THE RELATIONSHIP BETWEEN THE ARCHITECT AND THE DRAFTSMAN

By R. Clipston Sturgis

As the success of an Architect who has passed the early stage of doing most of the work with his own hand depends very largely on the ability, faithfulness and intelligence of his draftsmen, his relations with them are of prime importance.

One may put these relations under six heads. In the office:

(1) Teaching the fundamentals of plan and of design.

(2) Teaching the fundamentals of construction.

(3) Teaching the fundamentals of the drawings as the guide for work in the field.

(4) In all this establishing a spirit of friendly cooperation.

Outside the office:

(5) Encouraging and aiding reading, study and a love of the arts.

These five subjects will be taken in more detail.

(1) The fundamentals of plan and design. However thorough the training of a student in the schools, actual office practice is a new field and must be learned. The plan is no longer a school problem, but is to become the definite material which will enable estimators to understand clearly what construction, material and workmanship is called for, and which will enable mechanics to know with certainty just what the Architect desires, and requires, and what the Owner has agreed to pay for. This needs clear thinking on the part of the draftsman. He must for the time completely subordinate draftsmanship as an art to draftsmanship as a business proposition. The result is to be, not a poetical effusion, nor a burst of oratory, but a legal document which will stand the test of use. The Architect can be of great use to the draftsman here in teaching him to look at the drawing from the point of view of the estimator, the contractor and the mechanic. There should be no unnecessary lines added, and there should be no essential lines omitted. Detail, once drawn carefully and completely, should not again be drawn where it is repeated; the time which would be spent in this is better spent in drawing the one example as completely and perfectly as the scale permits. The places where it is repeated should be so clearly marked as to be unmistakable. This one thing is used as an example. It is typical of many others marking the workmanlike, businesslike character of what are properly called “working” drawings. The Architect’s own drawings should illustrate this, for the draftsman.

Under this first heading comes design and here the Architect can help the draftsman best by encouraging him to develop sketches in the spirit of the design and giving him time for study in the library, with books and photographs.

(2) The fundamentals of construction. The plan for a modern building is a complicated balancing and reconciling of a great many factors, and those major trades which influence the construction should be embodied in the original drawings, and
must never be lost sight of as the drawings are developed. Masonry, steel work, carpentry, roofing, plumbing, heating and power, all require consideration in planning the structure. Here again the student will have acquired but little to help him in the schools, and must depend on the architect to learn to handle all these intelligently.

His drawing must be of the head as well as of the hand, and he must remember, points of support, spans, the bearings for loads, the spaces necessary for plumbing and heating pipes, shafts for various purposes, and never lose sight of these as he works from small scale to large, and from large to full size. The architect who has been through the mill, and made for himself all the usual mistakes, can help the draftsman to avoid some, and should not be
over-harsh with the draftsman for the mistakes he inevitably makes. It is one of the most amazing things in the profession that just when you and your trained draftsman have got to the point when you do not make the common mistakes, new draftsman come in and the old mistakes again creep into the working drawings. Some architects have devised elaborate systems to help their draftsman to avoid the most obvious and common ones, but with no great success. The architect must teach the draftsman to think.

(3) Teaching the fundamental of the drawings as the guide for work in the field. The architect can help the draftsman most by giving him the opportunity to see work in the field and understand the significance of lines and figures, and their interpretation. Under our conditions it is not easy to do this. To take a draftsman from his board where he is earning his salary and send him to the job, not to inspect, but to study and learn, is obviously something that cannot be done except at someone's expense. A young draftsman, earnest and eager to learn would need only encouragement from the architect to make such visits in his own time, or to get time off with out pay for the purpose. It is a valuable and indeed almost necessary experience and the architect owes it to his draftsmen to see that they get it.

(5) Outside the Office. The architect may well guide and encourage the draftsman's study and reading and above all free-hand drawing. The latter is a very valuable asset and one which everybody can acquire, as easily as he learns how to write. Facility in free-hand drawing is much more common than it was forty years ago, but even now the value of rapid and accurate draftsmanship is not valued as highly as it should be and the architect can do much in helping his draftsmen to obtain that.

One cannot do more than suggest, in a broad way, what the relations should be between architect and draftsman and one has not so far touched on the reverse side, the draftsman's obligations toward the architect. This is partly because draftsmen as I have known them have shown a very high standard of appreciation of their work, and of the obligations of service. The draftsman generally has a whole souled interest in his work, and his failures are largely those which are the result of inexperience, or of failure to remember that he is working for the eyes and head of a mechanic and not for those of a school professor.

What has been said, however, will apply very differently in practice in offices of different sizes, but the end that every architect has in view is to have a drafting room that will turn out drawings as well or better than he could himself, as fast or faster, and without any of the mistakes which even he makes at times. The hardest architect to work under is the man who never draws, therefore never makes mistakes, and the best is the one who draws, works with and among his men, and is in constant touch with the drawing-boards. Example and encouragement are better stimulants than abuse.

The subject of the relationship between the architect and the draftsman is one which directly concerns the readers of Pencil Points. We have arranged for a series of discussions of this subject by a number of America's leading architects and will present a paper in each issue until further notice. Contributions to the discussion will appear by the following:—J. Monroe Hewlett of New York, Walter W. Judell of Milwaukee, Albert Kahn of Detroit, Edwin H. Hewitt of Minneapolis, H. Van Buren Magonigle of New York, F. R. Walker of Cleveland, Charles D. Maginnis of Boston, Myron Hunt of Los Angeles, Leon C. Weiss of New Orleans, William A. Boring of New York, William Leslie Welton of Birmingham, William Emerson of Boston, and Irving K. Pond of Chicago.
THE DESIGN AND CONSTRUCTION OF STAINED GLASS WINDOWS

By Alfred E. Floegel

Editor's Note: The author of this article was a Fellow in Painting of The American Academy in Rome during 1922-1925, and while in Europe made a special study of Stained Glass, Mosaic, and Fresco. He is, therefore, well qualified to write on this subject. In future issues of Pencil Points he will take up Fresco and Mosaic Decoration with special reference to the importance of Co-operation between the Architect and the Painter.

Many books have been written on the subject of stained or painted glass, in which the history of its development as an art and the technical aspects of its manufacture have been covered very thoroughly. The subject is a vast one and it is obviously not within the province of this short article to attempt to cover the whole field. There are, however, some features relating to the design and construction of stained glass windows which may be advantageously described in brief for the benefit of architectural draftsmen. It is the author's modest hope that the information here set down may be of assistance to them when they are faced with this special architectural problem which is likely to occur in any architect's life.

When we think of stained glass we are prone to conceive of it as altogether ecclesiastical in its uses. True, it was developed by the mediaeval church builders to solve a part of their particular problem of decoration, and was brought by them to a glory of perfection exemplified in the great cathedrals of Europe.

Though the greater number and the most beautiful windows, however, belong to the church, there is no logical reason why we should confine the application of this highly decorative art entirely to churches today. Indeed we do not, for we find stained glass, more or less excellent, used increasingly in public buildings, libraries, schools, and even residences.

Although it is popularly supposed that the secrets of the mediaeval stained glass workers are lost to us, the fact is that the craft is at present flourishing, in this and other countries, maintained by an appreciable number of shops working under the direction of master craftsmen and artists who are endowed with the true love of their art. They can turn out glass, moreover, which has all the quality of the old glass. If our modern windows are inferior to the mediaeval product it is not the fault of the glass makers or craftsmen but that of the artists, who are trained mostly to work in other media and who have, except in isolated instances, paid little attention to stained glass as a means of artistic expression. Public taste has also played its part in holding down the art, but happily conditions in that respect are improving.

It may be asked, "Where are stained glass windows to be appropriately used?" History and tradition find a place for them in churches but as I have stated above, there is no real reason why they may not be used in many other types of buildings. The art is an exceedingly decorative one, very closely allied with that of mural painting. It has individual decorative characteristics, which can be used to enhance the beauties of architecture or conversely abused to produce incongruity and ugliness. Wherever we have a room in which it is considered desirable to introduce color decoration and where at the same time we can afford to allow a more or less subdued light, stained glass may be used as the color feature. It must not, however, be allowed to clash with other color which may be in the room. Color wall decoration, juxtaposed to a stained glass window should be broadly treated so that it will not compete with the glass for attention.

Several principal factors influence the design of any particular window. First and most important is the surrounding architecture, which sets the period and determines the shape of the window. Gothic, Romanesque, and Renaissance windows are familiar and obviously should be used where the architecture is of like character. There are, however, possibilities in "modern" architecture for the development of "modern" design in stained glass, just as such men as Edgar Brandt have de-
Chartres, Portion of the Madonna Window
From the Color Rendering by Alfred E. Floegel
veloped the modern spirit in decorative wrought iron. The excellence of the result depends of course upon the genius of the individual designer.

The second factor, partly dependent on the first, is the position of the window both in respect to the strength and direction of light and to the direction and distance from which the glass is to be viewed. In a church, where the desirable effect is one of dimness and mystery, the light transmitted by the glass will be comparatively low in intensity and colored glass will predominate. In a library, on the contrary, the window will very likely be made up largely of light glass. Again, the design will be influenced by the question of whether the glass will be seen closely or at a distance, at the eye level of the observer or well above him.

The third consideration is one of architectural or artistic judgment; that is, whether the color design or the pictorial subject is to predominate. In memorial windows it is usually necessary to stress the subject; the color, while it is present, is secondary. Some of the most beautiful windows in existence, however, depend for their beauty almost entirely on the vibrant loveliness of their color. Their subject matter is divided up into small panels at small scale so that in order to concentrate on the
pictures it is necessary to approach closely enough
to get away from the magic fascination exerted by
the color harmony of the whole.

The first step to be taken after it is determined
to install a window is for the architect to consult
with the painter or stained glass man who is to carry
out the work and inform him of the
conditions. After talking over the
suggested ideas for the subject, in-
tensity of light, color scheme and so
on, the painter makes several studies
at small scale in color. In further
consultation with the architect it is
decided which of the studies is to be
developed. The painter then makes a
careful finished drawing in color,
showing glass, lead lines, and “arming” or iron framework. In doing
this he exercises his talents as an
artist, making the line and color com-
position as beautiful as his ability
permits.

It may be well to point out here the
influence of the lead lines upon the
design as a whole. The lead lines
are used, of course, primarily to hold
the different colored pieces of glass
in position. Their “raison d’être” is
therefore utilitarian but they do con-
tribute a great deal to the effect pro-
duced by the window. In the first
place, they must be regarded from the
standpoint of line and space com-
position. They must not be obtrusive or
crush the composition of the sub-
ject. Considered without the glass
they must form a pleasing design in
which variety, rhythm, and line har-
mony are present. They are partially
determined by the outlines of the sub-
ject but there are many areas of a
single color which must be broken up
pleasantly into pieces small enough
to be in scale with the rest. Secondly,
the lead lines affect the color of each
piece of glass in the window. Two
pieces of different colored glass held
side by side do not give the same
effect as they do when the black line
of the leading is interposed between
them. The dark lead intensifies the
color value of each piece very mate-
rially and this fact has to be borne in
mind all during the process of making
the window.

