAL PAINTING

BY BARRY FAULKNER

The pencil study reproduced on the other side of this sheet is one of Mr. Barry Faulkner's studies for a series of mural paintings forming a continuous landscape about the room. It is an especially fine study for the composition of the scheme of tones. These decorations are in the dining room of the city residence of Mr. Richard Henry Dana, Jr.



PENCIL STUDY BY ROBERT VON EZDORF,

TREATMENT OF A LOGGIA

CROSS & CROSS, ARCHITECTS

On the other side of this sheet is reproduced a pencil study made in the office of Cross & Cross, by Mr. R. von Ezdorf, for the purpose of showing an idea to a client. For this purpose sketches of this kind often serve as well as drawings that take longer to make. This one effectively suggests the proposed ***treatment.***

THE STUDY OF ARCHITECTURAL DESIGN

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

THE "ANALYTIQUE" OR ORDER PROBLEM. PART VII.

Rendering

BY JOHN F. HARBESON

In this series of articles, which began in the January issue, Mr. Harbeson is explaining the method of working and how to get the greatest benefit in following the program of The Beaux-Arts Institute of Design. It is not intended as a substitute for personal instruction and criticism.—ED.

THE analytique is completed only when it is "modeled" by rendering to express the form. There are many kinds of rendering: the wash of water-color is the usual method of modeling an architectural drawing, but the method of modeling is the same whether the rendering be with wash (water-color or India ink), pen and ink, pencil, oil or mixed processes. All of these media are used in the drawings made by the men at the French Academy at Rome and published by D'Espouy as the "Fragments d'Architecture Antique." Figures 72 and 73 show two drawings, by Paul P. Cret, submitted in recent competitions, where a "detail" was required in addition to the usual drawings of plans, sections and elevations. The first is done in India ink, the other in pencil over a few washes of a water-color tone.

Rendering does not have fixed rules—any scheme is good if the reliefs and forms are adequately expressed by it. However, there are some general principles which should guide the rendering, and if the student gains an intelligent understanding of these principles he will be able later to develop his own personal style of expression.

I have already spoken of the casting of shadows. It is universal to assume the sun's rays following the direction of which the horizontal and vertical projections make an angle of 45° with the ground line. The ray itself does not make this angle but has the direction of the diagonal of a cube,—down, back, to the right—of which the sides are respectively parallel and perpendicular to the two planes of projection. This method has two advantages: the casting of shadows is made as simple as possible—which is well to consider, for at that the process is often long and complicated,—and the widths of shadows are equal to the projections; consequently the size of the shadow explains, without any other drawing, the relief of one architectural member as related to another.

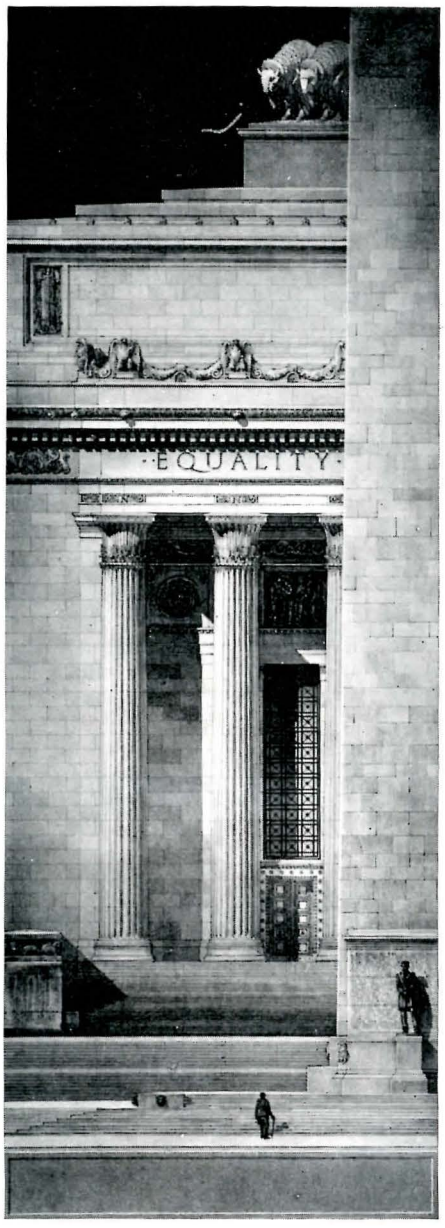


Figure 72.

For the analytique a monochrome rendering is required. Though this is sometimes called a "monotone" rendering, it is, to speak strictly, a monochrome rendering, as many tones are used, but of one color. If India ink is used it should be freshly ground and strained or filtered. This may be done, as in Figure 74, by soaking a small piece of thick, soft white string in the ink, and then putting one end in a saucer at lower level. All of the ink will pass through the string by capillary action. The great advantage of India ink is its transparency—the drawn lines are never lost. Its one disadvantage is that the tone becomes very much lighter when it has dried, so that frequently tones must be put on a number of times before the proper value is reached. It is also very diffi-

cult to sponge out India ink tones (the ink acts rather as a "stain" penetrating the fibre of the paper than as a "paint" remaining on the surface), so that one must proceed cautiously to avoid a too dark wash. As a result, rendering in India ink is a much slower process than rendering in a water-color monochrome.

Of the water-color pigments, one may use ivory black, or peach black (of French manufacture), or Sepia, or a mixture of two colors, as ivory black and raw sienna, ivory black and cobalt blue, ivory black and yellow ochre, or ivory black and French blue (if the drawing is at fairly large scale, otherwise the settlement is too great). Many other combinations are possible, of course. It is best not to mix more than two colors as there is a tendency for the pigments of varying solubility to settle unequally, and thus cause streaks in washes and changes of tone.

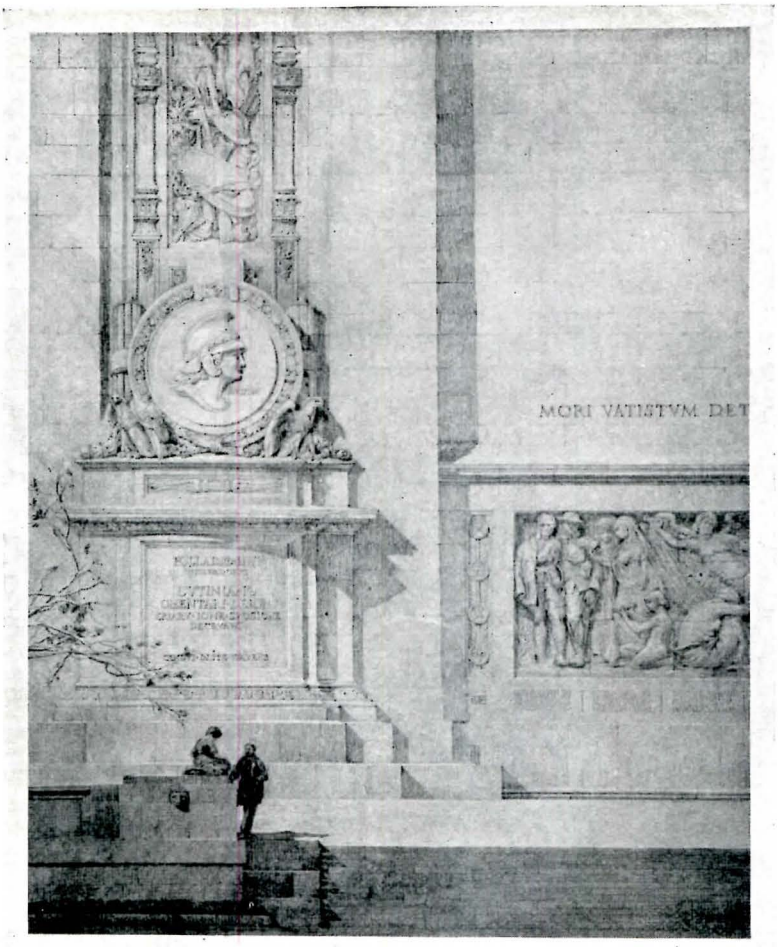


Figure 73.

In any case, whether you use India ink, a single pigment or a mixture, begin by making a thick "soup" of strong color; from this dilutions are made for lighter tones in small saucers by adding varying amounts of water. This avoids a constant remixing of pigment; when a mixture of two colors is used it avoids a change in the tone; and there is always the strong tone of the "soup" for the small accents of dark color necessary toward the finish of the rendering.

The rendering should follow an orderly progress, and the work should extend to all parts of the drawing: it is very bad to render up one portion to a finish, and then another portion, and so on. A drawing so rendered will look like a mosaic of which the several pieces do not belong together. It is always best to run all the big washes first—all the general tones—and then gradually work down through the smaller.

In most renderings the first step is to run the "shadow wash," but for an analytique it is best first to run a wash over the large-scale details or "frame" to differentiate it from the small-scale picture. Now run the shadow wash in all the shadows—in the small-scale drawing and the details. Do not bother about the exact value of this first wash; it will in most cases be changed later; the important thing at first is to separate the light and shade. This distinction must always exist, no matter how much the parts in light and shade are worked up, there should always be the difference between light and shade.

Next, take the small-scale drawing and run washes in the openings, in the windows and doors, and in the sky if the drawing is one showing a silhouette. It is not necessary in any of these washes to get the final effect at first; usually this cannot be done, and later washes are added from time to time to keep the different portions in their proper place. It is essential, however, to keep neat edges on all washes, running them up to the bounding line, and not over it. When the brush does run over the line, it is well, as soon as the wash has dried, to soften such a place with a little water on the brush, rubbing gently with the brush, and blotting up with a handkerchief (preferably) or with a blotter.

Next, washes should be run on the vertical planes to give distance, to "focus" the drawing at the principal plane. As perspective illusions are not present in the geometrical drawing, the only resource to bring a plane forward or backward in relation to another is to tint it differently: An object near-by is strongly modeled; as it goes away it is less modeled; in the distance it becomes all one gray.

Thus, keeping the portion in light of the important plane of the elevation practically white, washes are placed over the vertical planes behind it, of darker tone as they become more distant; again as we come forward from this plane we run washes over

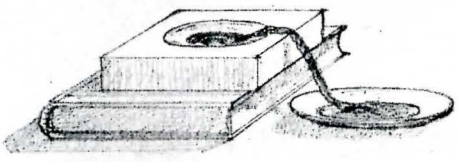


Figure 74.

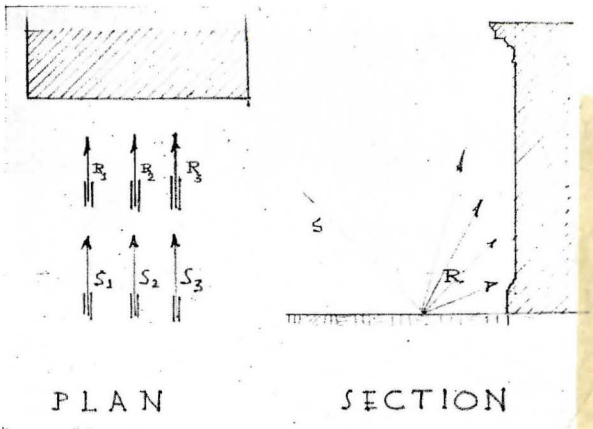


Figure 76.

the vertical planes, stronger as they are nearer to us.

In Figure 75, the plane marked 1 is the principal plane, and planes 2, 3 and 4 are successively farther away; and planes a, b, c are successively closer than plane 1. If we now take the shadows on these planes, the shadows of plane 1 are in greater contrast with the surfaces in light; on planes 2, 3 and 4 the shadows show, successively, *less contrast;* and again the shadows on planes a, b, and c show successively *less contrast to the portions in light* of these planes than is the case on plane 1. Note well: this is entirely irrespective of the strength of tone of the individual shadows in the foreground planes. These shadows may be darker in color than the shadows of plane 1—it is the amount of contrast to the portion in light of the same plane that is the important thing.

In this manner the drawing is "focused" at the important plane. In Figure 75, I have used a large building with planes at great distances one from another in order to illustrate the principle involved: the analytique usually has vertical planes at very limited distances from one another—they are treated in the same way, the washes to separate them being only slightly different in tone.

