Coloured glass used for decorative, often pictorial effect in windows. In its purest form, stained glass is made by adding metal-oxide colouring agents during the manufacture of glass. Shapes cut from the resulting sheets are then arranged to form patterns or images. These shapes are joined and supported by flexible strips of lead that form dark, emphatic contours. Details are painted onto the glass surfaces in liquid enamel and fused on by heat.

in general, windows made of colored glass. To a large extent, the name is a misnomer, for staining is only one of the methods of coloring employed, and the best medieval glass made little use of it.

**Background**

Colored glass as window decoration is of great antiquity in East Asia. Muslim designers fitted small pieces of it into intricate window traceries of stone, wood, or plaster, and this type of window mosaic is still in use. Colored glass was used in windows of Christian churches as early as the 5th cent., and pictorial glass as early as the 10th cent.

**Medieval Stained Glass**

With the development of medieval architecture, stained glass assumed a unique structural and symbolic importance. As the Romanesque massiveness of the wall was eliminated, the use of glass was expanded. It was integrated with the lofty vertical elements of Gothic architecture, thus providing greater illumination. Symbolically, it was regarded as a manifestation of divine light. In these transparent mosaics, biblical history and church dogmas were portrayed with great effectiveness. Resplendent in its material and spiritual richness, stained glass became one of the most beautiful forms of medieval artistic expression.

The early glaziers followed a sketched cartoon for their window design. They used a red-hot iron for cutting the glass to the required pieces, afterward firing in the kiln those that had received painted lines and shadings. The pieces were then fitted into the channeled lead strips, the leads soldered together at junction points, and the whole installed in a bracing framework of iron called the armature. The lead strips were adjusted to the articulation of the design and formed an integral part of it. The coloring of glass was achieved in the melting pot, where metallic oxides were fused with the glass. The metallic ores, although at first crude and limited, ultimately produced admirable color variations. The glass, available only in small pieces, gave thereby a jewellike quality to the colors. The pieces, by their uneven surfaces and varying thicknesses, gave the advantage of irregular and scintillating refractions of light.

Only fragments remain of glass from the 11th cent. The period of greatest achievement in the art extended from 1150 to 1250. Some examples from the 12th cent. can be seen in the windows of Saint-
Denis (Paris), Chartres, and Le Mans in France, as well as at Canterbury and at York Minster in England. The windows of this period were characterized by rich dark colors, single figures, and scrollwork. A recurrent design, that of the Jesse tree, continued in use until the 16th cent.

By the beginning of the 13th cent. figures were abundantly used in scenes, being enclosed in geometrical medallions, such as circles, lozenges, or quatrefoils. A window was composed of many of these medallions. Color became more detailed and varied, and the prevailing scheme of red, blue, green, and purple, with small amounts of white, created tense and vibrant harmonies. In France the cathedral at Chartres is an unrivaled treasury of 13th-century glass; Sainte-Chapelle, Paris, is a triumph of architecture in which the walls present an illusion of being made entirely of fragile, exquisite stained glass. In England there are outstanding windows at York, Lincoln, and Salisbury. In the 14th cent. as medieval glass-making waned, medallion compositions were replaced by a single figure framed in canopied shrines. Many windows showed clear areas designed in grisaille.

See also rose window.

Later Stained Glass

In the 15th cent. glass artists achieved a silvery tone by the use of large proportions of white glass, and their figures of saints and apostles were surmounted by elaborate canopies. With improved glassmaking many of the assets of medieval stained glass (small, jewellike pieces of varying thicknesses) vanished. By the 16th cent. the material was smoother and in larger pieces; toward the middle of this century the use of enamel paints permitted the designs to be entirely painted on the glass and then fired. During the 16th cent. stained glass designers emulated the purely pictorial effects of Renaissance oil painting, with complicated perspectives, large scale, and realistic detail.

Stained Glass in the Modern World

Nineteenth-century romanticism and the Gothic revival brought fresh study and emulation of stained glass as well as of other medieval arts. The arts and crafts movement under William Morris was especially productive. A great contribution to American stained glass was made by John La Farge and Louis Comfort Tiffany. In modern art the medium has been used with great effectiveness by Rouault, Matisse, and Chagall.

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