When the color rendering is finally
acceptable to the painter and to the
architect, a full size black and white
drawing of the entire window, (on
several sheets if it is large) known
as the “cartoon”, is made. This cartoon is generally
made on detail paper with charcoal or crayon, and
shows the actual shape and size of every piece of
glass in the window. It may be “squared up”
from the color drawing or may be enlarged by
photostating. In fig. 1 a cartoon may be seen on
the wall behind the artist.

When the work has been carried to this point the
process becomes for a while mechanical. The car-
toon is turned over to a workman who makes from
it two carbon copies by tracing over
all the lead lines. By reference to
the color sketch each space repre-
senting a piece of glass on one of
the resulting picture puzzle diagrams
is lettered with the initial letter of
its color. Each space on both dia-
grams is also given a number to make
assembling of the glass easy. The
diagram marked for color is then cut
up into its individual pieces either by
means of a pair of double bladed
scissors or with a double bladed
knife (see fig. 5). The space be-
tween the blades of both of these
implements is equal to the thickness
of the cross bar of the H shaped
section of the leads. In this way
the patterns are made so as to allow
the proper space for the leads be-
tween the pieces of glass when they
are assembled. The other diagram
is retained and is used later on when
putting the window together.

We now come to the question of
selecting the glass to be cut up to fit
each individual piece of the pattern,
and this makes advisable a short dis-
cussion of the different varieties used.
Until this time I have referred to the
material we are considering as
stained glass. Properly speaking
there is a great difference between
stained and painted glass, though the
word “stained” has by popular usage
long been accepted as a term to in-
clude both. Stained glass or grisaille
is either white or colored glass which
has been treated with a stain, made
up usually of silver salts, and then
fired. The result of this staining
process is to produce some shade of
yellow or orange which may be either
evenly distributed or graded. If
stain is applied to colored glass the
resultant effect is to produce the hue
which would be obtained by combin-
ing the original color of the glass
with yellow. Blue glass, for ex-
ample, when stained becomes green.
Painted glass is either white or
colored glass which has been painted
with metallic pigments and fired.
Both sorts of glass are usually,
though not necessarily, present in most so-called
“stained” windows.

Glass which is of one color throughout as it comes
from the makers is known as pot-metal glass. Some
colors such as red or "ruby" are too dense to be used solid and are hence made up of white glass coated, or flashed, with a thin layer of colored glass. This is called flashed glass. By flashing one color on glass of another color it is possible to produce many agreeable effects. Plated glass, a third but less common variety, is made up of two sheets of pot-metal glass, of different colors, closely united together. Doing this produces a tint different from that which would be obtained by fusing the two colors together in the melting pot.

Stain penetrates the glass to a measurable depth and is as transparent as the glass itself. The paint, however, only adheres to the surface and is always more or less opaque.

In selecting glass for the elements of the window, the artist, with full knowledge of the effect he wishes to produce, picks out pieces which will give him the color and texture he wants. To fill any certain space he may decide to use colored pot-metal glass, or a piece of white glass upon which he can paint, or a piece of flashed glass which may be etched where white lines or areas are necessary. Every piece is selected with great care and always considered in reference to the adjoining pieces. This matter is of the greatest importance and requires all the skill and judgment the artist is able to give it.

The glass once selected, the proper pattern is laid upon each piece and the workman corrects it to shape with a diamond or glass-cutting tool. When all the pieces are cut, they are assembled on a large sheet of plain white glass set in a frame, under which the aforementioned numbered diagram of the whole design is placed for reference. Each piece is then fastened in position on this glass "easel", with melted wax composed of beeswax and resin. Figure 3 shows this process, together with an assembled cinnabar foil already on an easel, where the dots of wax and the spaces between the pieces to allow for the lead lines are clearly evident. Of course, only a comparatively small window or a panel of a window can be assembled in this way at once. The assembled design is now placed against the light and the artist inspects it critically. If any pieces of glass are of the wrong color or value, new pieces are cut and put in their places. When all the glass is satisfactory it is placed upon the cartoon, either piece by piece or several pieces together, and the outlines of the design are traced with mineral color which can be fixed in place by firing in the kiln. This color is usually mixed in oil and is ordinarily brown.

Those pieces which require further painting to produce modelling of the forms are then painted over with a flat wash of water color paint mixed with a little gum arabic. This does not in any way affect or disturb the oil paint outlines previously applied. The modelling is done by stippling with old blunt brushes held at right angles to the surface. Each dab of the brush removes some of the paint and gathers what remains into numerous little dots. By a dexterous use of the brush, portions of color of different degrees of thickness are removed according as the shadows, halftones, or lights are required. Wherever the glass is left bare by a complete removal of the color, we get the lights; the places which the brush has spared give the shadows. Partial removal of the color gives the halftones. The operation is what the French very aptly call "peinture par enlevage". In figure 4 this process is shown under way on two circular panels mounted on an easel. For a larger composition the stippling would necessarily be done on one or a few related pieces at a time.

When the stippling is all done the glass is ready for firing. It is laid, painted side up, on a large sheet-iron tray upon which there is a layer of whitening or plaster of Paris to protect the glass from danger of fusing to the metal. The tray is then slid into the gas furnace or kiln which is run up to a temperature of about 1200° Fahrenheit. The operator watches the condition of the glass through a small aperture and when the colors reach the fusing temperature the gas is shut off and the glass is allowed to cool. When cooled it is ready for assembling and the paint is permanently set so that it cannot be rubbed off. If it were necessary or de-
WINDOW AT CERTOSA, ITALY, ATTRIBUTED TO RAPHAEL
FROM THE COLOR RENDERING BY ALFRED E. FLOEGEL
sirable to do additional painting on any piece, the process could be repeated several times without harming the glass.

The glass is finally assembled with the leads on the diagram as shown in figure 3, one piece at a time. A piece of glass is placed on its proper space and surrounded with a strip of lead, which is H shaped in section as shown in figure 5. The lead is held in place temporarily by several long thin nails driven into the table top, until the next piece is fitted alongside and surrounded with lead. This procedure is followed until the entire panel is built up. Around the outside there is generally placed a wider lead to give greater stiffness to the whole. All the joints are soldered on both sides of the window. The joints are made weather-tight by scrubbing a sort of putty over both sides with an ordinary scrubbing brush until all crevices are filled. The surplus putty is then wiped off leaving the glass clean.

[MARGRAFEN WINDOW, ST. SEBALDUS, NUREMBURG, GERMANY
FROM THE COLOR RENDERING BY ALFRED E. FLOEGEL]
FIG. 2, ASSEMBLING GLASS ON EASEL FOR INSPECTION

FIG. 3, CUTTING THE GLASS AND ASSEMBLING WITH THE LEAD
For a large window, an armature is built of galvanized iron, using pieces about 1" x ¼", though these dimensions vary. The main thing is to have the structure strong enough to sustain the window and give it stiffness. The divisions of this armature are, of course, determined early in the game when the design is being made. The glass for each panel is assembled as a unit. These panels are held in place as shown in the sketch in figure 5 or by some similar method which has proven satisfactory. If the panels are too large to be sufficiently rigid, saddle bars of about quarter inch round iron are fastened across the leads at about one foot intervals by wiring with copper wire and soldering.

Examination of the illustrations of windows given here will bring out the arrangement of the armatures and saddle-bars and will show how they count as a part of the design and yet are so placed as to be as inconspicuous as possible.

The monk, Theophilus, who lived in the tenth or eleventh century, has left us a very complete account of the mediaeval methods of making glass and building stained glass windows. I think it will be interesting to compare the old ways with present day practice as outlined above and am therefore taking the liberty of quoting here, in conclusion, parts of his description "Of the Making of Windows". The process, it will be seen, is the same in its essentials as our modern method, differing only in details.

"When you desire to construct glass windows, first make yourself a smooth wooden board of such length and breadth that you can work on it two panels (partes) of each window. Then take chalk, and scraping it with a knife over the whole table, sprinkle water thereon in every part, and rub the table entirely over with a cloth. When it is dry, take measure of the length and breadth of one panel (unius partis) of the window, describe it on the table by rule and compass, with lead, or tin. If you wish to have a border in it, draw it of such a breadth as pleases you, and with such workmanship as you wish. This done, draw as many figures as you like, first with lead, or tin, then in the same manner with a red, or black colour, making all the strokes carefully, because it will be necessary when you shall have painted the glass to join the shadows and lights (on the different pieces of glass) according to (the plan of) the board. Then arrange the various draperies, and mark down the colour of each in its place, and whatever else you wish to paint; mark the colour by a letter. After this take a small leaden vessel, and put in it chalk pounded with water; make yourself two or three hair pencils, vis., of the tail of a martin, or ermine, or squirrel, or cat, or of an ass's mane. Take a piece of glass of whatever kind you please, which must be every way larger than the place it is to occupy, and lay it flat on this place. When you have seen the strokes on the board
through the glass, draw with chalk upon the glass the outer strokes only, and if the glass should be so dense that you cannot see the strokes on the board through it, take a piece of white glass and draw on that, and when it is dry lay the opaque glass upon the white, raise it against the light, and draw on it what you see through it. In the same manner you will mark all kinds of glass, whether for the face, or the drapery, hands, feet, or border, or wherever you wish to place colours.

"These things having been thus completed, take pure tin and mix with it a fifth part of lead, and cast as many rods of it as you want; with which you will solder your work. You should have also forty nails, one finger long, which should be at one end slender and round, and at the other square and perfectly curved, so that an opening may appear in the middle. Then take the glass which has been painted and burnt, and place it according to its order, on the other part of the board on which there is no drawing. After this take the head of one figure, and surrounding it with lead, put it back carefully in its place, and fix round it three nails with a hammer adapted to this purpose. Join to it the breast, and arms, and the rest of the drapery; and whatever part you join, fix it on the outside with nails that it may not be moved from its place. You should then have a soldering iron, which ought to be long and thin, but at the end thick and round, and at the extreme end of the roundness, tapering and thin, filed smooth, and tinned. Place this in the fire. In the mean while take the pewter rods which you have cast, cover them with wax on all sides, and scrape the surface of the lead in all those places which are to be soldered. Having taken the hot iron, apply the pewter to it wherever two pieces of lead come together; and rub with the iron until they adhere to each other. The figures having been fastened, arrange in like manner the grounds of whatever colour you wish, and thus piece by piece put the window together. The window having been completed and soldered on one side, turn it over on the other, and in the same manner by scraping and soldering, make it firm throughout."

FINISHED GLASS PANEL IN THE MEDIAEVAL MANNER
ADAPTED FROM WINDOW AT LE MANS

Courtesy of A. L. Brink
Pen drawing, as a separate and complete form of pictorial representation, is a thing of comparatively recent date, its greatest development having taken place since the beginning of the last quarter of the 19th century.

This of course does not mean that pen drawing was unknown prior to that time, for such is far from the case. One has but to recall the illuminated manuscripts of the Middle Ages to realize with what skill pen lettering and certain types of decorative design were then done, but in this work the drawing was subordinated in nearly every instance to the lettering itself, or the pen lines in the illuminations were merely outlines or framework for the colored embellishments.