The rays of the sun striking near the foot of the building will cause reflections on the lower portions of the building of the colors of the ground surfaces near its foot. In Figure 76, the sun's rays are represented by S, the reflections by R; it will be seen that these reflections are strongest near the base of the building. For this reason the tones on the vertical planes may be graded. If the ground surface is a white pavement, the reflection will cause the face of the building to be lighter at the bottom, and a wash on this plane will be graded from dark at the top to light at the bottom, as at *a,* Figure 77; if the ground surface is grass, or a pavement of darker stone, these darker colors will be reflected on the lower portion of the façade, and the plane will then be rendered with a wash graded from light to dark, as at *b,* Figure 74. The grades in such washes should be very gentle.

These principles as to rendering vertical planes apply equally well to the large-scale details; the details may be put one behind another by light washes (see Figure 3, February issue, Plate IX, March issue). Also the various vertical planes in each detail may in the same way be made to take the proper distance from one another—the several members of

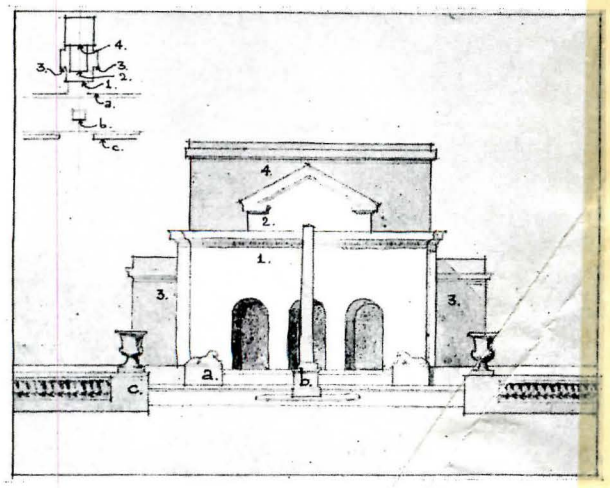


Figure 75.

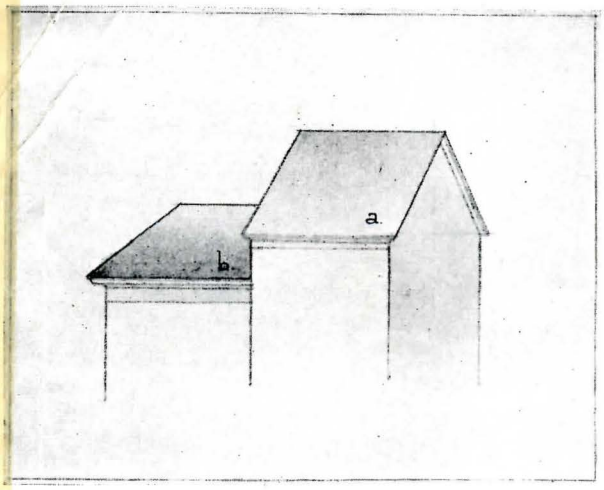


Figure 79.

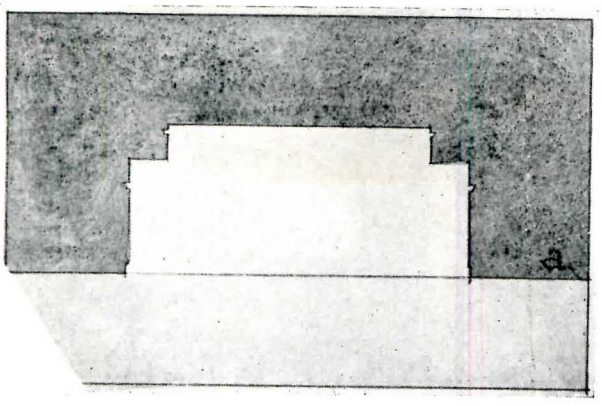


Figure 78a.

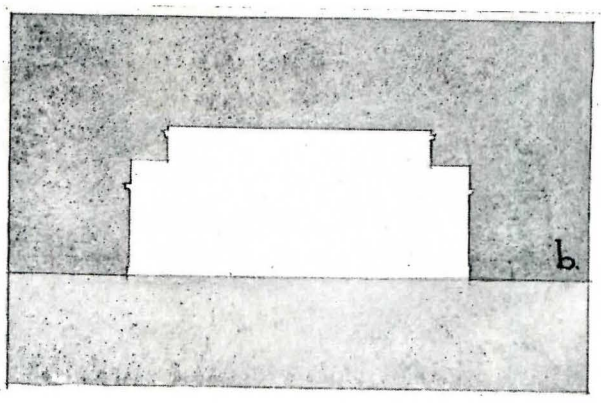


Figure 78b.

r instance. When a vertical plane con-
t in low relief, in which the patterns
nd are as regular and as well studied
of the ornament (see Figure 39,
of Basilica Ulpia), it is well to
background to separate it from
s to set it behind it.
f the small-scale drawing
g darker as it comes away

rnice, fo
ornamen
he backgrou
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y issue, frieze
a tone over thi
pattern as well a
he foreground
uld be graded, getti
m the build-
, and it may
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les than in the
iddle. It should
ways be left
irly light, how-
ver, both because
is very well-
ghted — as well
s a vertical plane
—and because the
levation must
have a base upon
which to stand.
Thus, in Figure
78*a*, the building,
always fairly
white in general
one, has a white base on which to rest; in Figure
78*b*, where the foreground has been washed in
darkly, the building has nothing to stand on and
seems to be "floating."

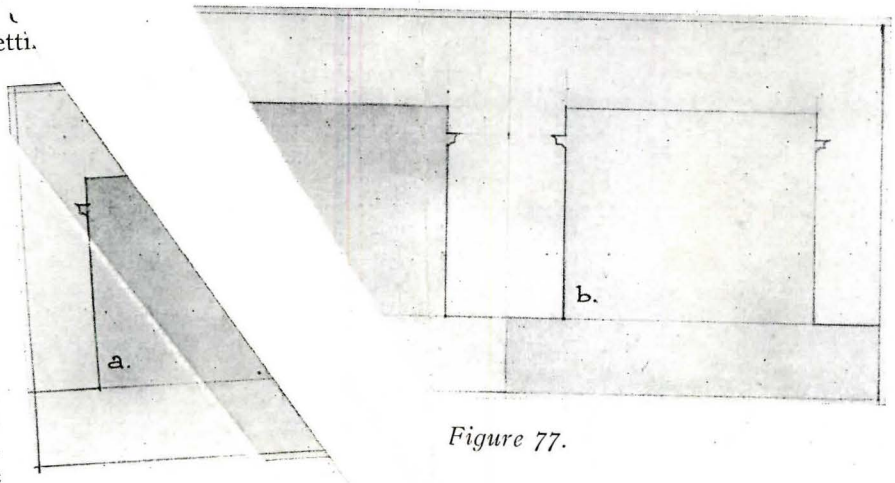

Figure 77.

Where roofs are shown, they should of course be rendered by graded washes. In a roof of steep slope the upper part—by contrast with the brightly illuminated background of the sky—will appear to be darker than the lower part. On the other hand, in a roof of slight slope, the distance from the eaves to the ridge increases much more rapidly than the height, and therefore the effect of distance is more important than the effect of contrast and a more satisfactory rendering will be obtained by darkening the tone of the wash near the eaves of the roof and grading toward the ridge. See *a* and *b*, Figure 79. (*The Analytique will be concluded next month.*—Ed.)

WORKING FOR THE PARIS PRIZE.

THE five men chosen, as the result of the preliminaries, to compete in the final trial for the Paris Prize, given by the Society of Beaux-Arts Architects, are now working in the competition under the Beaux-Arts Institute of Design.

The list of men is as follows: L. Morgan, Atelier Hirons, New York; R. A. Fisher, T-Square Club, Philadelphia; H. S. Atkinson, T-Square Club, Philadelphia; J. G. Schuhmann, Jr., Columbia University; A. Westover, Jr., T-Square Club, Philadelphia.

Work in this competition will end Aug. 15 at 1 P. M. The judgment will take place on Aug. 16. The drawings will be placed on exhibition the evening of Aug. 16 and will be exhibited at the headquarters of Beaux-Arts Institute of Design, 126 East 75th Street, New York City, Aug. 17 to 27, inclusive, from 9 A. M. until 9 P. M. daily.

EDWIN LUTYENS AWARDED ROYAL GOLD MEDAL.

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ral Meeting of The Royal Institute of
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nstitute has been intrusted since 1848
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ho, by reason of the excellence of
worthy of especial distinction.
name is well known to the pro-
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ARCHITECTURAL DETAIL PART IV

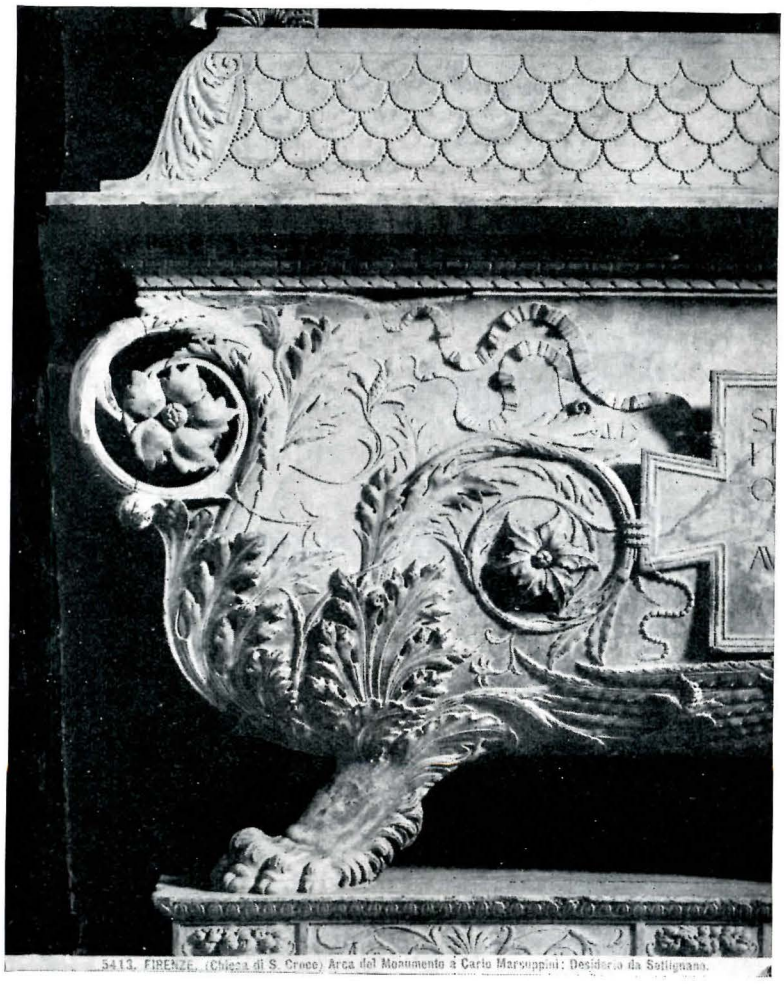
BY JOHN VREDENBURGH VAN PELT

This is the fourth instalment of an article in which Mr. John Vredenburgh Van Pelt, formerly Professor in Charge of the College of Architecture, Cornell University, Architecte Diplomé par le Gowvernement 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.

THE opposite of contrast in the inter-relations of elements of detail is "Continuity." Necessarily the different parts of a design must unite with each other and in flowing on throughout the composition, where they do not contrast, their tangents at the points of joining must be common or at least parallel. We have already noted this in Figure 12. Even though parts of a design do not actually touch, the dominant directions may carry the eye from one part to another, always without any break in the curve.

An interesting subject that has to do with both continuity and contrast is that of "Ties." Elements may be separated, tangent or may cross. In the first case continuity is obtained by a tie which should be either tangent or directly normal to the line of the element, Figure 29. A tie becomes almost necessary when the elements are tangent to each other, Figure 30,* and it is very useful when they interlace, Figure 31 (*a'*). We have already noted how important it is that they cross at right angles; a glance at Figure 32 is convincing. The only exceptions are derived from cases governed by "suggestion" as when a mosaic pattern seems to so fit together the blocks that make up the design, there can be no impression the pieces are going to slip apart, Figure 31 (*b*). Two very interesting crossed line designs are shown in Figure 33.

