THE MAKING OF A MODERN STAINED GLASS WINDOW—ITS HISTORY AND PROCESS, AND A WORD ABOUT MOSAICS: BY FREDERICK S. LAMB

The making of stained glass is one of the few forms of art industry that has been developed far beyond its previous possibilities in recent years; more than that, this development has taken place in our own country. Modern painters have not gone beyond the art of Velasquez, Rembrandt and Franz Hals; many of the industrial arts have lost their quality in this age of material progress; other wonderful, old processes are lost arts; but within the last thirty years in America, effects have been evolved in stained glass that did not exist even in the golden days of Mediaeval and Renaissance art.

It is true, however, as John La Farge has said, that the suggestive material was there in the old windows. Speaking of the wonderful Mediaeval glass in the Chartres cathedral, he says: "All the principles of work in glass windows are stated there, although in archaic form," yet the American glass of to-day is markedly different in effect from the old. Although stained glass windows were used in the fifth, sixth and seventh centuries, we can hardly depend upon the authenticity of surviving examples before the tenth and eleventh centuries. This Mediaeval glass, examples of which are to be found in the churches of France and Bavaria, depended upon the juxtaposition of the colors for its effect. In these designs the pieces of glass are small and there is no attempt to represent figures. In windows of this period and of the succeeding centuries up to the seventeenth, the designs are almost entirely conventional and made up of a great number of small pieces, all of primary colors. The result in the best examples was a jeweled effect indescribably beautiful. The conception of the glass worker of that period was undoubtedly founded upon the designs of mosaic.

The superimposing of films of different colored glass upon white was also practised with good effect. This form of work reached its high-water mark in the fifteenth century.

Painted glass finally superseded the mosaic and jeweled effects produced by the craftsman, and was almost universally used until the middle of the eighteenth century. In some cases a large section of glass, the color of which formed the basis and dominating note of the
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color scheme, was painted upon in other colors. The decadence of painted glass came when larger pieces of glass were used exclusively, with the entire design painted upon them. All of this painted glass was perishable, and its effect weak and dull in comparison with the modern glass. From this time on the art deteriorated until the present period in England, which has seen the work of Richmond and Burne-Jones.

THE first stained glass used in America was imported. When the industry was started in this country the glass was made in the continental fashion with foreign workmen. Yet now American glass is influencing that of Europe. The construction and effect of modern glass is quite different from that of the old. Instead of the jeweled effect of primary colors or the inadequate painted figure, we have a gorgeous bloom of color in large "washes," so to speak, in which figures and landscape bathe in an atmosphere that the painted canvas can never realize, for the low amber glow behind purple mountains, represented with pigment, cannot possibly have the luminosity of real light shining through color. Someone has called the stained glass artist a painter without a brush, and it may be as truly said that he uses light itself for his combining medium.

The extraordinary richness of color obtainable in modern stained glass is gained entirely through the variety and degrees of color in the glass itself, and in the manipulation of the color sections. Effects are, therefore, possible in the shading of draperies and in backgrounds never gained in the painted glass. In the modern glass only the head, hands and feet are painted.

BRIEFLY the process is as follows: First the artist makes a small colored design of the whole window, showing its shape and decorative conformation. Sometimes a full-size colored design is made, but more often the work is done from the small sketch, as the workmen seem to give the best results from this freer method of selection. In reproducing the large, colored model they tend to search for a literalness of imitation which develops into a generalized color impression of the whole. From the small, colored design, then, a full-size outline cartoon is drawn to a scale and the placing of the leads is determined. These lines consist of the rather
thick, strong horizontal bars required by the scheme of construction, and the thinner lines outlining the various sections of colored glass. For this latter purpose lines of different widths are used, varying from one-sixth to one-half of an inch, according to the quality of line desired. On the mechanical side of the arrangement of the leading, the artist has to consider that a section of glass larger than twelve inches cannot safely be utilized without the support of the constructional bar. On the artistic side, he knows that the lines are an important decorative factor, and that upon them depends the beauty of the line composition in the completed window.

After this large working drawing is finished, the work passes for a time out of the designer’s hands and into those of the artisan, who, like the craftsman of Mediaeval days, must also be an artist in his way. With the design before him, the workman selects sections of glass to fit the colors in the design. The glass for this purpose is kept in different compartments in a large, well-lighted room and is numbered and classified precisely as to the tints and shades of each color. This system of numbers the workman knows as a musician knows his notes. Looking at the design he can gauge the color called for in each spot. He knows, for instance, this for a number one blue, that for a number three violet, and so on through the whole scheme.

After the pieces of glass are selected, the exact place where each is to go is marked upon a design which has been transferred from the working drawing to a heavy paper. Then each section of paper is cut out with a cutter which allows for the exact width of the lead line to be employed. This is so that the fitting together of the sections will be absolutely correct. Each section of paper is then used as a pattern by which to cut out the separate pieces of glass.