Again, if one brings to mind the many pen sketches and studies made centuries ago by some of the most famous of our old masters it will be realized that the pen was turned to with great frequency even in their day. Analysis of their pen drawings makes plain, however, that this early work was usually in the form of preliminary studies for paintings or parts of paintings, or was much in the nature of a sort of pictorial shorthand by means of which facts of interest were vigorously and sometimes, it must be admitted, rather crudely recorded. Apparently no attempt was then made to develop pen drawing as an art by itself, and it is only during the last few decades, as we have stated above, that this has been done. Today pen drawings are made not simply as adjuncts of another art or as means to certain ends, but as finished and complete things.

Undoubtedly the invention and gradual improvement of the various processes of photo-mechanical reproduction, which have provided comparatively cheap and faithful methods for the reproducing of pen work, have afforded a great impetus to this development, for publishers have not been slow to take advantage of these processes and have thus created a demand for drawings in this medium, which artists in turn have hastened to meet.

Pen drawing has received encouragement, too, through the gradual perfection and standardization of the materials used,—pens, inks and papers,—of all of which an infinite variety may now be easily obtained at a reasonable cost, permitting selections suitable for any purpose.

Even with these encouragements it is doubtful if pen drawing as an art would have so soon advanced to the enviable position it at present occupies had it not been for a realization on the part of the artists who contributed most to its development, that the pen, because of its peculiar qualities, was a medium demanding a far different treatment from that accorded any other.

It may be well to pause here for a moment for a consideration of certain fundamental principles which bear on all art work,—principles with which these artists were undoubtedly familiar,—and to see in what way they are applicable to pen drawing.

First, the reader should be reminded that each of the fine arts has certain restrictions as a result of which characteristic conventions have been developed. This thought will be amplified in a moment.

Secondly, unless one bows to these restrictions, and accepts along with them such conventions as have been found to naturally accompany them, he is usually loading on to himself a heavy handicap so far as artistic accomplishment is concerned.

To illustrate this first thought, the sculptor, using plastic materials, is able to correctly copy many of the forms of nature, but is forced by his medium to largely disregard their color. The painter, on the other hand, can show their color, but contrary to the worker in plastic materials he is limited by his canvas to the delineation of only two dimensions, being forced to resort to conventionalities for the representation of the third. The worker in brush and wash of gray is forced to still further employment of convention, for he must interpret color in terms of various tones of gray ranging from light to very dark. Such mediums as charcoal and crayon are frequently used in much the same way as wash, adopting similar conventions, yet these mediums may be employed in a linear manner, too, in which case new conventions come into play, particularly the use of outline and the suggestion of color and light and dark by means of various combinations of openly spaced lines. The pencil, though capable of being handled much like wash or charcoal or crayon, has also certain distinctive characteristics, notably its ability to hold a sharp point; these demand equally distinctive conventionalized treatments.

And now we come to the pen and its own limitations and conventionalities. Of both there are many, perhaps more than for any other medium. It might seem that this would put the pen at a distinct disadvantage, yet the ever-increasing popularity of pen work seems to indicate that the contrary is true. The pen is a linear tool, but unlike the crayon or charcoal or pencil it gives off no color or tone itself. Instead it serves as a vehicle of transmission of ink from bottle to paper, acting in this sense much like the brush. Unlike the brush, however, it has a rather fine and stiff point, capable of holding only a very limited amount of ink, a limitation which makes it an impractical instrument for covering large areas of paper surface. This limitation acts in two direct ways. It tends to keep pen drawings somewhat small in size, and makes the use of a large variation of value in tone as well as big areas of it extremely difficult. It should be borne in mind that every line made with a pen is absolutely black (colored inks being a rare exception) against a background of paper which is usually white. This means that color must necessarily be disregarded altogether or suggested by the white of the paper or by various combinations of jet black lines. Tones of light and dark, too, must be ignored or suggested in similar manner. In order to build a value of gray
it is necessary to dot the surface with stippling,—
a little used treatment,—or to lay individual black
lines side by side, or crossed in series. If one wishes
to subsequently darken a tone obtained in one of
these ways he must painstakingly enlarge each
existing line or dot or must put more lines or dots
into the area. (Compare this with wash, by means
of which it is possible to produce quickly and easily
almost any given value, or to wash over and still
further darken one.) To lighten a tone and still
keep it in good character is practically impossible;
if it is too dark there is nothing to do but erase
(and in pen work this is far from easy) or put a
patch on the paper and begin again.

It is because of these various technical difficulties
of working with a fine point in black ink on white
paper that it is so extremely hard to build up values
corresponding with all those in nature; it is for this
reason that the less positive ones are disregarded,
and the others simplified or merely suggested.

If color or tone is disregarded we must substitute
something for it unless the forms are to be lost; it
is here that we resort to the conventionality of using
outline, particularly where we wish one light object
to stand out against another. The pen is an especial-
ly fine instrument for this outline work,—not only
is it unexcelled for the sharp delineation of shape
and for precision of draftsmanship, but its lines,
even though jet black, may be made very expressive
of all sorts of irregularities of form and texture.

This use of outline, together with the method of
tone building by means of lines (or dots) as touched
upon above, are two of the most distinctive char-
acteristics of pen drawing. There are many minor
conventions in use, to be sure, to which we are so
accustomed that we hardly think of them at all;
modes of suggesting shadow tones, for instance,
and trees and clouds and the textures of building
materials, and so on throughout a long list.

So these are the important restrictions and limita-
tions and the resulting conventionalities of pen draw-
ing,—the facts which were recognized by those
artists who made the art what it is, and which must
still be recognized by those who would emulate them.
If one tries to make a pen drawing larger than the
instrument warrants, or attempts to carry gray tones
all over his paper, or in any way disregards the
peculiar properties of his medium, he will be forcing
it to do that which it is not best adapted to do;—
whatever success results from such methods is al-
most sure to be technical rather than truly artistic.

This does not mean that one is so bound down
that individuality is impossible; quite the contrary
is the case, for it is often true that the more conven-
tional the art the greater the opportunities for
originality. We might go so far as to say that there
is perhaps no medium offering one a better chance
for the development of a personal technique, for
pen drawing is akin to handwriting and just as no
two people write alike, so no two people draw alike.

We have already mentioned the popularity of pen
work. Part of this is undoubtedly due to the
methods of reproduction to which we have pre-
viously referred. Part of it, as we have said, is due
to the ease and cheapness with which the necessary
materials may be secured. Yet aside from all such
causes pen drawing has made a lasting place for
itself among the fine and applied arts through its
intrinsic merits alone. Pen drawings, in their simple
black against white, have a crispness and directness
that is appealing; they are full of life and light.
Many of them are only suggestive, leaving much to
the imagination, and we take pleasure in this. A
few lines here, and a few touches there, and some-
times that is all, yet there is a power to this sug-
gestion which often makes photographs, telling
everything, seem stupid by comparison.

This virtue of line drawing over photography is
realized even by "cold blooded" business men, or
by the advertising experts representing them, as is
evidenced by the great use of pen work for ad-
vertisements, even in a day when commercial
photographers are existing on every hand.

Perhaps this popularity of pen work for adver-
sising purposes has come about partly because repro-
ductions of pen work harmonize so beautifully with
the type matter of the printed page, due largely to
the scale, their linear quality and to the fact that
they are printed on the same paper with the same
ink. And this harmonious quality is undoubtedly
one of the main reasons why pen illustrations for
books and magazines and all sorts of similar press
work are in such great demand.

It might seem that the strong contrasts of black
and white in pen work would prevent such subtleties
of representation as many subjects require, yet there
is ample evidence in the form of drawings that this
is not the case. In fact there is a delicacy to much
pen work which is lacking in the work of other
media.

Another point in the favor of drawings done with
pen and ink, and one which should not be forgotten,
is their cleanliness. Many mediums rub or soil
easily, but pen drawings not only keep clean them-
selves, but do not soil other drawings with which
they come in contact. And neither do they fade.

Here, then, are some of the leading characteristics
of pen drawing, some of the principles on which it
is based, a hint as to its history and to certain uses
to which it is put. It is enough to show the impor-
tance of the subject, to suggest with what seriousness
it should be regarded. If, however, that which has
been written here makes the subject seem too deep
and complex, we can offer a word of encouragement
to the student. This is that pen technique itself, be-
ing so highly conventional, is more or less a matter
of tricks. Just as some learn to write well with
case, so some, already grounded in a knowledge of
drawing, (for as we have previously said there are
no easy tricks about that), learn these tricks of
technique and thereby get the knack of pen work
almost without trying. This is of course exceptional.
It must be admitted, that others need much practice
to gain the same results; while some with the best
of effort never do acquire more than an ordinary
technique. Even famous workers in other mediums
have sometimes failed miserably with the pen, much
to their own discouragement, undoubtedly, but to
the encouragement of lesser artists who have also
found the road a difficult one.
SHOP DRAWINGS
THE BUILDER'S DRAFTSMAN AND MILLWORK DETAILS

By W. E. Schlimen

Editor's Note.—In addition to the detail drawings which should be made by the architect to fully elucidate or amplify the contract drawings, the builder and manufacturer must make shop drawings which constitute a transposition of the architectural drawings into terms and indications of shop practice. Contractors' and subcontractors' shop drawings constitute the intended interpretation of the requirements of the architectural drawings and of the specifications and should agree with the specifications as to material and with the architect's drawings as to design and arrangement and the indicated space conditions. In this and subsequent issues will be shown selections from the shop drawings which have been prepared by the draftsmen in the builder's, subcontractor's and building material manufacturer's drafting rooms. It will be noted that oftentimes the architectural drawings only indicate a typical condition which is to be amplified or arranged to suit varying conditions or locations. The shop details in these cases often constitute additional architectural drawings even if prepared by the building contractor, millwork factory, marble, stone, architectural terra cotta, steel, or cabinet work draftsmen.

In Colonial days many architects in this country were also builders and most of our domestic architecture was both designed and constructed by them. One of the best known of these architects was Asher Benjamin, who published a number of works on architecture and building problems and who styled himself "Architect and Carpenter."

In modern practice it is customary to employ a builder for the execution of the architect's designs and his work is usually done under the architect's direction and supervision. To obtain the best results it is highly desirable that the builder work in harmony with the architect and in some measure be allied to the architect's organization during the progress of the work. The architect prepares and furnishes the plans, specifications, and details which cover the design. There are many other drawings required however, so a draftsman is an important member of a builder's organization. In the practice of the writer the builder's drawings are termed "Shop Drawings" to distinguish them from the architect's drawings.

The services of a draftsman are undoubtedly more necessary to the builder of country houses than to most other builders. This draftsman should have some architectural training, preferably as a draftsman in an architect's office, so that he will know how to interpret the architect's design correctly. His duties consist largely of the preparation of details and lists of millwork and other materials. He should have a knowledge of good construction, be able to make framing plans, and compute simple stresses for both steel and timber. Advanced engineering knowledge is not required, since structural steel, in the sense that it is used in large fireproof buildings, is seldom used in country houses.

Country houses usually are at some distance from the builder's office and are, therefore, not visited as frequently as if they were more easily reached, so the superintendent on the job must be furnished with more information in documentary form than would otherwise be necessary. This information should, as far as possible, answer any questions which might arise in connection with the construction, and should also clear up all points which might be somewhat vague on the architect's drawings. In order to permit the superintendent to attend to other pressing and important matters he should be relieved from the necessity of solving problems of construction and so on. These can be solved in the builder's office where a record can be kept and the architect consulted if necessary.