In the foregoing we have been reviewing laws that derive their force from a direct appeal to the eye. There is another series that is important because of "Suggestion." If a design reminds us of another experience or object, its power to please will be influenced by the pleasure or displeasure we have derived from the experience or object, and also by the reasonable or logical picturing or suggestion of the object. A running scroll may be only a line design, yet, subconscious reminder of a vine, it must always grow in the same direction. As already noted, the mirror at the right of Figure 22 would have a top and bottom if hung on a wall and as habit accustoms us to feet or a base quite different from a head or top, suggestion makes the horizontal axis of symmetry displeasing. Because sharp edges and points suggests a dangerous knife blade or lance on which one may injure oneself, or in other elements because they seem fragile, requiring care in handling, they are not agreeable, even though the contours may become tangent and they might be so constructed as to be removed from any real danger of breakage, Figure 34. There are some bits of design, as where a panel, with a concave circle for one side, ends in sharp points, that present no material suggestion of danger to life, or fragility in themselves, yet are disagreeable. In my own case, as well as I can analyze the sensa-



Detail of Monument to Carlo Marsuppini by Settignano, in the Church of S. Croce, Florence.

**Figures 30, 31, 35, 37, and 41 are reproduced at somewhat reduced size from "Essentials of Composition," by J. V. Van Pelt, published by The Macmillan Co., New York.*

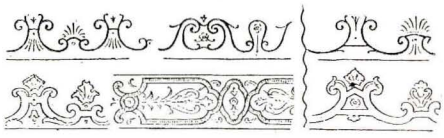


Figure 29

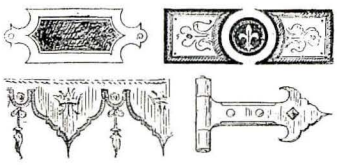


Figure 34.

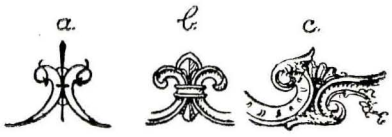


Figure 30.

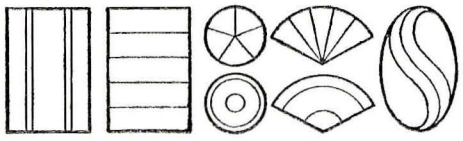


Figure 35.

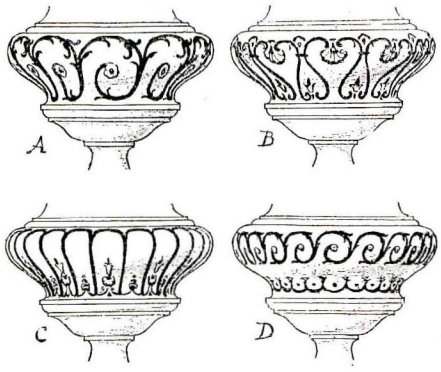


Figure 36.

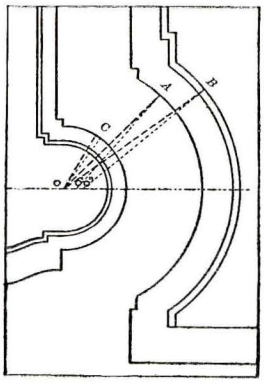


Figure 41.

Figure 38.

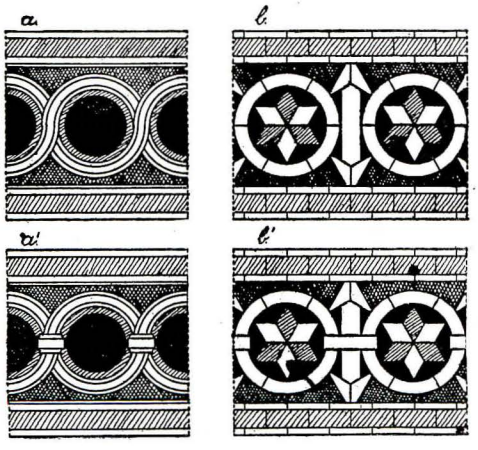


Figure 31.

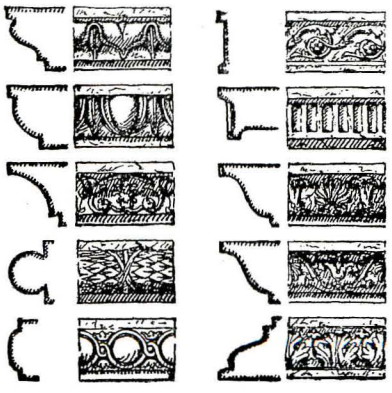


Figure 37.

tion there is an impression of pinchedness. The panel is reduced to a line at the point of the curve and all the unpleasant suggestions of a narrow, dust-catching, tight corner are present. Enlargement upon these examples is not primarily for the purpose of establishing the objectionable features of the sharp angle; but to bring home to the reader a realization of the important role that suggestion may play in rendering objectionable an innocuous shape or element. It may be pertinent to note in further proof of this that when a spear head in a design requires the suggestion given by a sharp point and is of appropriate material so that it does not seem fragile, the sharp form becomes quite acceptable.

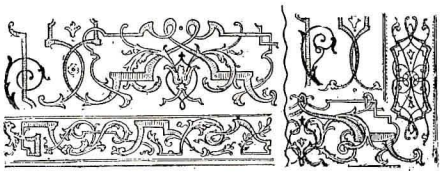


Figure 32.

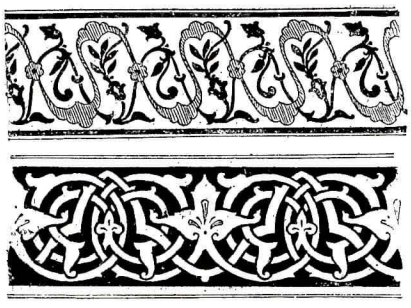


Figure 33.

Other faults of suggestion are those where the operation of a natural law such as gravity, is implied and its requirements not obeyed; i.e., standing figures placed at an angle or horizontally, garlands and pendants that do not conform to the direction of the earth's attraction, figures depicted on a ceiling as if on a side wall, or so shown on the ceiling that they do not seem to be viewed from below, figures that are floating, but are so drawn as to require a support. In composing the detail of a ceiling, figures, heads, and minor compositions having a top and bottom, must be so placed that a person standing in the room and looking up will see the design in its proper position. In most cases this means that for a viewpoint near the center of the room, the head of the design must be toward the center.

It is because of the suggestion of insecurity that a lintel of a material ill-suited to the span allowed, but made strong by a hidden construction is always disagreeable. Suggest the support and the design satisfies.

A whole chapter, a whole book might be written on the necessity of making the design appropriate to the known peculiarities of the material in which it is to be expressed. The detail of some of the wrought iron I have lately seen exhibited with pride by skillful workers is better fitted to bronze. The nineteenth century *Gobelins* tapestry made to imitate painting is far less satisfying than that of the fifteenth and sixteenth centuries.

A serious fault is committed daily by a large proposition of the full sizers of our offices—the stone detail is inappropriate to the particular kind of stone for which it is made. In New York City there are miles of sculptured brownstone that looks like cast iron and miles of cast iron that looks like brownstone. I hear the answer: "That was speculative work of the old days." But is all the limestone with the planes of ivory carving and that is lost after a year or so of exposure, speculative work? Is the granite carving, done at unreasonable cost because such a hard and coarse grained stone can not readily be worked into the delicate lines of marble speculative work? I have seen limestone on the exterior of a New York Building which, barring the freestanding spray, is as finely cut as the monument to Carlo Marsuppini (see page 25). This masterpiece of Settignano is executed in close-grained statuary marble and is carefully protected on the interior of the Church. There is granite in America that falls not far short of it.

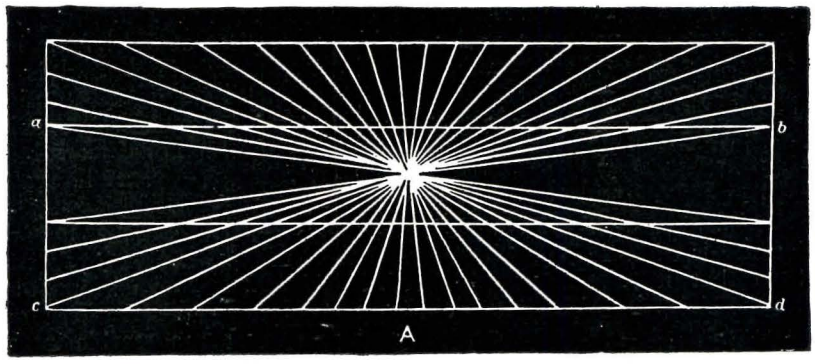
And how about the terra cotta imitations of stone, the travesty of one lovely material by another lovely material that has its own beautiful modes of expression? If I go on into the disagreeable impressions created by the discovered sham, I shall never stop and there still remains one point on which I must touch in connection with the design of ornament.

The ornament must conform to the enclosing frame and to the surface on which it is placed. Nearly all ornament follows some directing line. Squares and circles are symmetrical about two or more axes. Owing to their marked symmetry they are appropriate to plane decoration: a distorted form so alters their lines that they no longer remain true to type. Such designs as the egg and dart should be reserved for a quarter round section. The running scroll is appropriate to a plane surface or to a half round or taurus; it should never be used for a bed mould where a water leaf is appropriate. Finally straight figures must be reserved for surfaces of which the generating lines are parallel to the dominant lines of the figures, and are straight or nearly so. Figures 35, 36, 37 and 38 show this effectively. Note how badly the upper part of the Minerva in Figure 38 is distorted by the sharp curve of the surface to which the design is applied. The dominant lines of the design applied *must* conform to those of the underlying surface.

While the detailer remains watchful that no unfortunate suggestion, operating on a sub-conscious plane, mar his design, he must likewise be on guard lest the psychological reactions induced by one part of the design modify another part to its detriment. The subject of "Optical Illusions" is treated from the artist's point of view in "Essentials of Composition," but a few hints here may be useful for those who do not happen to have the book at hand. There are four important facts to remember:

1.—Lines that cross at an angle are each affected in direction and each leans toward the perpendicular to the other line. As Titchener puts it*: " . . . small angles . . . are overestimated and ob-

**Experimental Psychology, New York, Macmillan, 1901. Figures 39, 40, 42 and 43 are reproduced through the courtesy of the Macmillan Company from Vol. 1 of that work.*



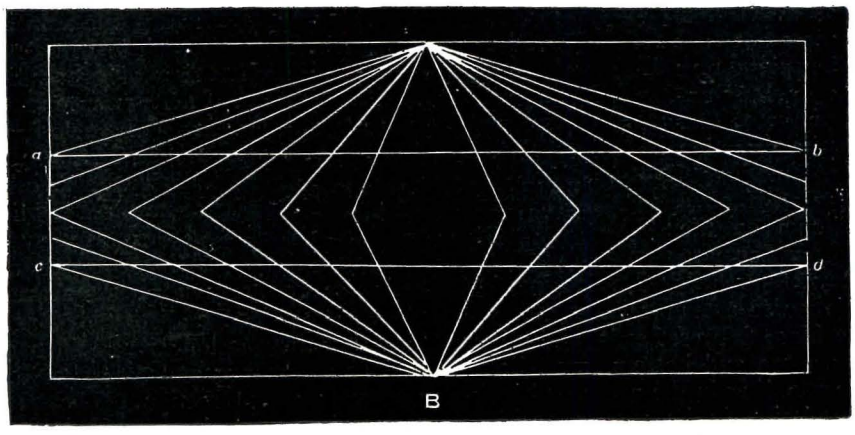


Figure 39.