On a large piece of plate glass, in a heavy wooden frame—the glass-worker’s easel—which is placed upright against the strong daylight, the pieces of glass are laid on in the design and held together with a temporary wax-like substance which also serves to keep out the white light. In this process comes the tentative part of the work, and often many pieces of glass are rejected before the exactly right one is found and the artist’s idea is satisfactorily fulfilled. This final decision is, of course, made by the artist himself. For although the stained glass designer of to-day does not, like
ONE END OF MR. LAMB'S STUDIO, SHOWING FINISHED WINDOW AND WORKING DESIGNS AT EITHER SIDE
AN ANGEL IN STAINED GLASS—SECTION OF THE PARIS WINDOW—FINISHING THE HAND
PUTTING IN THE FINISHING TOUCHES OF GLASS ON THE FIGURE OF A KNIGHTLY ANGEL
PREPARING A CARTOON FOR THE ARTISAN

GLASS CUTTERS AT WORK ON WINDOWS
ROLLING GLASS IN TO THE FURNACE

GLASS MEN WORKING IN THE LAMB STUDIO
WORKING DRAWING FOR MOSAIC FIGURE
DONE IN MODERN STYLE
CARTOON FOR A MOSAIC BY ELLA CONDIE LAMB
AT WORK ON A PORTION OF THE PARIS WINDOW
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the artist of the fifteenth century, do all the work himself, the decision does not at any time pass out of his hands so that the individuality of his work is preserved as it was not in the decadent era of glass work when all the manual work was done by workmen, who were seldom artisans.

When the final decision in the matter of the glass has been reached, the embryonic window is carried into another room and taken apart. Then each section of glass is cleaned and polished and put together again, and placed on the spot where it belongs, over the full-size cartoon. Then the leads are fitted in and soldered together with a solder stick and red hot iron, used simultaneously. The next step is the filing smooth of the lead lines, and the last, the insertion of a water-proof cement between the lead lines and the glass to make all water and air-tight.

There are several ways of producing color-shading and variety aside from that offered by the varying opaqueness of the glass itself. Modeled glass—also an American invention in this usage—has great value in breaking up the color for certain purposes. It is especially happy and suggestive used for the expression of angels' wings in white, faintly streaked with violet. The overlay of edges is another means of producing the effect of shadow colors. This effect is susceptible of great variety and verisimilitude. For instance, blue superimposed upon red, as any one will realize, would produce violet for a cool shadow in a crimson robe, and, conversely, red over blue will produce a warm shadow in a blue fabric. This process can create most gorgeous effects of color such as one sees in the water, skies, and flowers in nature. The superimposing of one piece of glass of a certain color upon a number of smaller pieces of various colors will give an effect of indescribable richness. The use of corrugated glass in this way,—rather a popular one at present,—is apt to give an over material effect and to encourage the tendency to lay too much stress on the mere representation of textures. It has seemed to us that a more interesting, translucent, water-color-like effect is gained by the overlay of smooth glass upon smooth glass, which produces a result more spirit-like and intangible.

A phase of stained glass work that may be said to be entirely modern is the use of landscape. Landscapes will be found used as a background in some of the old painted glass, but they are of a
pale and didactic character, and were painted, not created with the glass itself. The effect of landscape produced in the modern glass is a kind of vivid, intensified realism that is yet dream-like.

In a stained glass factory, although the workers are many, the work becomes more or less that of one personality, just as the individual musicians in an orchestra unite to produce the conductor’s interpretation of the composer. Therefore does the glass from this or that house bear the stamp of the factory it came from. The relation between the artist and the artisans who carry out his design, we have always found to be sympathetic and harmonious.

Mosaic work has been so allied to stained glass as an ecclesiastical decoration, that a word may be said about it in this connection. Mosaic, as we all know, was used as ornament in the earliest days. The old Roman mosaics still exist and would undoubtedly exist intact were it not for the hand of the despoiler who contributes his share to the work of destruction in each generation—even to-day the tourists are gradually disintegrating the mosaic floors of Tiberious. These early mosaics, used for walls and pavements, were made of stone. The next development was the use of bits of tile or porcelain. This is the process used in the beautiful mosaics of Venice and Ravenna, and it is the same as that practised to-day. The gold used was, and is, permanent, being an interposition of gold leaf between two pieces of glass.

In mosaic work the design is first made in color by the artist just as for any other decoration. Then the pieces of mosaic are selected for the various spaces. Ordinarily there is less contrast and variation of color than in the stained glass, and the mosaic designs deal more in flat tones. The variety of effect comes from the broken tone created by the conglomeration of the large number of small pieces.

There are two ways of making mosaic. In one, the pieces are set into the soft cement. In the other the pattern, after being laid, is pasted face downward upon thick paper and the liquid cement is poured over the back, filling up all the interstices. In a design for a memorial made by Ella Condie Lamb the color scheme is very light and high in key, almost like a Monet painting, producing a distinct effect of atmosphere, quite different from that of the older designs.
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A variation introduced in American mosaic is the combination of marble with the tile or porcelain, and the use of it in occasional large sections, as, for instance, in one of our designs, an angel’s shield is composed of one piece of pale-colored marble. A further and important development in the making of mosaic that is purely American, is the utilization of glass instead of tile. The same heavy, slightly opaque glass used in the windows is taken for this purpose. The glass furnishes a much wider opportunity for variety and subtility of color effect, and also gives greater freedom in the planning of the design as larger sections can be used in ways that are interesting in glass where, in the more solid tiling, they would tend to be monotonous.

Mosaic has not been used for decoration in this country to the extent that it undoubtedly will be in the future. It is as much adapted to the interiors of secular public buildings as to churches, and for the decoration of certain spaces, gives an effect of richness unprocurable by any other means.