Architect's details should, and usually do, give enough information such as profiles and so on to illustrate the design, but they are not always in such shape that they can be used by the mechanic either in the shop or at the building without further elucidation by additions and modifications. An architect's drawing may, for example, be a detail of a porch made on a comparatively small sheet to conserve paper. A profile would be given through the cornice at one point; the balustrade above the cornice might appear on another part of the sheet; the columns, railings, facia, connection to the house, etc., would be shown on still other parts of the sheet; but none of them would be connected in such a manner as to be intelligible to the average mechanic. The builder's draftsman, in this case, redraws the porch detail showing the several members in their proper relation to each other. In cases where the architect's detail can be used, the construction, dimensions, and so on, are usually placed on the architect's drawing.

It is neither necessary nor desirable that the architect's details show construction, the building up of moulded parts, etc., unless there be a special reason for doing this, but all outlines and profiles should be given.

The preparation of drawings for millwork is the most important part of the draftsman's work for the country house builder. The accompanying illustrations are details made in connection with a country house of wood frame construction built near White Plains, N. Y. These drawings were selected at random as being typical of the work done.

Shop Drawing No. 15 is a Full Size Detail of a
SHOP DRAWING NO. 33, STAIRCASE DETAILS
Residence of Henry C. Lomb, Alfred Busselle, Architect
SHOP DRAWING NO. 20, TRIM AND COLUMN DETAILS
Residence of Henry C. Lomb, Alfred Busselle, Architect
SHOP DRAWING NO. 38, INTERIOR TRIM DETAILS AND LIST OF MATERIAL
Residence of Henry C. Lomb, Alfred Busselle, Architect

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porch over which is a sleeping porch. This drawing was made for use at the job and similar drawings were made in the mouldings and other members correspond to these numbers on Shop Drawing No. 20, which is a detail and list of exterior millwork as ordered from the mill.

Shop Drawing No. 33 is a detail of the main staircase, which was made and installed by a stair builder including all panel work surrounding it.

Shop Drawing No. 36 is a detail of kitchen and pantry dressers, used for constructing the work at the mill as well as for erection at the job.

Shop Drawings No. 38 and No. 44 were used for ordering interior trim and doors respectively.

Shop Drawing No. 39 is a detail of the dining room interior panel work which was manufactured and erected by a cabinet maker.

Copies of all shop drawings as well as architect's drawings are kept on file at the job so the superintendent may know what materials are ordered, where they are to be placed, and how to prepare the building properly to receive them.

The practice of making shop drawings and lists in the office of the builder is to be preferred to the sending of the architect's plans and details to the mill and permitting the millworker to prepare such shop drawings. By the former method the builder determines in advance what the detail and construction shall be and can proceed with his work without waiting for information from the mill.

The builder, in addition to getting just what he wants, can usually purchase his millwork at a closer price because the millman's estimate will be based on fixed quantities. He also saves much of the cost of preparing shop drawings and mill lists.

While on this subject of millwork it might be well to call attention to the recent changes made in the thickness of all classes of soft wood lumber, establishing a new standard known as the "American Lumber Standard".

These standards are acceptable under the provisions of 91% of the building codes and are endorsed by the American Institute of Architects, American Railway Engineering Association; American Society for Testing Materials; Associated General Contractors; Association of Purchasing Agents; Natural Retail Lumber Dealers Association; National American Wholesale Lumber Association, and all the principal associations of lumber manufacturers.

Examples:

A nominal one inch board which formerly became 3/8" thick when dressed is now only 25/32" thick.

In framing lumber a nominal 2" x 4" becomes 1 5/8" x 3 5/8" when dressed.

Much of our lumber stock comes from the Pacific Coast and the Inland Empire, and nearly all of it is dressed before shipment. This fact should be taken into consideration by draftsmen in architects' offices as well as in builders' offices when preparing details for millwork. Information as to the various dimensions of dressed soft wood lumber, including structural timbers and factory lumber, can be obtained from any of the lumber trade publications or any of the associations of lumber manufacturers, and draftsmen not thoroughly familiar with the new "American Lumber Standard" should verify all sizes.
SHOP DRAWING NO. 36, DETAILS OF KITCHEN AND PANTRY DRESSERS

Residence of Henry C. Lomb, Alfred Busselle, Architect
SHOP DRAWING NO. 39, DINING ROOM MILLWORK DETAILS

Residence of Henry C. Lomb, Alfred Busselle, Architect
FIRST PRIZE DESIGN, RUSSELL S. SIMPSON, CLEVELAND, OHIO

American Gas Association Small House Competition
SECOND PRIZE DESIGN, F. S. HOPKINS AND P. C. BOHANON, CLEVELAND, OHIO

American Gas Association Small House Competition
SMALL HOUSE COMPETITION

AMERICAN GAS ASSOCIATION SMALL HOUSE COMPETITION

THIRD PRIZE DESIGN, ANTONIO DI NARDO, CLEVELAND, OHIO

American Gas Association Small House Competition

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AMERICAN GAS ASSOCIATION SMALL HOUSE COMPETITION

FOURTH PRIZE DESIGN, HAROLD A. RICH, AUBURNDALE, MASS.

American Gas Association Small House Competition
SMALL HOUSE COMPETITION

FIFTH PRIZE DESIGN, ALFRED COOKMAN CASS, NEW YORK CITY
American Gas Association Small House Competition

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SIXTH PRIZE DESIGN, GEORGE C. CROCKETT, PELHAM, N. Y.

American Gas Association Small House Competition
Details of ironwork from a screen in the Cathedral of Cuenca and some brass turned work from the Cathedral of Zaragoza.
"RENAISSANCE ARCHITECTURE AND ORNAMENT IN SPAIN"

A PLATE FROM THE WORK BY ANDREW N. PRENTICE
PLATE XXVII

Volume VII

Number 8

This plate shows one of a series of drawings made by Mr. Price of the Miami-Biltmore, completed during the past winter at Coral Gables, Miami, Florida.
DRAWING BY CHESTER B. PRICE

DINING ROOM IN COUNTRY CLUB, THE MIAMI-BILTMORE, SCHULTZE & WEAVER, ARCHITECTS

PENCIL POINTS
PENCIL POINTS SERIES of RENDERINGS IN COLOR
RENDERING IN WATER COLOR AND COLORED PENCIL BY OTTO R. EGGERS
Size of Original 28½” x 17”
University Baptist Church, Baltimore, Maryland
John Russell Pope, Architect
PENCIL POINTS
SERIES
of
RENDERINGS
IN
COLOR
PENCIL SKETCH BY SAMUEL V. CHAMBERLAIN
VIELLE MAISON, RUE ST. ETIENNE DU MONT, PARIS
This lithograph by Samuel V. Chamberlain is one of a set of twenty views of Old Paris. The artist has here chosen to depict an old house next to the church of St. Etienne du Mont. It is interesting to note that he worked from almost the same spot where F. Hopkinson Smith made the charcoal sketch reproduced on Plate XXI of the June issue of Pencil Points. Size of original 11" x 17".
PENCIL SKETCH BY A. THORNTON BISHOP
STREET ON THE DARRO, GRANADA
A. Thornton Bishop, samples of whose excellent work in pencil are shown in the sketch reproduced here and in this month's cover drawing is a commercial artist and renderer. His architectural training is clearly apparent in his method of handling such subjects as that of this plate.
WHITTLINGS

PRIZES AWARDED IN SMALL HOUSE COMPETITION

The American Gas Association has announced the winners in its $2,500 prize competition for a six room suburban house. The first three prizes were awarded to architects of Cleveland, Ohio, as follows: 1st prize, $1,000, Russell S. Simpson; 2nd prize, $500, F. S. Hopkins and P. C. Bolohan; 3rd prize, $250, Antonio di Nardo. The 4th prize, $250, was awarded to Harold A. Rich of Auburndale, Mass. The 5th to the 9th prizes inclusive, consisting of $100 each, were awarded to Alfred Cookman Cass, New York; George C. Crockett, Pelham, New York; Walter J. Thies, Carl H. Martin, and Erskine A. Hart, Dayton, Ohio; Otho McCrackin, Hutchinson, Kansas; Charles W. Cleary and James N. Holden, Boston, Mass.

Honorable mention was awarded the following: Carl C. Tallman, Auburn, N. Y.; Russell E. Yates, Detroit, Michigan; R. Schofield Morris, Hamilton, Ontario; Ernest Irving Freese, Los Angeles, Cal.; Frank C. Burke, Watertown, N. Y.

The competition was open to all architects, draftsmen, and students in architectural schools in the United States and Canada. Judges of the competition were Aymer Embury II, and Dwight James Baum, of the American Institute of Architects, and Alexander Forward, secretary-manager of the American Gas Association. William Adams Delano was the architectural advisor.

The first six prize winning designs are published on pages 481 through 486 of this issue.

NEW YORK SKETCH CLUB REVIVED

There may be few who remember the Sketch Club of New York of thirty years ago, how vital it was to both the designer and draftsman. Its exhibits gave evidence of the fraternal, jolly companionship; the spirited studies exalted the enthusiasm of those playing while they worked and working while they played. In reopening the Sketch Club, the opportunity of instruction in "pencil painting" is offered to all draftsmen, designers, renderers and students of architecture.

The lead pencil is perhaps the one most important tool of the architect, and in making studies, sketches and rapid memoranda it is the invaluable resort and constant companion. An architect who cannot use his pencil with facility and decision is at great disadvantage. It is the invaluable process of representing a building as a work of art by means of the ordinary work of art.

Mr. Ernest W. Watson, for many years an instructor at Pratt Institute and recognized as one of the leading exponents of the art of pencil sketching, will conduct the atelier of the Sketch Club in the Club rooms at the Art Centre, 65 East 56th Street, one evening a week. The class will open late in September and continue through the winter and spring. There are very few architectural draftsmen and renderers who cannot study to advantage the artistic topography, the power and simplicity that lies dormant in their most common instrument, their pencil.

The Sketch Club and Atelier are conducted under the auspices of the Pratt Art Alumni; the proceeds of the class maintain an annual European Scholarship. At the close of the season an exhibit of the class work will be held in the Club rooms at the Art Centre. Messrs. D. Everett Waid, Thomas B. Hastings, and Otto R. Eggers are members of the Advisory Council.

So great has been the interest in this opportunity to acquire the technic of expressing with one's own individuality the studies of the great masters, the artistic qualities of their own designs, as they want their clients to see them that many have applied before any announcement of the class could be made. The facilities for personal instruction are limited and all who desire to attend the Club and Atelier for the coming season are urged to correspond immediately with A. Thornton Bishop, president of the Pratt Art Alumni, 105 West 40th Street, New York City.

SAN FRANCISCO ARCHITECTURAL CLUB

The San Francisco Architectural Club wishes to announce the huge success of the Thursday Luncheons which are held weekly in the club's banquet room.

Some 45 members have been present at each of the four luncheons held to date and all attest to the excellence of the cuisine. These noon gatherings are tremendously popular with the boys and each Thursday is looked forward to with eager anticipation.

The success of the mid-day meal must be attributed to the endeavors of C. Trudell, "our Secretary," and his assistants. Also to his good judgment in securing the services of a diettian of international repute—a former chef of Monte Carlo. The generosity of Ed Counter of Dietrich-Post Co. has been a mighty influence towards making the dinners the good time that they are. Ed conducts a free rail at each luncheon which culminates in the distribution of valuable drawing instruments.