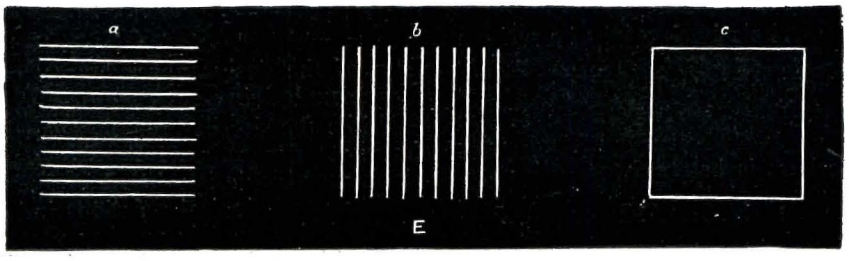
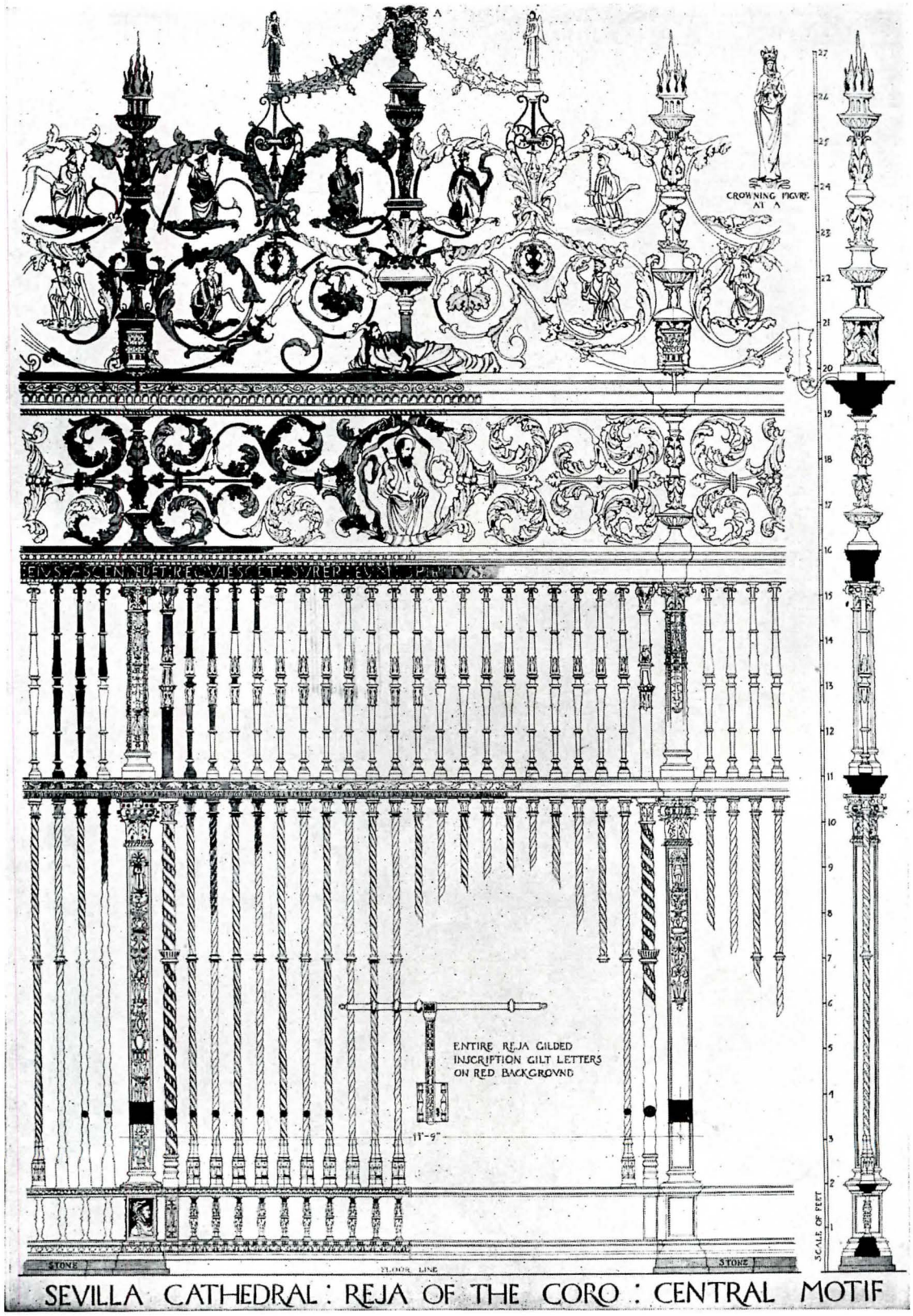


Figure 42.



Copyright, 1914, by The Hispanic Society of America

Detail of Reja of the Coro, Sevilla Cathedral. From "Rejeria of the Spanish Renaissance" by Arthur Byne and Mildred Stapley, Published by The Hispanic Society of America, New York.

tuse angles underestimated in comparison with them," Figures 39 and 40. The application of the above is strongly manifest in the drawing (see page 29) from the lovely "Rejeria of the Spanish Renaissance" by Byne and Stapley, choir grille of Seville's cathedral. See how the twisted bars squirm and seem to converge in directions that lean toward a perpendicular to the direction of diagonal lines that represent the twistings. It is interesting to note that this is more apparent in the drawing reproduced than in a photograph of the grill, the reason being that in the photograph the twistings of the bars are not so prominent. In giving consideration to such an illusion remember that the more definite and forceful of two lines which react mutually is that less affected.

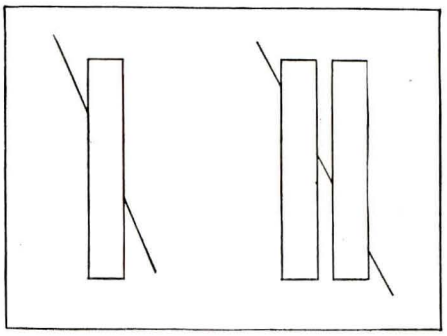


Figure 40.

2.—Concentric arcs of circles limited along lines that do not pass through their common center appear eccentric. The eye confuses the distance between the ends of the arcs with the radius and to correct the deformation, as the arc recedes the center must be pushed out. Figure 41.

3.—In estimating distances the eye rates a divided line or space greater than an undivided one and it is also influenced by other neighboring lines that tend to carry it along or to arrest its progress, Figures 42 and 43. In Figure 42, *a* and *b* are square, but *a* looks higher than it is wide, *b*, wider than it is high. Sometimes these two influences operate against each other. Repeated narrow vertical lines will increase the apparent width of a panel; but two important vertical border strips set in somewhat from each side will cause the eye to judge the width as ending at the borders and they will carry the eye vertically and decrease the apparent width. Not long ago the head designer of a well known New York firm brought to me a question that was troubling the peace of his draughting room. His employer had told him to increase the number of ceiling beams in a long room in order to make the room appear wider. He had objected and he was right. Two large beams across the room with a narrow repetition of small joists running lengthwise with the room was the proper solution. The large beams would have carried the eye with them, the small ones have induced the inhibitions to eye movement that would impel the observer to overestimate the distance across them, namely the width of the room.

4.—In sharp contrasts of value a light space will appear larger than an equal dark space. Columns silhouetting darkly against the sky have to be increased in diameter. Designs that are to be carried out in sharply contrasting values or colors must not be studied in outline.

The four groups of optical illusions upon which we have just touched are not the only ones to be found in this interesting section of psychological research. They are selected because of their peculiar relation to architectural design and detail. Moreover I am not offering a mathematical formula for determining the quantity of readjustment. If the designer keeps in mind the fact that such reflex influences really exist and are active, he will review his design from the standpoint of the observer receiving a first impression. He must erase from his mind, the knowledge that T-squares, triangles or centres have set the lines and must correct the latter by eye just enough to give the effect he intends. It is somewhat difficult to do this, for when we know certain conditions exist, our tendency is to rely upon that knowledge, our receptivity is impaired, and our sensitiveness to impressions dulled.

The practical application of the remedies of these optical illusions is far more usual than most detailers realize. As we said last month, it is not sufficient to convince ourselves that certain things are true, we must turn conviction into action. Then some of the atrocities that greet the eye in our peregrinations about town will not be re-enacted.

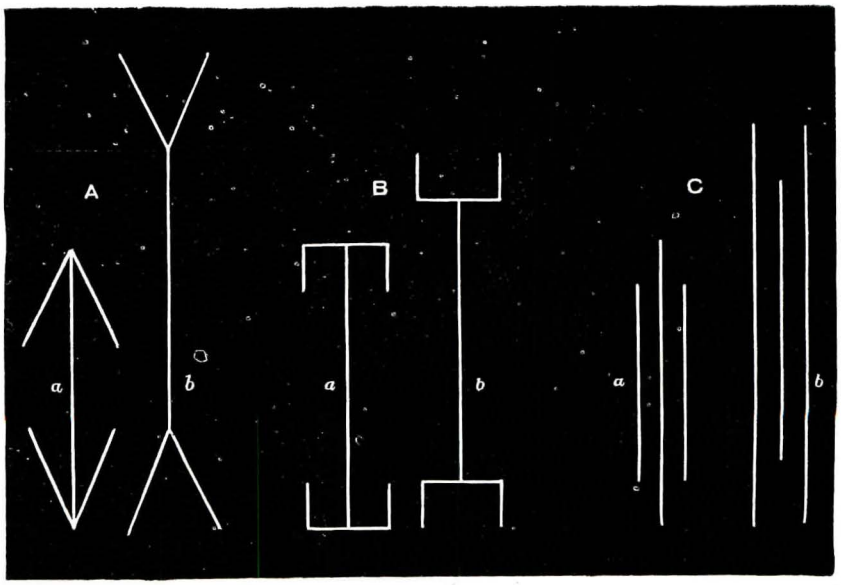
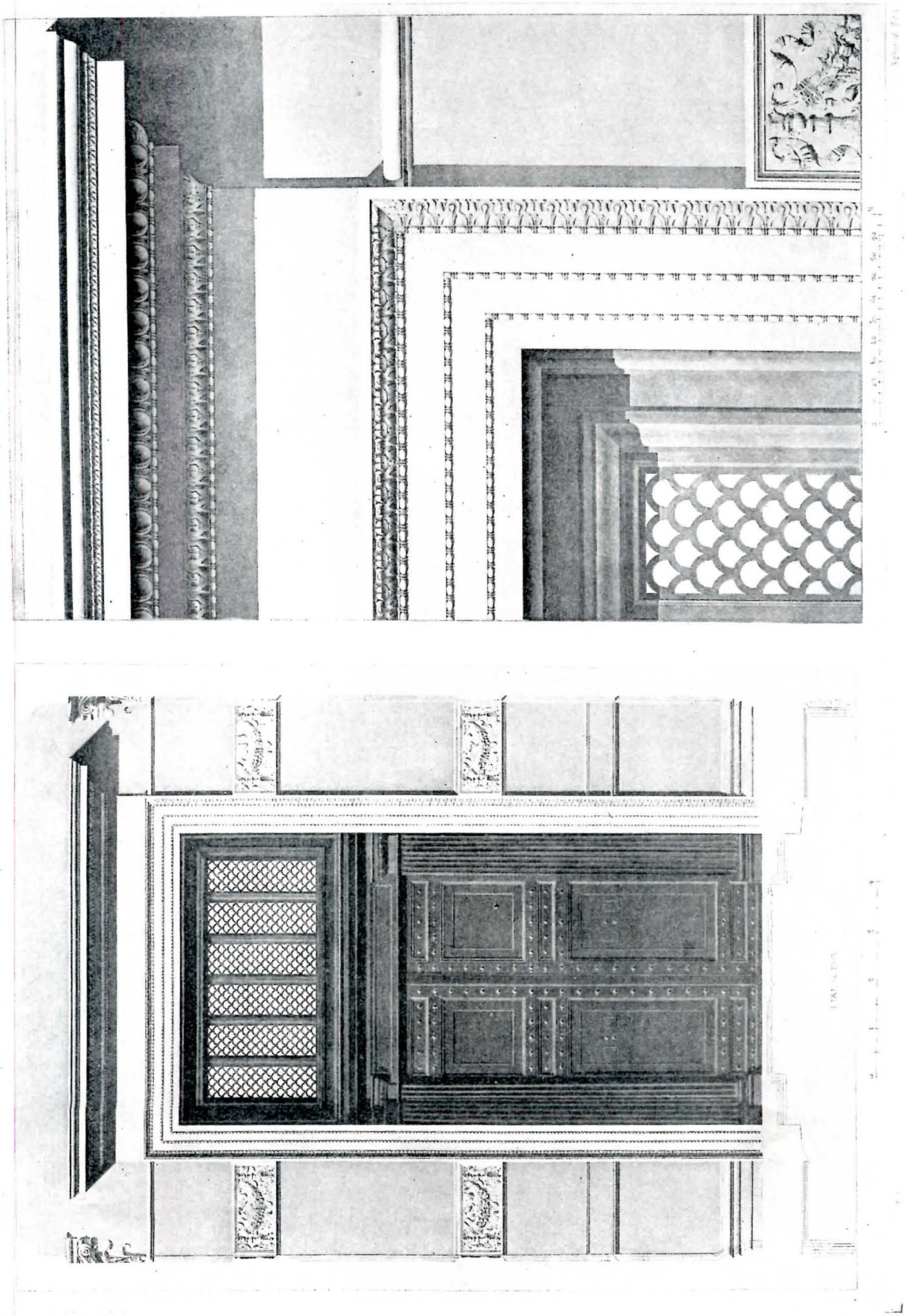


Figure 43.

Note—Figures 29, 33, 34, 36, and 38, are from H. Mayeux's "La Composition Décorative.



DOORWAY OF PANTHEON, ROME
FROM H. D'ESPOUY'S "FRAGMENTS D'ARCHITECTURE ANTIQUE"

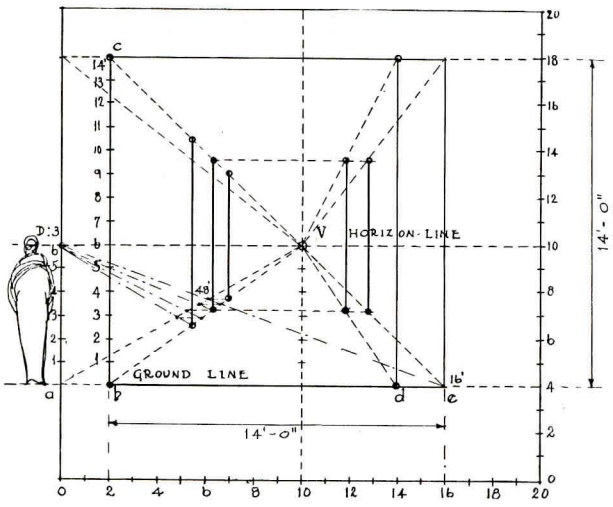


Figure 37a.

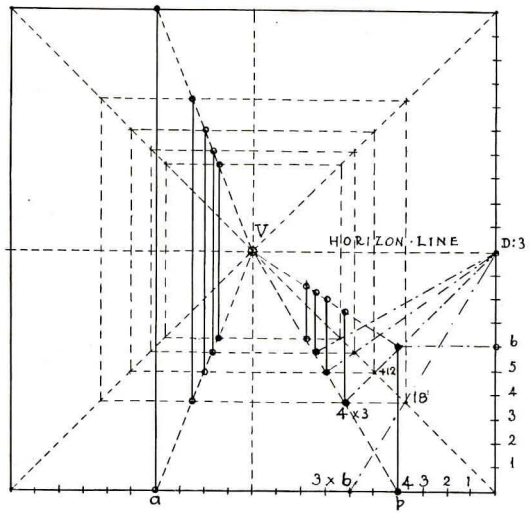


Figure 37b.

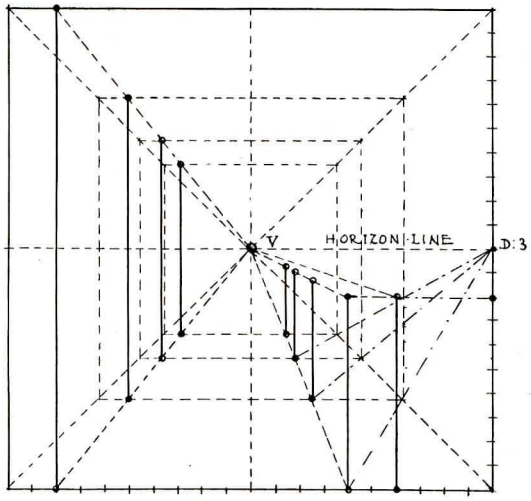


Figure 37c.

Perspective Drawing. *See Text on the Opposite Page.*

PERSPECTIVE DRAWING, PART XV

BY PAUL VALENTI

TO AMPLIFY the problem considered in the last issue, we may take the following examples:

Figure 37*a* expresses a condition where the area of interest in this particular case is limited arbitrarily to 14′-0″ in width and 14′-0″ in height, the picture beginning at 2′-0″ to the right of the left-hand margin of the picture plane (or at point 2 on the bottom limit of picture), and terminating 14′-0″ to the right, or at point 16 on this same line, (the height of picture, as already indicated being also 14′-0″). Placing the ground line 6′-0″ below the horizon line, as was done previously in Figure 37 (and again shown in Figure 37*a*), mark off 14′-0″ in the scale of the picture from point *b;* or at point *e* find the right-hand limit of the picture. The problem now is to find certain units within the picture, at a specified distance and height. As is shown in Figure 37*a,* a line is drawn from point 16 on the ground line to the reduced distance point $D \div 3$ intersecting line aV at a point 3×16 feet away from the ground line, or at 48′-0″. Tracing a horizontal from this point to line bV, thence a vertical to line cV, we shall obtain a line or unit 14′-0″ high, 2′-0″ to the right of the left-hand limit of the picture plane, and exactly 48′-0″ distant from the ground line on the transparent plane. Upon careful observation, the other two units may be readily and easily located on line bV, and as it will be found are 12′-0″ apart, because the operation represents, in the reverse condition, (that is, working backwards), $2 \times (3 \times 2') = 12'\text{-}0''$. These units may be refered to lines dV and eV as desired, and shown by the dotted lines in Figure 37*a*.

Figure 37*b* illustrates a condition also of finding different units arbitrarily within the picture plane in specified positions of depth and height. For example, in this diagram a unit 6′-0″ high is shown immediately next to the transparent plane 4′-0″ to the left of the right-hand limit of the picture. Then at a depth of $3 \times 6'$—or at 18′-0″—and on the same line bV we find the same unit repeated and so on indefinitely. It will be noticed also that at point *a* a line or unit extending up the whole height of the picture plane is found in the different locations on line aV opposite the units found previously on line bV and in the same way.

Figure 37*c* is practically the same as Figure 37*b,* changing only the location and dimensions of the units, merely to show that one is unlimited, and it is hardly necessary to say, that with a multiplication of units thus found, we may determine anything, from a simple cube, to a cathedral.

These diagrams are plain indications, serving to show the method of locating simple units within the picture and to make possible a clearer explanation of the more complex problems that will follow. These examples, as already stated, are merely diagramatic drawings, but as may readily be seen, the principles involved therein can be applied to more complex problems under innumerable and widely varied conditions. It would be well for the student to exercise himself in the application of these principles by applying them to specific cases, as he may see fit. This applies to the nucleus of an elaborate interior as well as the details and, also, by reducing the scale, to the problem of drawing a bird's-eye view, for example. The latter problem will be taken up in a subsequent issue.

THE NEED FOR STANDARDIZATION OF BUILDING CODES.

IN AN effort to arouse widespread interest in the standardization of building codes, the Structural Service Bureau, Philadelphia, has sent out copies of a paper which was presented at the Fifty-fourth Annual Convention of The American Institute of Architects by D. Knickerbacker Boyd. From this paper we quote the following:

"At the present time there is a great cry for more homes and for the lower cost of homes. In an effort to encourage building and stimulate interest in house construction, by far the most important and most practical suggestion, not alone in its present influence but in its effect on future building, is to revise building codes and to make their requirements as nearly uniform as possible throughout the country.

"In almost hundreds of cities, building codes are now in operation which were prepared or approved a decade or more ago and have not been revised or amended since that time. These codes fail to take into consideration the advances made in the scientific and efficient use of structural materials and, in numerous cases, changes might be made which would reduce building costs while still retaining safe structural requirements.

"One of the most obvious of these necessary revisions, relating to wall thicknesses, was brought to light recently in an investigation by the Structural Service Bureau of some 100 building codes throughout the Country. These results thus far verified are tabulated as follows:

Code Provisions for Brick Exterior Walls in Dwellings.

One story	dwellings	.....	8-in.	walls	.....	63 cities
"	"	over	8-in.	"	.....	14 "
Two	"	.....	8-in.	"	both stories.	28 "
"	"	over	8-in.	"	first story...	31 "
"	"	over	8-in.	"	both stories.	19 "
Three	"	.....	8-in.	"	all stories...	6 "
"	"	over	8-in.	"	first story...	10 "
"	"	over	8-in.	"	1st & 2d st..	21 "
"	"	over	8-in.	"	all stories...	39 "

Mr. Boyd then pointed out the effect of these inconsistent and often unnecessary requirements, making a full analysis of the figures collected and concluded with a strong appeal for revision.

SOME SUCCESSFUL ARCHITECTURAL CLUBS

TO TELL exactly how some successful architectural clubs are organized and how they are run is the purpose of this article.

In response to a circular letter which this journal sent out last month we have received detailed information, some of which is presented here. Any club that has not already sent us full information is requested to do so now for the good of the architectural club movement in general and for the good of all connected with architectural work throughout the country. We want to publish more of this detailed information in order that those contemplating the organization of new clubs and those who are working in established clubs may gain useful ideas.

The Pittsburgh Architectural Club.

The Pittsburgh Architectural Club, Pittsburgh, Pa., has a total membership of one hundred fifty. Membership is open to architects, draftsmen and those interested in allied arts. Thirty-three per cent. of the membership is composed of employing architects. The club consists of male members in four classes, namely, Active, Non-resident, Associate, and Honorary. Active members must be practising architects, architectural draftsmen or artists residing within a radius of one hundred miles of Pittsburgh. Only active members have the right to vote or hold office. Non-resident members have all the rights of active members, except to vote or hold office. Associate members must be interested in architecture or the allied arts and reside within a radius of one hundred miles of Pittsburgh. Honorary members receive election as a mark of honor from the Club and are exempt from initiation fees and dues.

The Club holds meetings monthly. The dues are Five Dollars a year, payable in advance. The committees are as follows: Exhibition, Entertainment, Club Quarters. A room is rented for the monthly meeting. By means of a campaign the membership was increased 200 per cent. last year. The features of the club life are: lectures at the monthly meetings, exhibitions which are held annually, competitions of local interest. Small prizes are offered.

The Club does not offer scholarships, does not have a life class, and at present does not have a sketching class, though it had one in the past. It aids in securing positions for members through the monthly publication "The Charette."

A picnic is held once a year, but there will be two this year, purely stag affairs. It is expected that the Club will give a ball this fall in conjunction with the artists of Pittsburgh. An admirable feature is the publication of the monthly journal of the Club, "The Charette," a wide-awake, lively and at the same time thoughtful little paper, that is well edited.

The T-Square Club, Philadelphia.

The total membership of The T-Square Club of Philadelphia, Pa., is three hundred forty. Its membership is composed of men engaged in the study, practice or advancement of architecture or any of the kindred arts, sciences or crafts.

Approximately 20 per cent. of the membership is composed of employing architects. The membership is divided into three classes, viz., Active, Honorary, Contributing. An active member whose residence and business office are outside of a radius of twenty-five miles from Philadelphia City Hall may be enrolled upon request, as a non-resident member, paying a semi-annual tax equal to one-third of the tax prescribed for an active member and be ineligible to elective offices. An active member who has been enrolled for five consecutive years may become a Life Member upon proper application. Life members pay the sum of two hundred dollars after their election and are not thereafter required to pay the semi-annual tax but are subject to the liabilities of active members.

Meetings are held twice a month, from October to May. The committees are: Membership, House, Educational (atelier, etc.), Exhibition (in Club House), and Executive. The membership is increased by special campaigns, prize memberships, etc. The dues are: Active, $15.00; Non-resident, $5.00, per year, payable in April and October. The Club owns its own Club House.

There is a lecture at each meeting. There are exhibitions continually, changing every two weeks or so. The Walter Cope Prize Competition is conducted under the auspices of the Club. The prizes are $100, $60, and $35. The prize was founded in honor of the late Walter Cope, a founder and early president of the Club.

In addition to the Cope Prize there are prize memberships, medals, etc. The Club does not offer scholarships. A sketch club has not been regularly maintained. There is no life class. The social events consist of occasional dances, outings, "Ladies' Nights," etc. The Club assists in securing positions for members by posting want advertisements on the bulletin board.

St. Louis Architectural Club.

The membership of the St. Louis Architectural Club consists of eighty-five active, sixty-five associate, five honorary, and five out-of-town members.

Membership is open to architects, draftsmen, and members of the associated building trades. The employing architects comprise about twenty per cent. of the total membership. Associate membership is open to building contractors, building material men, and men commonly affiliated with the building trades.

Meetings are held bi-monthly between September first and July first. The annual meeting is held on the second meeting in April. Ten dollars is required as an initiation fee, and dues are $12 per year payable in quarterly installments.

There are seven standing committees: House, Entertainment, Membership, Atelier, Exhibition, Publicity and Library, which are self-explanatory.

(*Continued on page* 37)

PENCIL POINTS

Published Monthly by

THE PENCIL POINTS PRESS, Inc.

Publication Office—Stamford, Conn.