Geo. Travis is with us again, having completed his studies at Harvard. He is once more "over the boards" at Bakewell & Brown's, back with his old gang.

The club as a whole regrets the absence of Stanton Willard, who has ascended to new heights in Los Angeles, where he is managing the office of Walker & Eisen.

Good luck Tubby!

The membership drive is still "driving" draftsmen and many of the professionals into this organization.

Massier H. Anderson has plans under way for a grand gathering of the Atelier. An elaborate dinner and entertainment with a pianist will mark the occasion.

The semi-annual election at the July meeting resulted in the selection of J. H. Devitt for treasurer, Harry Laughly and Ira Springer for Directors. James Magee was appointed chairman of the Minstrel Show Committee with Ira Springer and C. J. Sly as his aides. The Minstrel Show will be held in October to commemorate the Club's 25th year of existence.

J. H. Devitt,
Publicity Manager.

OLD CHURCH DOOR OF CHAPEL,
"THE KING'S SCHOOL", PARRAMATTA, AUSTRALIA
Reproduced From a Snapshot by Louis Brackenreg.
The first mile of the street was formerly Bay Shore Drive, recently widened and improved. The remaining 2 1/2 miles is a new street involving cutting through fourteen improved city blocks and widening a narrow street (formerly Northeast Third Avenue) through nineteen improved blocks.

This new section will be open to traffic about December 1st, 1926. The competitions close October 1st.

The Biscayne Boulevard Association agrees to award to the winners within 5 days after the judgment of the jury $4,650.00 in prizes as follows:

Competition No. 1—1st Prize $1,000.00; 2nd Prize $400.00; 3rd Prize $400.00; 4th Prize $200.00; 6 Mentions, each $75.00.

Competition No. 2—1st Prize $750.00; 2nd Prize $400.00; 3rd Prize $250.00; 4th Prize $150.00; 6 Mentions, each $75.00.

Program of the Competitions may be obtained by addressing Harry T. Frost, in care of Biscayne Boulevard Association, Columbus Hotel, Biscayne Boulevard, Miami, Florida. Or—American Architect, 239 West 39th Street, New York. Or—Bennett, Parsons and Frost, 80 East Jackson Boulevard, Chicago.

FRANK SCHWARZ

Frank Schwarz has been awarded one of the John Simon Guggenheim Memorial Fellowships for 1926-27 and has sailed to study methods in painting and in decoration in medieval times, the 13th, 14th and 15th centuries and some things in the work of the modern artists. Mr. Schwarz was formerly a fellow at the American Academy in Rome and has done some very fine paintings. One of his most interesting works, a screen, was published in the April, 1925, issue of Pencil Points. He will do some creative work in mural decoration while he is in Europe.

The Fellowship provides a stipend of $2,500 for a year of twelve months abroad.

TWO COMPETITIONS IN DESIGN FOR TRAFFIC SIGNAL TOWERS AND OTHER STREET FIXTURES

Two competitions in design based on the widely recognized need for better design in street fixtures are announced.

The first competition calls for designs for traffic signal towers and standards and street lighting standards. The second competition is for filling station designs.

In neither case is the electrical or mechanical equipment of the structure a part of the competition.

These competitions are being conducted by the Biscayne Boulevard Association, Miami, Florida. The Association has appointed Messrs. Bennett, Parsons and Frost, Consulting Architects, Chicago, to serve as professional advisers for the competitions.

The purpose is both to secure designs appropriate for Biscayne Boulevard and to stimulate interest in the designing of better structures for these purposes than the unstudied devices now in general use.

The street for which the designs are desired is a level 100 foot street extending from the center of Miami for three and one-half miles to Northeast 55th Street, where it becomes the Federal Highway which, combined with the Dixie Highway, extends 360 miles to Jacksonville and beyond to the Northern States.
Buren found four unpublished ones among them, which he will shortly make known to the world.

"The President and the Vice President of the Academy spent a number of days in studying conditions at the Academy, but both have now gone north."

"Professor Showerman is due today, and his Summer School of seventy-four opens next Monday. Professor Shepherd Stevens, of the Yale School of Architecture, has registered in the Summer School and with the permission of the Trustees is now in residence at the Main Building. "

"Czechoslovakia, Bulgaria and Egypt are planning Academies in Rome, to be located in the valley Giulia, near the present British School and the big modern art gallery. The city of Rome rents lots of land to all these countries for one lire a year, and does not tax them, which are big inducements for establishing Academies in Rome."

CORRECTIONS

The rendering on the cover of the July issue of Pencil Points was made by Sydney Jelinek and not Herbert Pullinger to whom we credited the drawing. John Molitor is the architect of the "Palace of Agriculture", the subject of Mr. Jelinek's rendering.

We regret that in the advertisement of the Cold Spring Granite Company appearing in this issue of Pencil Points the name of the contractor is misspelled. The name should be Charles Skooglin.

M. I. T. SPECIAL STUDENT SCHOLARSHIPS AWARDED

J. B. Wertz, of the Office of Pelton, Allen & Collins, New York, was placed first in the competition for special student scholarships, Department of Architecture, Massachusetts Institute of Technology. T. H. Drehis was placed second. The subject of the competition was "A College Swimming Pool". Mr. Wertz's design is reproduced below. Each of the winners is given a year's tuition at the Institute, amounting to $300.00.

AMERICAN ACADEMY IN ROME

From a letter recently received by C. Grant La Farge, Secretary, from Gorham P. Stevens, Director, we quote the following:

"At this moment only seven Fellows are in residence—Meyer and Hancock in sculpture, Finley in painting, Elwell in music, Fraser in architecture, and the two women classicists; all the others are traveling. Meyer is hard at work upon his third year's group. Hancock has his first year's figure well under way. Finley has returned from Florence with his Penturricchio copy under his arm. Fraser is finishing his first year's classical restoration, and the classicists are working on their theses. Deam, third-year Fellow in architecture, has finished entirely and is now in Germany, which he finds interesting in many ways. Bradford's eyes have been troubling him, and he is now taking a rest; his big composition is well advanced.

"Newton has completed the general plan of his third year's work, the Villa Magliana near Rome, and is now in Siena for the Palio. Mr. W. S. Richardson was of especial assistance to Newton in the designing of the entire layout. Newton left with us about 600 films, all taken by himself, of Italian villas for printing for our collection of landscape photographs.

"Of the staff, Professor Fairbanks has returned on private business to America for a few weeks. The Moreys and Ulmans are in residence. The Lamonds, Van Buren and Mr. W. S. Richardson are off for the summer. It may interest you to learn that Mr. Richardson bought a number of old Roman inscriptions to decorate his villa and that Prof. Van

A COLLEGE SWIMMING POOL

Design by J. B. Wertz, Placed First

M. I. T. Special Student Scholarship Competition
Louis Skidmore, winner of the Rotch Traveling Fellowship for 1926, was born in 1897 at Lawrenceburg, Indiana. He attended public and high school at Peoria, Illinois, and later at the Bradley Institute in that city. During the War he was in the United States Air Service and later was an instructor in mechanical drawing for two years at the Pullman Technical School, Chicago, Ill.

In 1921 he entered the Massachusetts Institute of Technology for the third, fourth and fifth years of architectural training. He was awarded the Rotch Prize for the best general average for third and fourth year work.

For two years Mr. Skidmore was in the office of Maginnis & Walsh, Architects, of Boston, and he feels greatly indebted to Mr. Maginnis and to Charles R. Strong, Architect, of Cincinnati, Ohio; also Professor Emerson and Professor Fenan of M. I. T.

Louis Skidmore

The United States Gypsum Company announces that Sabinite Acoustical Plaster, developed at Riverbank Laboratories, Geneva, Illinois, by Dr. Paul E. Sabine, is to be manufactured and marketed by the Gypsum Company under an exclusive license.

This material comes to the job already sanded and requires only the addition of water. It is porous in composition and instead of reflecting virtually all the sound that strikes it, as does ordinary plaster, it absorbs a great proportion of the sound, which it transforms by friction into heat-energy. Its covering capacity is greater than ordinary plaster and its application involves no greater problems than the application of ordinary plaster.

While this material was perfected over five years ago, it has been withheld from the market by Riverbank Laboratories until actual job experience should substantiate or disprove the results obtained in laboratory tests. To obtain this job experience two rooms at Riverbank Laboratories, one room of the Geneva, Illinois, High School and auditoriums and radio broadcasting rooms at various points in the United States were plastered with it. According to Dr. Sabine these test jobs all are in perfect condition and the material has performed identically on the job as it did in the laboratory.

Tests and researches into the physics of sound, according to Dr. Sabine, have demonstrated that through the use of this material a maximum of acoustical efficiency can be obtained in any theater, church, auditorium, school or other room.

Riverbank Laboratories, where Sabinite was developed, is a scientific organization that was founded and is maintained by Colonel George Fahy. The researches into the physics of sound conducted there by Dr. Sabine are a continuation of the work begun by his late cousin, Professor Wallace C. Sabine of Harvard University.

The Mills Company, manufacturers of Metal Partitions and specialists in Steel Sash glazing and erecting, announce the acquisition of a new plant giving them over 50,000 additional square feet of manufacturing space.

**PERSONALS**

**Bates and How, Architects**, have removed their offices to 145 East 57th Street, New York.

**Peter E. Camburas, Architect**, has been elected as 2nd vice-president of the firm of Hall, Lawrence, Rippel & Ratcliffe, Inc., Architects, 123 W. Madison St., Chicago, Ill.

**Frank E. Fowler and H. Gilbert Karges** have formed a partnership under the firm name of Fowler & Karges, Architects & Engineers, with offices at 707 Furniture Building, Evansville, Indiana, as successors to the office of H. Gilbert Karges and the office of Shopbell, Fowler & Thole, Inc.

**Robert Pioso** is now associated with the organization of Lincoln Norcott Hall, Architect, 7 West Madison St., Chicago, Ill.

**Everett H. Merrill, Architect**, has removed his offices to 4475 Santa Monica Blvd., Los Angeles, Calif.

**Forrest S. Rusk, Architect**, has removed his offices to 35 East Main Street, Columbus, Ohio.

**Edward James** is now associated with Lee Burns, Architect, 4205 Washington Boulevard, Indianapolis, Ind.

**W. Newton Dreibel**ing, Architect, has moved his offices to 904 Jefferson Building, Greensboro, N. C.

**R. H. Shreve**, of Shreve & Lamb, Architects, was elected president of the New York Building Congress at their annual meeting.

**Elmer A. Stuck** has opened an office for the practice of architecture at Jonesboro, Arkansas, and would like to receive manufacturers’ catalogues.

**Samuel S. Tufts**, Architect, has become consulting architect for the Jones & Laughlin Steel Corporation, 311 Ross Street, Pittsburgh, Pa.
PENCIL POINTS

ELEVATION

SECTION

WINNING DESIGN FOR "A SCHOOL OF ARCHITECTURE," BY LOUIS SKIDMORE
ROTCH TRAVELING FELLOWSHIP FOR 1926

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PENCIL SKETCH BY GEORGE W. SIEFKEN
RHEIMS CATHEDRAL AS IT WILL APPEAR WHEN THE WORK OF RESTORATION IS COMPLETED
A new school has been founded in the Middle West—The Post Graduate Institute of Architecture and Landscape Architecture,—in which one of the primary purposes is to bring together during their period of study members of different professions who will necessarily do some of their best work in later practice by collaboration. A group of sixteen men and women have been awarded scholarships for three months of study in the field under a certain amount of guidance with all expenses paid and are now working in the vicinity of Chicago, carrying out the scheme of collaboration which has been conceived, living together, travelling together, working together and carrying out projects of identical nature.