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

RALPH REINHOLD, President F. W. ROBINSON, Treasurer
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Subscription rates per annum, payable in advance; United States of America and U. S. Possessions, Cuba and Mexico $1.00, Single copies 15 cents; Canada $1.25 all other countries $1.50.

Wholesale Distributors, The American News Company, New York.

MEMORIAL QUADRANGLE AT YALE UNIVERSITY INSPECTED BY ARCHITECTS AND CLUB MEMBERS.

AN EVENT of interest was the visit of a large group of New Haven architects, out-of-town architects and members of the Architectural Club of New Haven to the beautiful Memorial Quadrangle of Yale University on July 21. That extremely interesting and beautiful example of recent architecture is a most worthy and delightful subject for study by every lover of good architecture. James S. Hedden welcomed the large company of more than 100 as the guests of the official representatives of James Gamble Rogers, the architect of the memorial, and of Marc Eidlitz & Son, Inc., in an educational survey of the memorial building. Mr. Hedden, who, as superintendent of construction, is familiar with every detail of the buildings, led the party to the interior of the quadrangle. Here he introduced George Nichols, who gave a full and warmly appreciated description of the surrounding examples of the Gothic architecture of the dormitories and the towers. This lecture was one of the notable courtesies and instructive experiences of the afternoon.

Mr. Hedden then personally conducted the party over the various parts of the buildings, detailing as he walked along at the head of the party the difficult and almost insurmountable problems of construction that had been battled with and solved until the complete interpretation of the architect's ideals crowned their efforts.

Mr. Hedden escorted the party through the interior of the tower where the magnificent memorial room to Charles Harkness and the great belfry with its giant bell will form the climax to this great masterpiece of architecture. It was late in the afternoon before the inspection was completed but there was evidently a feeling of great pleasure and gratitude for the privilege thus afforded under these favorable conditions of expert escort on a day specially set apart by the architects for this inspiring visit.

In the design of the group of buildings forming this quadrangle the architect has incorporated the spirit of the old English colleges, while making the dormitories thoroughly practical and livable, he has given nobility, dignity and an indefinable charm to this group. The informality in the many minor features, the variety of succeeding views as one walks among the buildings, the coloring of the stone, its soft grays and browns that suggest age, all contribute to the charm of a masterpiece of architecture great and scholarly in general conception and worked out to the smallest detail in a way that gives evidence of devoted study.

Theodore O. Appel, president of the Architects' Club, expressed the thanks of the guests for the great privilege which they had enjoyed and also extended an invitation to out-of-town architects to visit the Club's local headquarters.

DEPARTMENT OF ARCHITECTURE, KANSAS STATE AGRICULTURAL COLLEGE.

THE Kansas Architectural Record is a handsome book, published by The Architectural Club, Kansas State Agricultural College, Manhattan, Kansas. It contains a general statement in regard to the profession of architecture and the course of study in this subject offered by the College; the names of the members of the faculty and of the members of the Architects' Club; and a large number of illustrations of work done by students in the various classes. In the place of honor at the front of the book is a portrait of Dr. John Daniel Walters, the first head of the Department. The frontispiece shows a design for a store and office building by Professor Baker. A list of the annual prizes offered to students of the Department of Architecture is also given. It is also stated that various student loan funds are provided for the aid of properly recommended students.

The Architectural Club meets every Thursday. The first meeting of the month is with the freshmen and at this meeting an outside speaker addresses the club; the programs of the second and third meetings are composed of papers written by students, and the fourth meeting of the month is with the rest of the engineering division of the school.

On the Ides of March the annual students' carnival is held, the students taking part in costume. The architects always dress in some uniform costume, this year they appeared as jesters. The celebration of the day begins with "stunts" put on by the different divisions, and this year the architects won the prize with their "stunt," a living presentation of Greek statuary.

During the middle of the winter the juniors and seniors made plans and perspectives of the new buildings to be erected at the college this year, including a new cafeteria building, girls' dormitories, veterinary clinic building, and agricultural building.

THE Southern Pine Association inspectors report the general adoption of 2⅜" as standard for 3" Flooring, in substitution for the previous two standards of 2¼" and 2½". The standard of 2⅜" was recommended by the grading committee, endorsed by the subscribers, and approved by the board of directors, at the annual meeting, April 6th, to become effective June 1st, 1921.

Reports taken into consideration indicated that the retail trade generally has approved of the elimination of the two sizes of 2¼" and 2½", and the general adoption of 2⅜" in place of them. The finished size of 2⅜" for 3" Flooring is now the officially recognized standard of the Southern Pine Association.

DURING the school year just completed a club consisting of twenty-five students in architecture and limited to them only has been formed at the Mechanics Institute, of Rochester, N. Y., under the title of the "Mechanics Institute Architectural Association." Through the efforts of the retiring president, Mr. Chiste, and the guidance of Mr. Hendrick Van Ingen, instructor, the club has been made very successful and all members are very much interested in planning big things for the coming year.

THE competition for the selection of an architect for The Liberty Memorial, Kansas City, has been decided with the selection of H. Van Buren Magonigle, as architect. His design is one of great nobility. Robert Aitkin, sculptor, will assist Mr. Magonigle in carrying out the work and Mrs. Magonigle will be associated with her husband in carrying out the mural designs.

COMPETITION IN MURAL PAINTING.

AN UNDIVIDED grand prize of $5,000 in mural painting is open to all who wish to compete for it, even though they may be of limited means. The Chicago Tribune has offered, through the Art Institute of Chicago, a prize for $5,000 for the design which may prove most suitable for the "city room" in its new plant, the most expressive pictorially and spiritually of significant phases and episodes in the history of journalism. The Art Institute has offered ten free scholarships to painters wishing to compete, as the competition is limited to students enrolled in the Art Institute School. Students entering the school in September, 1921, on these free scholarships or regularly, will be eligible as contestants for the prize.

PERSONALS

GLENN ALLEN, Architect, and Manager of Construction, has removed his office to The Georges Co. Building, corner of Market and Aurora Streets, Stockton, Cal.

FULTON & TAYLOR AND PAUL T. CAHILL have formed a new partnership under the name of Fulton, Taylor & Cahill, Architects, and have removed their office from 631 Hippodrome Building to 8120 Euclid Avenue, Cleveland, Ohio.

HELMLE & CORBETT, Architects, have removed their offices to 130 West 42nd Street, New York City.

WILLIAM J. DILTHEY, Architect, has removed his office from 1 Union Square to 120 Liberty Street, New York City.

HOPPIN & KOEN, Architects, 4 East 43rd Street, New York City, have admitted A. D. R. Sullivant, as an associate member.

FREDERICK B. HINCHMAN AND CARL F. PILAT, Landscape Architects and Engineers, have terminated their partnership but will continue to practice as associates. In town planning problems Mr. Pilat will be associated with Ernest P. Goodrich.

RICHARDSON & GAY, Consulting Engineers, 220 Devonshire Street, Boston, Mass., is a new firm composed of Edward B. Richardson and Harry Gay. Mr. Richardson, formerly of Richardson & Hale, Consulting Engineers, went overseas with the 26th Division and was discharged from the U. S. Army in 1919 as Lieutenant-Colonel, Field Artillery. Mr. Gay has been for the past nine years in the Boston office of Stone & Webster, Division of Construction and Engineering.

LAWRENCE ANDREWS AND ELMER R. COBURN, from the office of Mr. Welles Bosworth, Architect, New York City, sailed on the S. S. Centennial State, June 28, for England. They intend to extend their study of architecture through France and Italy, returning next spring.

W. WHITEHILL, Architect, has removed his office to 12 Elm Street, New York City.

HOWELL & THOMAS, Architects, have removed their offices from 2032 Euclid Avenue to 4400 Euclid Avenue, Cleveland, Ohio.

C. E. VAN KIRK announces that he has opened offices for the practice of architecture at 408 Oppenheim Building, Sixth and Minnesota Streets, St. Paul, Minn. Mr. Van Kirk was a member of the firm of Cederberg & Van Kirk, which, it is announced, was dissolved November 25, 1919.

H. L. SWAN, Mitchell Block, Penticton, B. C., and A. P. Augustine have dissolved their partnership, it is announced. Mr. Swan is now carrying on his practice in the offices formerly occupied by the firm of Swan & Augustine—engineering and architectural investigations and reports, surveys, designs, plans and supervision.

LOUIS KURTZ

LOUIS KURTZ, who has recently been doing some unusually interesting pencil renderings, one of which will be reproduced in the next issue of this journal, is with Electus D. Litchfield and Rogers, Architects, New York City.

Mr. Kurtz was born in New York City, and at an early age he removed with his parents to Long Island, where he lived until recently. He attended public school and high school and then took up the study of architecture in the Ateliers of Ware and Wynkoop and Columbia University, covering a period of five years. He studied music and art for a time while studying architecture in the ateliers.

He worked in the offices of several architects, making an effort to gain a general knowledge of architecture, including construction, superintendence, etc. He then entered the office with which he is now connected, that of Electus D. Litchfield and Rogers. There, under the advice and helpful criticism of Mr. Litchfield and Mr. Rogers, he took up seriously the making of architectural renderings, a branch of the work in which he had always felt an interest. Though Mr. Kurtz is an all-around architectural draftsman he is now specializing in design and in the making of renderings, more particularly those done in pencil.

THE big fault in architectural training today is not in the instruction in the schools but in the spirit in which it is too often received, said M. Paul Guadet, in a short discourse at the Forty-fifth Congress of French Architects held at Paris in June. M. Guadet declared that the courses are excellent and the teachers earnest and competent, and deplored the fact that the student, in the name of art, too often despises science and exactitude in a day when architecture and the profession of the engineer are becoming of necessity, more and more closely related. M. Guadet also stated his belief that the student too often hurries on, forgetting the things he has just learned. He urged that students more thoroughly assimilate the instruction given and keep always in mind the things they have learned.

SOME SUCCESSFUL ARCHITECTURAL CLUBS.

(*Continued from page* 34)

Membership is expanded through the Membership Committee.

The Club property is owned by the Club and is rented out for dances, dinners and conventions.

In the way of club life are included lectures, exhibtons, competitions, etc. There is no life class. The lectures are usually instructive, ranging from technical to æsthetic subjects and followed by a talk around and questioning the lecturer.

The Secretary conducts a free employment bureau not limited to members.

The Cincinnati Architectural Society.

The Cincinnati Architectural Society was reorganized after several years of inactivity, in December, 1920, and has therefore not yet completed the first year of its new life. It has already reached a membership of ninety, and the enthusiasm of its membership assures further growth.

The active membership comes from the draftsmen of the city, although several of the most prominent Cincinnatti architects have rendered invaluable services in the work of the Club. Active membership dues are $10 a year. Twenty-one practising architects (dues $15) are Associate Members of the Club. Junior membership (dues $5) is open to students and draftsmen for one year, after which they automatically pass to Active Membership.

It will be the aim of the Society to bring to a further interest in the Society the practising architects, as it is felt that an opportunity for draftsmen and architects to informally get together is fraught with benefit and inspiration to the draftsmen and benefit to the profession.

The Society rents a suite of three rooms for which it pays $45 a month. One room is attractively fitted up as a club room, with piano, lounging chairs, good pictures, draperies, etc. The two other rooms are given over to work, with drafting tables and stools, black board, etc. A billiard room will be added in the fall.

The educational work of the club includes the work of the Beaux-Arts Institute of Design, competitions for local problems in design, a weekly life class, two weekly classes in elementary and advanced engineering, trips to buildings under construction and monthly lectures.

No amusement features other than the monthly meetings (which are always preceded by a supper in the club rooms) and the usual picnic have been held this year. An exhibition is now being planned for next winter.

Special attention may be called to a recent competition for a Club house for a Municipal Golf Course. The City Park Board co-operated with the Society in the choice of subject. An actual site was chosen and visited by the contestants. Prizes of $30, $20 and $10 were offered and excellent designs submitted, the subject evidently appealing, both on account of its practical nature and on account of the opportunity it offered for satisfactory treatment. Being a subject of general interest the Society intends to reproduce the winning designs in the Cincinnati papers, which should not only stimulate interest in good architecture for the public parks, but advertise the Society.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

AT the end of the school year the Department of Architecture of the Massachusetts Institute of Technology is able to show marked progress and the statement made by Dr. William Emerson, Head of the Department, at the dinner given by the Alumni Society of the Department of Architecture, shows a close study of the means for making still further progress during the coming year.

An outline was given of some of the points which the Committee on Design believes can be bettered in the teaching of design and should be applied in the coming year.