The scheme was thought of by Mr. Ferruccio Vitale, Fellow of the American Society of Landscape Architects, and much of the planning of arrangements was done by him, no doubt based on wide experience he has had in connection with the work of the American Academy in Rome where the collaborative idea among painters, sculptors, architects, landscape architects, and so forth, is one of the great benefits of the institution. The direction of the work this summer is undertaken by Stanley White, Professor of Landscape Architecture in the University of Illinois. The Institute is located at Lake Forest on the shores of Lake Michigan where fine opportunities are had for the study of the best in domestic and civic design together with great natural scenic resources and the great fund of inspiration provided by the city of Chicago.

From time to time eminent practitioners in various professions are invited in to look over the work which is being done and give the students the benefit of their personal criticism. Lectures are attended now and then at the Chicago Art Institute and other places and many excursions are planned to take in places of unusual interest to students of the Fine Arts.

Much of the work of the first part of the summer consists of making sketches, measured drawings, water colors, etc., and the work of the last part of the summer will be one large competitive problem, the winners of which will be given an additional scholarship to take them abroad for a year’s travel. This competition will be done by teams of students representing both professions so that the winners will consist of one architect and one landscape architect.

The students are selected for the summer’s work by the various schools which have been chosen to send candidates: the University of Michigan, the Ohio State University, the University of Illinois and Iowa State College. Each school sends two architects and two landscape architects. The number of students is limited so that only graduates of high standing in scholarship will be enrolled for the work. It is hoped that the institute will be a great force toward the development of the arts in the Middle West.

The sketches reproduced on this page were made by students during the first week of this year’s session.
DETAILS OF CONSTRUCTION, SWIMMING POOL FOR MR. WARREN BICKNELL, CLEVELAND, OHIO

OLMSTED BROTHERS, LANDSCAPE ARCHITECTS
The period of summer dullness seems to be in our midst at the present writing. Contributions are not so plentiful this month, many of our staunch contributors apparently having gone on a vacation or something. We are going on a vacation ourselves one of these days and are going to leave this department flat, to be edited by some of the other folks around here who think they know a lot more than we do, and who are probably right. Maybe when we get back we will find things running along so smoothly that we will turn right around again and go off on another vacation.—And maybe not!—

The prizes this month are awarded as follows:
Class 1 David Horn
Class 2 Oong Gow
Class 3 New Zealander (Anonymous)
Class 4 Walter A. de Sager

Glad to see some of our readers from remote parts of the world sending in contributions now and then. A Scotchman won a ten dollar prize last month and this month a New Zealander walks off with one of them, so the boys and girls here in the States will have to get busy if they want to keep the money in the country. I suppose it is only fair if Bobby Jones goes over to England and wins the open golf championship, as we are told he did, for some of the Pencil Pointers from other lands to invade our shores with their pens and pencils and try to even things up!

Now come on you Scotchmen and New Zealanders, also all the rest of you located beyond the borders of the United States, and let's have plenty of friendly rivalry every month.

We are proud to have you all on our subscription list and to give your contributions equal consideration with the domestic product.

"Office Vignettes," by Royal Barry Wills, Boston, Mass.

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Which reminds us this prize-winning New Zealander has not as yet disclosed his identity to us so we have been unable to send him the prize awarded to him in May. So if he will just tell us who and where he is we will forward the prizes and print his name in the paper.

OUR OWN TRAVELOGUES
(PRIOR—CLASS TWO—JULY COMPETITION)
Santa Barbara earthquake wrecks
Are now displaced in Spanish and Mex.
Some that's good and some that's banned
By architects, immodest mannered.

Oong Gow.

M. R. Thayer, instructor in architectural drawing, at the Anaheim Union High School, Anaheim, California, has the right idea. He has organized an Architectural Club among his students called the T-Square Club which recently held a competition on the small house problem. One of the prizes offered was a year's subscription for PENCIL POINTS, won by Mr. Clyde Martin. Congratulations, Clyde!

THE POOR BUILDER
Submitted by John A. Downs, Washington, D. C.

THE BUILDING LAWS promulgated by King Hammurabi, twenty-two hundred years before the birth of Christ, were brief but pointed. They were seldom evaded, because the penalty was severe and certain.

A translation reads:

"If a builder build a house for a man and do not make its construction firm and the house which he has built collapse and cause the death of the owner of the house—that builder shall be put to death.

"If he cause the death of the son of the owner of the house—they shall put to death a son of the builder of the house.

"If it cause the death of a slave of the owner of the house—he shall give to the owner of the house a slave of equal value.

"If a builder build a house for a man and do not make its construction meet the requirements and a wall fall in, that builder shall strengthen the wall at his own expense."
PENCIL POINTS

Pencil Sketch by Otho McCrackin, Hutchinson, Kansas

Water Color Sketches by David H. Horn, Pasadena, California
(Prize—Class One—July Competition)
AN OPPORTUNITY

We have on hand about 900 sheets, 13" x 18", each sheet containing several clippings of plans, elevations and sketches of ornaments, monuments, dwellings, cottages, furniture, churches, towers, libraries, museums, apartment houses, schools, municipal buildings, theatres, armories, etc., the accumulation of a lifetime by an architect now deceased.

These plates are very moderately priced, and are offered for your inspection and purchase at the Pencil Points Press, Inc., 19 East 24th St., New York City. Please call and ask to see them.

COPIES OF PENCIL POINTS
WANTED AND FOR SALE

A. B. Gallion, c/o Le Beaux & Klein, St. Louis, Mo., wishes to obtain copies of March and April 1926 issues of Pencil Points.

Alvin L. Earle, 67 Inman Street, Cambridge, Mass., wants a complete set of 1925 copies, and January, February, March and April issues of 1926.


J. L. Dorman 3527 West 12th Place, Chicago, Ill., will sell all copies of 1921 except January; all copies of 1922 except February; 1923 complete; all copies of 1924 except January; all copies of 1925 except November; all copies to date of 1926 except January and April.

For Sale: Eight used volumes of Dumas books. Limp leather binding. In good condition. There are the "D'Artagan Romances" including the Three Musketeers, Twenty Years Later, Vicomte de Bragelonne, Louise de Lavallier, The Man with the Iron Mask, Also Chevalier d'Harmental, The Forty-Five, and Duke of Savoy's Page. These are offered at $4.00 for the lot. Books may be seen at the office of Pencil Points, 19 E. 24th St., New York.
Concerning specification writing, a great deal could be written on the subject. However, the old saying holds true in this case as in many others, "It is easier to preach than to practice"; and I might add, much easier to criticize than to execute.

It is not my intention, therefore, to attempt to tell somebody else how a specification should be written, but I will merely state some of my feelings on the subject to be read for what they may be worth.

Before proceeding any further let me state that to my mind the best critics of specifications are the contractors, but very often, for obvious reasons, such criticism is withheld. It might be well worth while to have some of the reputable contractors frankly express their views on the subject. The writer has found that valuable information can be obtained from contractors, manufacturers, and workmen.

Possibly no two specification writers work alike, and if a man is qualified he can no doubt accomplish the results desired with less effort by proceeding in his own way than by following the procedure of another.

The specification writer should of necessity possess more than a theoretical knowledge. He must have a thorough, practical knowledge of materials, erection, and the building industry in general.

To obtain some of the necessary qualifications, in my opinion, the student of specification writing should acquire his foundation or training not only from the inside of an architect's office, but from actual experience out on the job, and if possible, in the organization of a general contractor. After experience in the office of a general contractor one will realize that the Construction Department in estimating purchasing, as well as in field work, depends more intimately on the specification than is commonly recognized.

As to the writing of a specification: one of the first and important points is to visualize the building. This is important as one cannot produce a clear specification if conception of the building is vague. It is essential (especially in offices producing the higher grade of work) that the specification writer should have sympathy for the design and architecture, to enable him to properly interpret the intention of the designer.

Specifications should be arranged as much as possible to facilitate estimating and sub-letting of the work. They are written in sections covering the various branches of the work as nearly as possible in the proper sequence of building construction. This arrangement demands some knowledge of jurisdictional awards in the Building Industry. Although the specifications are arranged with a view to convenience for letting the necessary sub-contracts, all reference to sub-contractor for any of the work should be avoided.

A good Index is a convenience and a necessity.

General Conditions should be in accordance with the office practice—checked to suit the job and in no way conflict with the articles of Agreement used. A definite correlation should exist between drawings and specifications but duplication of information should be avoided. The practice of specifying or describing certain work (such as ornamentation, or special conditions of flashing, waterproofing, etc.) which should be shown on the drawings, thus leaving to the contractor to interpret what is wanted, should be avoided.

To my mind, the drawings and schedules should cover as far as possible the locations and extent of the various materials and finishes. The specification should give only a brief descriptive list of the work included but should include in detail the definite kind and quality of materials used and requirements of workmanship. Our office has found it good practice to formulate schedules accompanying the drawings, which give locations and finish materials of the various spaces, window and door openings, stairs, etc.
The specification refers to the schedules thus eliminating long lists of locations, numbered openings, etc., which would not be obtainable until the drawings are completely lettered and numbered as to spaces and openings. It is seldom, in most offices, that the ideal arrangement of writing from a completed set of drawings prevails. Reference to schedules will reduce the possibility of discrepancies between drawings and specifications as to the scope of the various items.

Results desired are essentially a specification requirement. However, the method in obtaining the results can and should be, in most cases, left to the contractor who may use his own method, probably just as satisfactorily and with less expense. If responsibility for the results to be obtained is placed upon the contractor, it is reasonable to feel that he can give the time and effort to interest in the method of construction obtaining the result desired. Legally the contractor, no doubt, would be relieved from responsibility as to results if he followed a definitely specified method for doing work.

Each specification should be treated as a separate problem. A specification writer should try to systematize, but not necessarily standardize, his work. In reference to a systematic method of writing specifications, it is necessary to bear in mind that the type of work and practice in the different architectural offices varies and, therefore, the method of writing specifications will vary.

In the process of writing specifications however, facts should be considered rather than opinions, and fairness to all parties constantly kept in mind.

**SPECIFICATIONS**

*By W. W. Beach*

**ELECTRICAL WORK**

(Continued from Page 452, July Issue)

(D) **FORCING LAMPS** shall be 2-1/4" No. 15 or No. 16 single- or double-tube 30-watt incandescent lamps, in black porcelain porcelain, composition receptacle, composition plug, weatherproof brass plate, etc., all as catalogued.

(F) **WALL SWITCHES**, except where otherwise specified, shall be wall-type, tumbler switches of approved make, similar to those shown in Nos. 10, 11, and 12, with cast iron box, porcelain receptacle, composition plug, weatherproof brass plate, etc., all as catalogued.