This outline was preceded by a statement of the need for lengthening the period of instruction in architecture and of the ways in which an increase in time can best be used, if secured.

It has not seemed wise to the Head of the Department to suggest special entrance requirements for those students intending to follow the architectural course, on the general ground that such requirements, where they apply to professional subjects, could not be taught advantageously in high schools at the present time and would be given preferably under the direction of the Department. It was pointed out, that it might be desirable to ask higher entrance requirements in such subjects as English, French, and possibly General History, so that the time taken in the Freshman year to compass this work might be given to the preliminary steps in the professional work, and thus time might be saved.

The courses that the Head of the Department wishes to see made a part of the Regular curriculum even on the present basis, are in Modelling, Landscape Architecture, and Town Planning, in addition to the course in Architectural Humanities that has been given this year. All of this can be made increasingly effective by a closer co-ordination and co-operation between the teaching of these different professional subjects in the Department itself.

The fundamental change proposed in the teaching of Design affects particularly the senior and graduate years, it being the belief of the Committee on Design that a student who arrives at the senior year has achieved considerable skill as a draftsman; and it is therefore not only unnecessary but undesirable to have him spend the necessary time on drawing and rendering in elaborate detail the formal projets that have hitherto filled all the Design periods, with the exception of those set aside for the twelve-hour sketches. Two projets a term, making six in the school-year, have been the quota up to the present time. It is suggested that only one of these be given in each term, thus freeing five to six weeks each term for short problems, which will give the much needed opportunity to acquaint the students with a greater variety of programs and subjects of composition, and accustom them to the necessity for intensive thought during a brief period of time on a variety of subjects. Certainly teaching students to think is one of the great responsibilities of an educational institution, and this is more likely to be accomplished by increasing the opportunities for applying their minds to programs on specific subjects. Such a change in the teaching of design would offer an opportunity to introduce a problem in archaeology in each grade, and the teaching would be further accompanied by a careful preparation beforehand of the plates and reading immediately pertinent to the problem in hand, the subject of the next projet being announced in advance so that each student with the help of his instructor would have a chance to thoroughly equip himself with useful data in the library.

In conjunction with this change of method it is proposed to make the thesis of more significance than it has been up to the present time, and with the help of carefully chosen subjects, selected by the teaching staff, enable the students to show in the development of their designs, the results of the teaching they have received in construction, history, and research, the latter accompanied by a carefully prepared paper so that the thesis shall indeed be a review of their professional work. In this manner it would express the belief that is gaining ground throughout the educational world that the degree at the end of a period of study should not merely be an indication that certain courses of study have been passed, but an assurance to all interested of satisfactory capacity and accomplishment by the holder.

OWING to a printing error one of the illustrations in the July issue of this journal, Figure 16, page 26, was inverted, and the fact was not discovered until the whole issue had been published. As the error is one that is obvious to anyone familiar with architectural detail, no confusion of the readers can have been caused, but we regret that the error occurred.

QUERIES

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

Question—Can you refer me to any magazine articles or other material dealing with the architectural treatment of bridge arches, bridge abutments, retaining walls, and similar heavy masonry construction, whether of stone, brick or concrete, and whether for stone, concrete or steel bridges? G. G., Lawrence, Kansas. *Answer—The Architectural Forum,* Vol. 31, p. 65; "Architects and Big Bridges," Vol. 31, p. 218; *The American Architect,* Vol. 116, "Bridges in Boston's Parks," p. 239; Vol. 115, "Architects as Bridge Builders," p. 23.

Question—Can you refer me to some articles concerning office management? J. P. K. & Son, Worcester, Mass. *Answer*—"The 'Business' of Architecture," a series of articles in *The Architectural Review,* 1920, by Howard Dwight Smith; recent articles concerning office management from *The American Architect* are as follows: "Methods of Office Accounting," Vol. 113, 1918; "The Checking of Estimates," Vol. 118, 1920; "The Architect and Organization," Vol. 111, 1920; "The Business Man Architect," Vol. 108, 1917; "The Fundamentals of Specification Writing," Vol. 111, p. 167-172, 173-174.

Question—Can you give me some information regarding co-operatively owned and operated apartment houses? W. F. G., Omaha, Neb. *Answer*—Vol. 32 of *The Architectural Forum* gives the following articles on this subject: "Financing and Operation, Co-operative Ownership," p. 240; "Financing Buildings, the Co-operative Method," p. 128; "Co-operative Owning and Financing of Group Houses," p. 161.

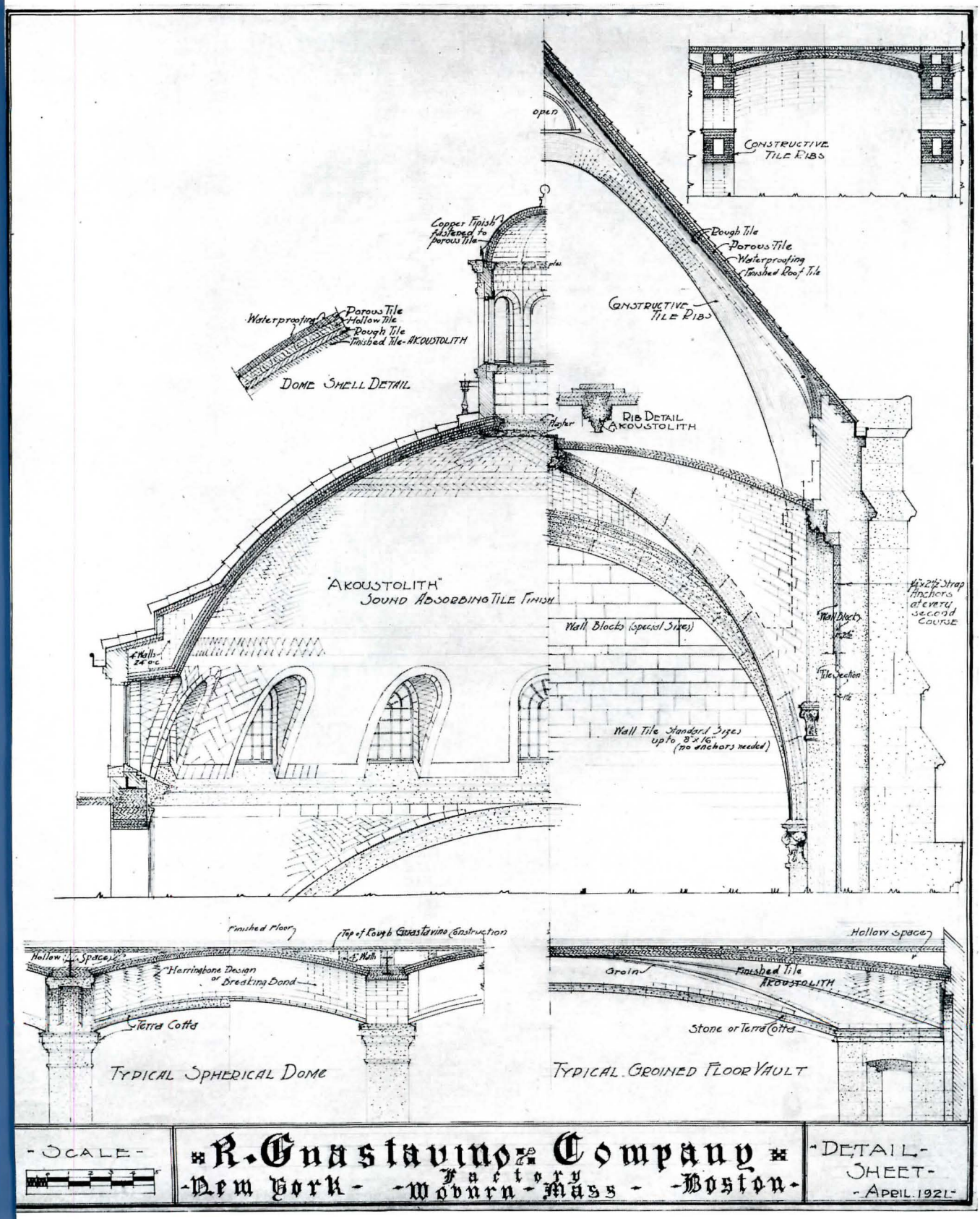
Question—Can you give me some information regarding hotels of the tourist type? W. I., Augusta, Ga. *Answer*—We find no references to this special class of hotel but give the following references on hotels, from which matter applicable to this class may be gathered: "The Modern Hotel and Its Furniture," Eberlein & McClure, in *Good Furniture,* 1916, Vol. 6, p. 272-293; "Hotels," *The Architectural Review,* 1913, old series, Vol. 19, p. 37-172; "The Modern Hotel," *Good Furniture,* 1916, Vol. 6, p. 315-339; "Ideal Lighting for Hotels," by F. Laurent, *Architecture and Building,* 1916, Vol. 48, p. 68-70; "Hotel Building," *Architecture and Building,* Vol. 47, p. 105-125; "The Statler Idea in Hotel Planning and Equipment," *The Architectural Forum,* 1917-1918, Vol. 27, p. 115-124, 165-170; Vol. 28, p. 15-18; "Hotel Pennsylvania," New York, *The Architectural Forum,* 1919, Vol. 30, p. 85-108; "The World's Newest and Largest Hotels," *The Architectural Review,* 1919, Vol. 8, p. 55-75, and "The Hotel Number" of *The Architectural Review;* "Hotel Commodore," New York, *Architecture and Building,* 1919, Vol. 51, p. 30-35; "Meeting the Demand for Hotels in the Smaller Cities," *The Architectural Forum,* 1919, Vol. 31, p. 161-174; "Hotel Ambassador," Atlantic City, N. J., 1920, *Architecture and Building,* Vol. 52, p. 73.

Question—Can you give me the names of three or four schools in New York City at which I can study architecture? H. McA., Westfield, N. J. *Answer*—Four good schools that we know of for the study of Architecture in New York City are: School of Architecture at Columbia University, West 114 to 121 Sts., N. Y. C.; Pratt Institute, School of Design and Applied Arts, 215 Ryerson St., Brooklyn, N. Y.; Cooper Union, 4th Ave. and 8th. St., N. Y. C.; Beaux-Arts Institute of Design, 126 E. 75th St., N. Y. C.

Question—I would like to get a list from you of about six or seven places where court houses ranging from one-half million to one and one-half million dollars have been built in recent years. W. E. H., Hutchinson, Kansas. *Answer*—New Haven County Court House, by Allen & White, built 1915; Supreme Court House, Appellate Division, New York City; U. S. Post Office and Court House, New Haven, Conn., Commodore J. J. Rogers, Architect; Richmond County Court House, St. George, Staten Island, N. Y., Carrere & Hastings, Architects; The Preble County Court House, Easton, Ohio; Hiestand & Richards, Architects; McCarty & Bulford, Associate Architects; Hamilton County Court House, Cincinnati, Ohio, Rankin, Kellogg & Crane, Architects.

Question—I am a student at school taking the architectural drafting course. I would like to get some good books on the subject of designing. Would you suggest a list of books for me. E. B., Manchester, Conn. *Answer*—Among the better books on Architectural Composition are: J. B. Robinson's "Architectural Composition," D. Van Nostrand, Publisher, 1908; J. V. Van Pelt, "Essentials of Composition," MacMillan Company, Publishers, 1913. These books are slightly advanced for the student in school, who is learning drafting. Design must be acquired by the architect through long association with architecture, photographs, and drawings that appeal and details which are found to suggest others in the composition upon which you are working. For that reason, practical exemplars such as measured drawings oftentimes supply better material for instruction in design. The principles and the theory of design are more readily understood after this preliminary training has been had. For instruction in indication and design of types see F. E. Wallis's "A. B. C. of Architecture," Harper & Bros., Publishers, New York. (In this book, the author takes up in succession the great styles of architecture and shows briefly how one form grew out of another; how distinctive features were created and gave rise to the various styles.) Varon's "Indication in Architectural Design," W. T. Comstock Co., Publishers, 1916; Ware's "Drawing, Designing and Thinking," Architectural Record Co., Publishers, 1909; "Essentials in Architecture" John Belcher, B. T. Batsford, Publishers, London.

THE Art Students League of New York has issued its catalogue for the season of 1921-1922, giving information about the courses offered and many interesting illustrations of the work of students in drawing, painting and sculpture. The frontispiece is a drawing, by George A. Picken, of the American Fine Arts Building, in which the headquarters of the League are located.