Article 5. **Wiring and Equipment.**

(A) **WIRE AND CABLE**. All wire and cable shall be single or multiple stranded, fine-smelted copper wire, stranded with a tough, durable, smooth, and aiguillette covering, of such gauge as is specified. The minimum allowable gauge shall be No. 18, and the larger sizes shall be only where so required in the drawings. All metal and other wiring shall be as specified, and all junctions shall be made with appropriate connectors. All joints shall be tight and neat, and all splices shall be made with approved connectors.

(B) **SWITCHES**. All switches shall be single- or multi-throw, of the type specified in the drawings, and shall be suitably marked with the type, size, and voltage for which the switch is intended. Switches shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code. All switches shall be of the type specified in the drawings, and shall be suitably marked with the type, size, and voltage for which the switch is intended. Switches shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code.

(C) **RECEPTACLES**. All receptacles shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code. All receptacles shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code.

(D) **FUSE-LUGS** shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code. All fuse-lugs shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code.

(E) **PLUGS** shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code. All plugs shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code.

(F) **EDISON PLUGS** shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code. All Edison plugs shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code.

(G) **EXTENSION CORDS** shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code. All extension cords shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code.

(H) **WIRING** shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code. All wiring shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code.

(I) **CIRCUIT BREAKERS** shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code. All circuit breakers shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code.

(J) **OUTLET BOXES** shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code. All outlet boxes shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code.

(K) **CONDUIT** shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code. All conduit shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code.

(L) **WIRE AND CABLE** shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code. All wire and cable shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code.

(M) **SWITCHES** shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code. All switches shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code.

(N) **RECEPTACLES** shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code. All receptacles shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code.

(O) **FUSE-LUGS** shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code. All fuse-lugs shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code.

(P) **PLUGS** shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code. All plugs shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code.

(Q) **EDISON PLUGS** shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code. All Edison plugs shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code.

(R) **WIRING** shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code. All wiring shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code.

(S) **CIRCUIT BREAKERS** shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code. All circuit breakers shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code.

(T) **OUTLET BOXES** shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code. All outlet boxes shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code.

(U) **CONDUIT** shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code. All conduit shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code.

(V) **WIRE AND CABLE** shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code. All wire and cable shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code.

(W) **SWITCHES** shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code. All switches shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code.

(X) **RECEPTACLES** shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code. All receptacles shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code.

(Y) **FUSE-LUGS** shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code. All fuse-lugs shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code.

(Z) **PLUGS** shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code. All plugs shall be of the approved make and of approved design, and shall be made in accordance with the specifications of the National Electric Code.

**WORKMANSHIP**

Article 7. **Conduit Work.**

(A) **INSTALLATION OF CONDUIT** shall be in accordance with best approved methods, all joints having sharp-cut threads of good length to afford tight connections with couplings; all joints made up butt to butt, with white-lead compound on male threads only. Both ends of all pipe shall
be reamed after cutting threads, to remove all obstructions. All conduit, unless otherwise specified shall be run concealed in drop ceiling, floor covering, or furred ceilings. No sharp bends or offsets will be permitted. Conduit shall be lapped over floor fill shall be laid close to arches and securely tied. Conduit in concrete slabs shall not be closer than 1” to bottom of same and shall be well secured in such manner as to prevent breaking with reininserting members. Conduit in floor construction shall not cross over steam or water pipes and, where crossing other conduit (or in any case), shall not be allowed to come closer than 1½” to finished plaster. Conduit in furred ceilings and walls shall be securely wired. The entire conduit system shall be fished and thoroughly cleaned out before wires or cables are inserted. During construction, all open ends of conduit shall be kept closed or capped and in case to enter same during storage or construction. Vertical runs of conduit shall be supported, once in each 15’, with approved clamp-hangers.

(B) CONDUIT FITTINGS shall be of same quality and installed with same care as specified for conduit. All shall be smooth, inside and out; free from kinks, buckles and dents. All elbows shall be machine-bent to long radius and all openings smoothly beveled. Pull boxes shall be installed, in approved locations, not over 50’ apart in all straight runs of feeder conduit; not over 100’ apart in runs with single right-angle bend; and not over 75’ apart in runs with two right-angle bends.

(C) OUTLET LOCATIONS shall be in general as shown on plans but may be more exactly determined by the Architect or the field, or by detail drawings. In no case shall the Contractor locate any outlet other than by specific directions to serve the installations of other Contractors, shall be as directed by them. In general ceiling outlets shall be in centers of rooms or panels: bracket outlets shall be 60” above floor; switch outlets shall be 60” above floor; all receptacles shall be not 15” above floor. Drawings shall be consulted for exceptions to all the foregoing locations. No switch shall be placed back of doors, but shall, unless otherwise provided, be located convenient to door opening and about 6’ from back of casing.

Article 8. Wiring.

(A) MAINS will be brought into building by local Service Co., as stated in Par. F of Art. 8, at which point the Contractor shall provide inlet conduits for two No. 00 and one No. 2 (neutral) wires. On side wall, just inside of building, in approved location, there shall be installed a 500-Amp. main-line knife-switch and cartridge-fuse, mounted in cast iron enclosure. From this service box, the two No. 00 and one No.2 wires shall be extended to main switch-board in machinery room and there connected through meter to a second 500-Amp knife-switch. From this switch-board, there shall be main branches of wires supporting the various wires, one set of wires in each story and one on stage, each branch controlled by a 100-Amp knife-switch. There shall also be located on main switch-board a control knife-switch of proper size for switching down panel-board shall accommodate the incoming power outlets. Each of these branch and power outlets shall be protected by a cartridge-fuse of proper size. Power circuits shall be 3-wire for 220 volts and lighting circuits 2-wire for 110 volts.

(B) BRANCH WIRING. The branches of No. 4 wire shall be connected, in each case, to a second 100-Amp knife-switch, mounted on panel-board, which shall also accommodate a 15-Amp plug-fuse and socket to control each circuit.

(C) Circuits and feeder wires shall be continuous. Splices in other wires shall preferably be made nearest to further end and none shall be made between boxes. All joints shall be mechanically perfect, soldered, compounded rubber-taped, friction-taped and again compounded. Loops at least 6” long shall be left at all outlets for connections.

Article 9. Panel Boards.

(A) MAIN SWITCH-BOARD shall be as specified in Arts. 5 and 8. Each panel-board shall be located in machinery room and rigidly anchored to both wall and floor. It shall be of proper size to accommodate the meter, main switch, 5 branch-switches and switches for the several power lines called for: also the cartridge-fuse to protect each switch.

(B) PANEL-BOARDS for branch circuits shall be located as shown, in each story, 6” above head casing of steel lockers. All shall be recessed, to have steel casings finish flush with plaster. Each panel-board shall accommodate the branch-switch and plug-fuse-socket for each circuit. Similar panel-board shall be located in recess in wall on stage, adjoining prosenium opening, at proper height for easy operation. In addition to main branch-switch and plug-fuse sockets, this board shall also have dimmer mounted thereon, controlling all outlets in auditorium, including those lighting prosenium.

(C) IN GENERAL. Each panel-board, other than main switch-board, shall be mounted in steel cabinet, as specified in Art. 8. Each panel-board shall have lock and at least 15” above floor, 6” of which will be secured, unless otherwise specified, with all fittings symmetrically arranged and properly connected. Drawing shall be submitted showing arrangement of fittings and wiring for each board, none of which will be accepted, unless in accordance with approved drawing. Circuit controls shall be in numerical order, with the circuit numbers stamped on copper bars.

Article 10. Switches.

(A) SWITCHES ON PANEL-BOARDS shall be as specified in Arts. 5 and 9. Each switch-board shall be as specified in Art. 4, single or in gangs, as indicated. Each light outlet shall be controlled, either by wall-switch or chain-pull, except that cord-drops shall operate only by socket-key.

(C) SCHEDULE REFERENCES to switches are as follows:

"A" indicates switch on side-wall of room to control ceiling-lights. "B" indicates 3-way switch on wall near stairs to control lights above or below. "C" indicates chain-pull sockets. "D" indicates switches with ruby pilot-lights on switch-plates to control lights in roof-space and vault. "E" indicates switch to operate with flat-key, all keys alike.

Article 11. Outlets and Fixtures.

(A) SCHEDULE (Note: Upper figures at electric outlets on plans indicate circuit numbers and lower figures indicate wattage of outlet.)

Here is given a complete schedule of all electric outlets, room in which located, number and kind of fixture (pendant, bracket, receptacle or what not), catalog page and plate number, number of lights, wattage, switch reference and circuit number. Giving this in detail here would serve no purpose.

(D) CIRCUITS. Circuits 1 to 8 inclusive, 17, 35, 36, 37 and 38 are on basement corridor panel; 9 to 16 inclusive are on stage panel; 18 to 24 inclusive are on first story panel; 25 to 34 inclusive are on second story panel; and 39 to 48 inclusive are on third story panel. Circuits 49 and 50 are No. 8 wire for 220-V circuits to motors in fan rooms. Circuits 51 to 54 inclusive are spares for future 220-V circuits.

(C) LIGHTING FIXTURES shall be installed (as specified and catalogued) by expert fixture hangers, all pendants plumbed and in perfect alignment, and all brackets exactly normal from ceilings. No fixtures shall be accepted, unless in accordance with Architect’s specifications. All fixtures shall be properly fitted with glassware specified or indicated in catalog, with lamps of specified wattage, all in good condition when work is accepted. 50 lamps each, of 40, 100 and 200 watts, are required. A copy of fixture and other electrical plans provided, tests to be made in presence of Superintendent and approved by him. Approved factory-sealed packages need not be tested. Shop drawings, in accordance with Architect’s details, shall be submitted for outside wrought iron brackets.

Article 12. Low-Voltage Work.

(A) PROGRAM CLOCKS. Master-clock shall be installed as directed in Principal’s office, and 28 secondary clocks in various other rooms, as indicated, all in accordance with standard directions of the Maker, with necessary modifications, as approved by Architect, to suit this particular work. All wiring shall be concealed in approved manner and necessary connection made with lighting current through transformer. Panel-board shall be located near master-clock, and all bells and outside lighting properly mounted in approved locations and properly connected. Each panel-board shall be in perfect condition when subjected to final tests, both by sound and electrical operation.

(B) BUZZER SYSTEM shall be installed as specified in Par. X of Art. 3 and Par. B of Art. 6, with all wiring concealed in approved manner. Panel-board shall be mounted on or near Principal’s desk and all buzzers in various rooms as directed. All shall be tested and shall be in good working order when accepted. Wiring shall be white, bell wiring for 6-volt current supplied through transformer off of lighting current.

(C) TELEPHONE CONDUIT will be left as approved, ready for insertion of Telephone Co’s wires.
PUBLICATIONS OF INTEREST TO THE SPECIFICATION WRITER

Publications mentioned here will be sent free, unless otherwise noted, upon request, to readers of Pencil Points by the firm using them. When writing for these items please mention Pencil Points.

Laundry Machinery.—A. I. A. File No. 35 D. Looseleaf data sheets describing typical large laundry installations and other valuable information for those contemplating the installation of a new plant. Youngstown, Geo. Z. Yost, Jr., Youngstown, Ohio.

Weekly.—A monthly publication of interest to those concerned in wall decoration. The issue for July contains five beautiful color plates in addition to over 35 line illustrations and suggestions for wall treatments. Wall Paper Manufacturers Association, 461 5th Ave., New York City.


Iron, Bronze and Wire Works News.—Monthly publication of interest to architects published by the National Association of Iron & Bronze Mfrs., 614 Race St., Cincinnati.

Atlantic Terra Cotta.—Monthly magazine for architects and builders interested in terra cotta. Contains data and illustrations of the Southern Branch of the Atlantic Terra Cotta Co. and shows many notable examples of buildings using Terra Cotta, as well as pictures of which Atlantic Terra Cotta figures prominently. Atlantic Terra Cotta Co., 19 West 44th St., New York City.

Crittall Standardized Casements.—Architects Catalog No. 1-26 is a complete handbook of information on the use of the Crittall Casement Window Co., Detroit, Mich.

Massachusetts Modified Squirrel Cage Fans.—Bulletin No. 33 illustrates and describes this type of fan. Rand, MacMall & Co., Cambridge, Mass.

Indian Limestone Details.—Service publication No. 15, 13 pages. Other interesting number in this series containing detail drawings of Indian Limestone cornices applied to reinforced concrete construction. Details of cornices in the Roman Doric and the Roman Ionic orders. Standard filling size: 8 1/2 x 11. Indian Limestone Quarries, Rockville, Conn.

Waterproofing and Dampproofing.—A. I. A. Classification index to data and specifications on waterproofings and dampproofings, and allied products. Carefully indexed and logical arrangement of those items of greatest use for such a document. Complete specifications in condensed form for standard filling size. Builders Co., Cleveland, Ohio.

MacArthur Piles.—Folder illustrating and describing the Consolidated Concrete Pedestal Type of Pile, 8 1/2 x 11. MacArthur Concrete Pile and Foundation Co., 15 John St., New York City.

Ferrox Drill and Trench Resistant Vault Plates.—Leaflet illustrating and describing this product. Contains detailed information of Ferrox Plates and list of installations. 8 1/2 x 11. Ferrox Mfg. Co., 50 Church St., New York.

Data Sheets, A. I. A. Classifications.—Interesting data sheets of specifications containing data and specifications on Roofing Tile Illustrating the Georgian, and Mission" style, details and plans. Standard filling size. The Heing Roofing Tile Co., Denver, Colo.


Norton Roofs.—Booklet containing reprint from an address by D. Knickerbocker Ford, reprinted from Quarterly, April 1926, of the National Fire Protection Assn., 40 Central St., Boston, Mass.

Durable Douglas Fir.—Handsome booklet illustrating and describing the properties of Douglas Fir. Contains many attractive drawings of this hardy western wood. 8 1/2 x 11. The West Coast Lumber Trade Extension Bureau, Seattle, Wash.


Ratto Textile.—Bulletin No. 177 treats of the various types of Nato Double Shell Tile and is a complete text book for the guidance of architects, contractors, and builders. It contains data and specifications on the various types of rubber composition tile, cross sections, diagrams showing application, construction, tile specifications, etc. Table, for determining height and length of wall, compression tests, etc. National Ratto Co., 30 E. 42nd St., New York City.

"I. W." Tovey.—Architect's specification and descriptive Bulletin covering the use of "I. W." Tovey Integral Waterproofing Compound. This booklet contains complete and detailed instructions for the proper application of the Tovey Compound for integrally waterproofing mass concrete or cement mortar construction. 8 1/2 x 11. Toche Brothers, 444 Fourth Ave., New York, N. Y.

The Dutch Boy Paint.—A magazine devoted to the interests of good painters and decorators. Contains an article of interest each month, a section for questions and answers, etc. Published by the same firm.—Steel Paint and Varnish Bulletin showing the use of "R. I. W." Protective Paints. A. I. A. File No. 15 e.

The Book of Decoration.—Booklet of 16 pages, especially designed for architects, building contractors and decorators: contains full specifications, plans, etc. Published by the same firm.—Steel Varnish Bulletin showing Architectural Details for use in Domestic Interiors, "Early American Interior", also Decorative Painting in Colonial Times," and the "American Spirit in Colonial Architecture." Published by the National Varnish Co., 50 Madison Ave., New York City.

The A. D. S. L.—Bulletin No. 48 of this series presents architects with information on objects retaining walls. Cross sections and details are shown. Alpha Portland Cement Co., Easton, Pa.

Marbleoid—The Universal Flooring.—Illustrated booklet covering subject of modern flooring in various types of buildings and for many uses. Industrial plants, restaurants, schools, hospitals, offices, churches, theaters are covered. 21 pages, 8 1/2 x 11. Marbleoid Co., 461 8th Ave., New York City.

Major Flood Light Unit.—Bulletin No. 5 describes the construction and adaptability of the Major Unit for efficient flood lighting in theatres, show windows, mills, etc., and its prices. Axten Equipment Co., Inc., 300 N. Michigan Blvd., Chicago, Ill.

The Roof Beautiful.—Brochure illustrated in color on the subject of roof treatment. 8 1/2 x 11. 22 pp. Laidlaw Celadon Co., Monroe Blvd., Chicago, III.

Warehouse Studies.—Series of renderings which include plans, elevations, sections and structural features of all types of glass enclosures, solar bathing rooms, glass enclosed swimming pools, aviaries and children's glassed-over play houses, as well as green houses of various types. A suit of drawings is furnished on the first mailing. Lord & Burnham Co., 29 E. 42nd St., New York City.

Water Mixing Valves.—Illustrated handbook showing thermostatic water mixing valves for showers and other uses, and a list of other uses, with full color illustrations and specifications, tables of test values, etc. Standard filling size. 8 1/2 x 11. 26 pp. Minwax Co., Inc., 270 Madison Ave., New York City.

Kernerator.—Covers disposal of refuse and other waste in the residence and apartment building. 49 pp. Kerner Incinerator Co., 82 W. 8th, Chicago, III.

PENCIL POINTS

Competitions in Design

1—Competition for street traffic signal tower and street signal standard designs, and street lighting standard designs, including street name signs.

2—Competition for filling station designs.

for

BISCAYNE BOULEVARD
Miami, Florida

Conducted by BISCAYNE BOULEVARD ASSOCIATION
BENNETT, PARSONS and FROST, Professional Advisers
These competitions are approved by the American Institute of Architects.

COMPETITIONS CLOSE 6 P.M. OCTOBER 1, 1926

Miami Harbor and Skyline of the lower portion of Biscayne Boulevard, taken from the new Causeway (Venetian Way) to Miami Beach and showing the Thirteenth Street Causeway in the foreground.

These competitions are open to all who desire to offer designs of merit for the above named structures. The purpose of these competitions is, [1] to obtain designs for traffic signal towers and standards and street lighting standards to be erected on Biscayne Boulevard, Miami, Florida, [2] to develop ideas for more pleasing filling station designs and [3] to stimulate general interest in the designing of better structures pertaining to public street improvement.

Biscayne Boulevard is a 100 foot street which extends from the center of Miami northward to Northeast 55th Street [three and one-half miles]. It runs along Biscayne Bay for one mile, and about one block from the Bay for the rest of its course through a high class residential section of Miami. The south end [formerly Bay Shore Drive] is an old street recently widened and improved. The north two and one-half miles is a new street opened by cutting through fourteen improved city blocks, widening a narrow street [formerly Northeast Third Avenue] through nineteen improved blocks, and extending the street thus created through the recently divided estate of Charles Deering, into Bay Shore, a suburb of fine homes. Biscayne Boulevard here becomes the Federal Highway, which combined with the Dixie Highway, extends 360 miles to Jacksonville, Florida, and beyond to the Northern States. Buildings are now being demolished along the new portion of Biscayne Boulevard and this section will be opened about December 1, 1926. Already dwellings are giving way to buildings for showrooms, theatres, offices, restaurants and first class shops.

Being a main artery of through traffic, a system of traffic signals will be required, lighting will be made a feature, and the demand for filling stations along the northern section of the Boulevard must be taken into consideration.

The Biscayne Boulevard Association is anxious that such structures shall be well designed so as to add to the beauty of the Boulevard. The Association, representing more than 80 per cent of the property, is desirous to control in a measure the architecture and the uses of the street. With the cooperation of the City of Miami and the City Planning Board, Royal Palms will be planted the entire length of Biscayne Boulevard.

Any competitor may submit designs for one or both competitions. The awards will be made separately.

The Biscayne Boulevard Association agrees to award to the winners within 5 days after the judgment of the jury, $4,650.00 in prizes as itemized below.

Competition No. 1

1st. Prize .... $1,600.00
2nd. " 600.00
3rd. " 400.00
4th. " 200.00
6 Mentions, each .. 75.00

List of Prizes

Competition No. 2

1st. Prize .... $750.00
2nd. " 400.00
3rd. " 250.00
4th. " 150.00
6 Mentions, each .. 75.00

Program of the Competitions may be obtained by addressing Harry T. Frost, in care of:
-Biscayne Boulevard Association, Columbus Hotel, Biscayne Boulevard, Miami, Florida.
or—American Architect, 239 West 39th Street, New York

or—Bennett, Parsons and Frost, 80 East Jackson Boulevard, Chicago.
Editorial Correspondence

The letters addressed to the editor of Pencil Points are varied in character, but those of general interest may be divided into two categories; letters asking for information, and those offering suggestions or criticisms. Some of the former flatter us with the assumption that we have a fund of information which could only be acquired by the immortals. Answering them gives pain, for it is necessary to admit that the writer's knowledge has limits and that he is not a prophet.

We are asked to recommend a window fastening which would not cost more than a dollar and by using which burglary would be made impossible, while at the same time the window could be left fully open from top to bottom. We have had letters, with diagrams attached, asking us how a smoky chimney which had defied the corrective efforts of three architects and two contractors could be completely cured.

Then there is the letter from an anxious mother giving a sketch of the character of her only son, accompanied by a photograph, asking us whether we considered him likely to make a great success as an architect or as a clergyman. She merely wanted to know what income we could guarantee he would be able to command at the end of five years. Another case was that of the inventor of a new style of architecture which he was anxious to introduce to a waiting world, who wanted our advice as to how to go about it.

We receive letters, and we may add we are always glad to receive them, containing criticisms of the contents of our issues and suggestions as to their improvement. The reader of antiquarian tastes will suggest that we give too little space to representations of the architecture of the past, while the typically commercial man finds little to interest him in a dissertation on the architectural value of Greek sculpture. Many would have our pages little else than a collection of architectural features and details which might be useful subject matter for the melting pot of modern design. Unfortunately, belief in a cause or school frequently begets intolerance towards the exponents of other beliefs. If our illustrations or articles sometimes serve to induce men to see matters from a point of view with which they are not altogether in sympathy, we have not worked in vain, for it is by acquiring a broader and more catholic outlook that the architectural profession will gain possession of a valuable means of bringing itself into touch with the general public, from which it obtains the opportunity of exercising its calling.

We hope that our friends will always give us their criticisms, which we promise will receive unbiased consideration. By so doing they are not only helping us, but are doing useful work for the calling whose needs they have at heart.
ARCH OF TITUS, FROM THE PEN-AND-INK DRAWING BY RICHARD M. POWERS

Original 7½" x 12"

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