- SCALE -

R. Guastavino Company
Factory
New York - Woburn - Mass - Boston

- DETAIL SHEET -
- APRIL 1921 -

THE SPECIFICATION DESK

A Department for Specification Writers

WHAT THE SPECIFICATION WRITER WANTS TO KNOW.

By Louis R. Holske.

Roofing—While the shingle roof is a carpentry item, one point in connection with shingling will be discussed. The architect in considering a shingle roof should, in the writer's opinion, require the use of galvanized, cut nails, because it appears that they last longest. This seems to be particularly needful in using Cypress shingles for apparently some element in the wood is very destructive to steel.

Slate Roofing—In considering slate for roofing the architect will want to know something of its quality and the possible range of colors. As to the thickness of slate to be used, æsthetic requirements aside, the architect should insist that it be not less than ¼" thick. He will require also that the slate have cut (rough) edges and a rough surface, that all nail holes be punched and countersunk at the quarry. He should require the slates to be secured by cut nails of either copper or composition metal. As to laying, he will insist that the slate be laid on one thickness of saturated roofing felt, and with a 3" cover, i.e., each course to extend 3" under the second course above it. Also for a distance of 1'-0" each side of hips, valleys and ridges, the slate to be bedded in elastic roofing cement.

Tin Roofing—In specifying tin for roofing the architect will want to know something of the base metal, and the weight of the coating. The writer prefers a charcoal iron base to one of steel, and the material should have what is called in the trade a 40-lb. coating. Other points are the size sheet proposed to be used, whether 14" x 20" or 20" x 28". The architect should not permit nailing through the sheet itself, but through tin cleats having tails which are locked in the joints, and there should be not less than three to each sheet. On sloping roofs tin should be laid with standing seams. The tin should be given one coat of paint on the under side before laying, and two coats should be applied immediately after laying. One should not wait until rust spots appear as some roofers advise. The writer prefers an iron oxide paint.

Promenade Tile—In considering promenade tile for use the architect will inquire as to its quality. He will note whether its surface is true and edges square, and he will split it to see its internal characteristics. He will expect to find it homogeneous in structure and approaching vitrification. He will prefer a tile having its under side heavily scored. The roof surfaces under the tile should be waterproofed by a 5-ply coal-tar-pitch and saturated felt waterproofing, and the junctions with walls should be flashed and counter-flashed with copper. Also the flashing should be secured on the waterproofing by two-ply work cemented in place. A setting bed of one-to-three mortar one inch thick on the waterproofing should be required, in which to bed the tile and the joints should be grouted with a one-to-two grout, the tile to be cleaned off immediately after grouting. One other thing will be required which is of the utmost importance, viz.: expansion joints. They will be required at intervals of not over 25'-0" in both directions, and made of either soft copper and a bituminous material having a high melting point, of copper alone, or of the bituminous material alone. Good joints may be made by any one of the three methods.

Glazing—The architect should familiarize himself with the range of glass the market affords. Glass is made in great variety, of which the following list, although not complete, will give some idea.

Plate glass in standard thickness (¼"), and also a grade made by some factories called "car plate," which is $\frac{3}{16}$" thick. Plate glass ½" and thicker is made on special order only.

Wire glass in standard thickness of ¼". Also made in ⅜" thickness. Thicker glass is made on special order only. In addition to rough, ribbed and polished, wire glass is made in a great variety of figures.

Rolled, figured glass is made in standard thickness of ⅛" and also $\frac{3}{16}$" thickness. Among the patterns obtainable are the following: Maze, Colonial, Florentine, Cobweb, Rippled, Syenite, Ondoyant, Holly, Romanesque, Muranese, Pyramid, Rough, Liberty, Ribbed, Hammered, Cathedral.

The Prismatic glass is made in plain ribbed and figured or ornamental.

The cylinder or blown glass is made in single strength about 16 oz. to the square foot, double strength about 24 oz., and also 26, 29, 34 and 39 oz. The latter runs $\frac{3}{16}$" in thickness.

In addition there is now on the market a very good glass corresponding in thickness to the cylinder glasses, which is made by a new process, i.e., drawn flat through rolls. It is called "flat-drawn glass."

Having selected the glass to be used the architect will require each kind to be free from the defects peculiar to it.

If using plate glass, and for high-class work, what is known in the trade as "Silvering quality," which is free from all defects, should be required rather than "glazing quality," which will permit glass having bubbles or seeds. If using cylinder glass the specification writer should require it to be free from waves and bubbles. This requirement, while customary in specifications, is a difficult one for the contractor to fulfill as the run of the glass will produce many pieces having waves. It is possible to select the glass, but this requires so much handling, which must be done with great care, that it adds very much to the cost. It is important to acquaint oneself with the sizes of the sheets of the various kinds of glass as made in the factory in order that in designing one may use it with as little waste as possible. Another point or two will occur to the architect regarding glass. He will insist that wire glass be set always with the twist of the mesh in a vertical position and that the glass in windows in service spaces or bath or toilet rooms, which should be screened against the gaze of persons outside the building, shall be translucent, either figured or ground. In using ground-glass he will probably give preference to an emery-and-acid grinding which gives a very soft finish. The details of setting the glass are important. The sash rebates should be given a coat of white-lead paint before glazing is done, to prevent the wood absorbing too much of the oil in the putty. All glass should be cut a little short of the rebate sizes in order to avoid forcing it into place, thereby creating in it a spring or bow. Plate glass should be blocked up in the rebate at the bottom on two (2) soft pine blocks. For the exterior glazing it is preferable that all glass, including plate glass, be secured by zinc brads and putty, rather than by mouldings and screws, as the water will get in behind the mouldings and quickly rot it. The zinc brads, in glazing, should be spaced not over 10" apart. Knowing the faults of common putty the architect will insist on the use of a high-class elastic glazing compound, of which there are a few on the market notwithstanding the increased cost. The life of common putty is comparatively so short that the higher priced material is economical in the long run. Should any mirrors be used they should be the best quality of "patent back" plate mirrors. Should they be applied on plaster or masonry, the surface back of the mirrors should be given two coats of an asphalt water-proofing paint. When mirrors are divided into smaller lights by muntins, the mirror should always be in one piece, with the muntin planted on the face of the mirror to avoid distortion of the reflection.

Painting—In approaching this subject exterior work naturally first presents itself and will be discussed first. The choice lies, of course, between a well-made ready-mixed paint and one mixed on the job. There are quite a few good ready-made paints on the market, which if applied as taken from the can will give good results, but, as they usually carry the highest limit in oil, resulting in a thin coat (a good characteristic), the painter is very apt to pour off some of the oil before stirring in order to obtain a denser mixture which will cover more easily. This is an injustice to the manufacturers and is responsible in a measure, for the poor opinion of ready-made paints many people hold.

If the architect decides to use a ready mixed paint, he may well insist on knowing the formula used in its manufacture. Many paints contain what is known as a filler, an inert material such as silex and in varying proportions. There is considerable difference of opinion among the paint people as to the merits of the filler, some agreeing as to its desirability, but not its extent, while others maintain a paint is better without it. The pigment in some paints contains a high percentage of inert matter which would seem in such quantity to injure the paint. If used the writer believes the inert matter should be limited to 10%. If the architect decides to use a paint mixed on the job, he may well insist on certain ingredients being used and in certain proportions. For the priming coat, in that case, he should require white lead paint and not permit the use of an ochre primer. For the vehicle for the priming coat, he should require 80% of linseed oil to 20% of pure spirits of turpentine. Increase slightly the oil content and lower the turpentine content in the second coat, reaching proportions of 90% and 10% in the final coat. For the pigment one may well use white lead and zinc oxide, both ground in oil, and in proportions ranging from 80% or 85% of the former to 20% or 15% of the latter, according to conditions. It is important to require all coats to be well brushed-out to avoid heavy coats, a bad practice in painting. Painting should not be done when the wood is damp, or in foggy weather, or in damp weather, as immediately after a storm. Require not less than three days to elapse between coats, and preferably six.

After the priming coat is applied, nail holes should be putty-stopped with a high grade putty, before the second coat is applied.

Interior Painting—The first requirement for an interior paint is that it finish flat. The flatting medium usually being turpentine, a certain amount of linseed oil must be replaced by it to obtain a flat finish. At the same time turpentine has no binding qualities, being eventually lost, so that sufficient linseed oil must be retained as a binder. Indeed in the priming coat the oil should be predominant in the vehicle. As to the pigment, the softer material, white lead, should be in excess in the priming coat, which will necessitate more oil as noted above, while the harder material, zinc white, should be in excess in the finishing coat. Bearing these principles in mind, paint for interior use should be made to conform to them. The proportions of white lead and linseed oil to zinc white and turpentine may well be about three to one in the first coat, about equal in the second coat, and in the third coat, the proportion in the priming coat may be reversed, i.e., the zinc white and turpentine may be in the proportion of three to one of white lead and linseed oil. The material in each case must have a good dryer added to it, in extent about one pint to each 100 lbs. of pigment. The writer demands dryer free from gum, rosin or petroleum extracts and favors a white turpentine dryer. After the priming coat putty-stopping should be done, for which a mixture of white lead, whiting and linseed oil may be used. Each coat of paint should be required to be well brushed out, without runs, drops or sagging of the material. The final coat should be required to be stippled to remove brush marks. In painting plaster work the first coat will have a much higher oil content as there is considerable suction in a plaster wall, particularly in work which has been trowelled insufficiently. This may be overcome by the judicious addition of more dryer.

PUBLICATIONS OF INTEREST TO THE SPECIFICATION WRITER.

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

Roof Flashing Handbook—Effective flashing and improved flashing methods are shown in this handbook by drawings, illustrations, and texts. Construction details of the Barrett Flashing blocks with roofing specifications are given in detail for installation of Barrett Flashing forms, strips, elastigum and for various types of curbs. Illustrations and text show Holt roof and dampproof treatment of parapet and fire walls, use of roofs over various plies of board sheathing are given to aid the specification writer, and the man on the job. The book measures 6 x 9 inches, and contains 48 pages, and is issued by The Barrett Company, 17 Battery Place, New York.

The Barrett Specification—In a folder of four pages the use of types "AA" and "A" roofs of tarred felt, pitch and gravel or slag are shown; drawings in detail of plies of materials show dimensions of overlap and construction necessary over board sheathing, and over concrete for extreme durability. The size is 8 x 10 inches. The booklet is issued by the Barrett Company, 17 Battery Place, New York.

Ornamental Iron Fence and Entrance Gates—Nearly 150 designs of ornamental Iron Fence and Gates are presented in a booklet of 80 pages, size 9 x 12 inches, by The Stewart Iron Works Company, Cincinnati, Ohio. The designs shown are appropriate to the grounds which they enclose, showing photographic illustrations of wrought iron gates and fences.

Fuel Oil for Homes—The General Oil Burner Sales Corporation of 27 East 40th Street, New York, has issued a text on fuel oil for the home. It contains an analysis of use of petroleum, coal and wood, advantages of cleanliness and temperature control, less room, attention, etc. The booklet numbers 16 pages and measures 6 x 9 inches.

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The Williamson Underfeed—Advantages of feeding fuel from below are shown in a very graphic way in a 32-page booklet, measuring 6 x 8⅞ inches, issued by the Williamson Heater Co., at 335-339 West Fifth Street, Cincinnati, Ohio. The illustrations show furnace with casings removed showing the operating mechanism for feeding the furnace with coal from below, and details of parts. The text describes the parts and advantages of this system.

Handbook for the Man on the Job—This booklet with text gives a short general description showing the ease of handling of National Metal Molding by wire men, application to the small job problem; how the fittings can be used under all conditions of wire use and the book shows drawings of installations. The book was designed to be conveniently carried out on the job, for direction of work. Size 4⅜ x 6 inches. 102 pp. Issued by the National Metal Molding Co., Pittsburgh, Pa.

Hester System Store Front Construction and Design—Folio of Detail Sheets. Full size detail sheets, a, b, c, and d, of hollow metal store front construction giving full size sections of head, transom, sill and jamb with moulding profiles and bar cover to house awning construction. Sheets 18 x 22½ inches. Published by The Brasco Mfg. Co., Chicago, Ill.

The Blue Book of Plumbing—Catalog illustrated in color. Size 5x7 in. 450 pp. Published by The Trenton Potteries Co., Trenton, N. J.

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The Journal of the American Institute of Architects

313 East 23rd Street, New York, N. Y.