

**TEXTILE PRINTING.** The printed cloths of the eighteenth century in Europe were made in imitation of the *Indiennes* that for two hundred years had been imported from India, which may be regarded as the home country of printed cottons much as China is the home country of brocaded silks, and Flanders the home country of fine woolens. But block printing of textiles in one form or another can be traced back among the Egyptians, Assyrians, and Chinese to remote ages, and it was closely associated with other similar processes that produce similar results, such as painting, stenciling, and dyeing. In printing fabrics the color is stamped on from an engraved block or roller. Pliny says that the Egyptians figured fabrics by applying several mordants with different powers of resistance, presumably by stamping or stenciling, in such a way that one dipping in the dye pot produced a pattern in several colors. There are still preserved in European museums many examples of block-printed textiles from early Christian (Coptic) Egypt. A fragment of printed cotton was found at Arles in the grave of St. Cæsarius, who was Bishop there in the middle of the sixth century A.D. During the twelfth, thirteenth, and fourteenth centuries, in Germany the place of the rich Saracenic, Byzantine, and Italian damasks and brocades was largely taken by inexpensive block-printed imitations. There survive examples of Rhenish thin-printed silks with sim-

plified patterns in gold and silver; and coarse linens outlined in dark browns and blacks. In the seventeenth century the industry revived and Augsburg was famous for its printed linens, supplying Alsace and Switzerland with many trained workmen. In 1676 textile printing was introduced in England by a French refugee who opened an establishment on the Thames near Richmond. In the last half of the eighteenth century the art was brought to a high point of perfection in France, especially at Jouy, near Versailles, where Oberkampf produced printed linens that excelled in technique as well as in design, so that a leading place in the market to-day is held by modern reproductions of Jouy prints, some of these made from the original blocks. The most prolific designer for the works at Jouy, many of whose original drawings are still preserved at the Musée des Arts Décoratifs in Paris, was Jean Baptiste Huet. At this period the popularity of printed linens and wall papers became such that they crowded tapestries from the walls of even stately mansions, and brought to humbler homes decoration that had previously been lacking. At the end of the eighteenth century metal rollers took the place of wooden blocks for the production of simple repeat patterns inexpensively, and the modern machine period had begun. The invention of rollers is attributed in France to Oberkampf and in Great Britain to Bell. In the last quarter of the nineteenth century William Morris raised the standard of design greatly by his introduction of ingenious and richly colored flower and bird patterns, going back for his inspiration to Persian and Indian flat ornament, away from the modeled shapes and monotonous tiny repeats that had been in vogue in Europe since the Empire period. To-day block prints are again used for picture effects and large patterns, and the designs of the roller prints are growing constantly better. The block prints and the finer roller prints are on linen, the cheaper ones on cotton.

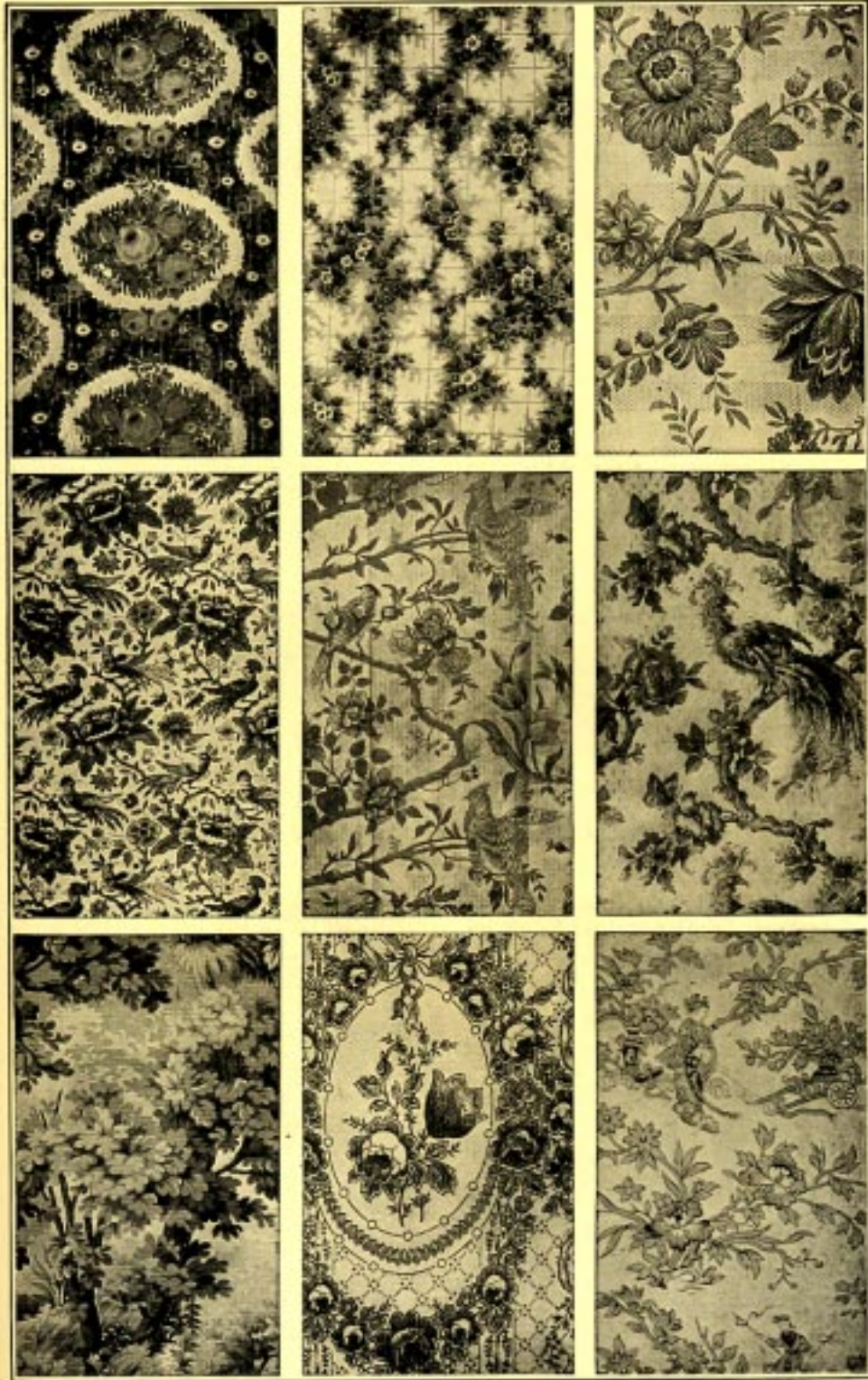
**Block Printing.** The blocks used are rectangular planks of wood about three inches thick, six inches wide, and nine inches long, built up out of two or more layers of pine with facing of sycamore, plane, or pear, and with a strong handle to lift them by. The design is transferred to the blocks by rubbing off a tracing in lampblack and oil of the outlines of the particular color, and then tinting the portions that are to be left in relief to distinguish them from those that are to be cut away. Fine details difficult to cut in wood, and that in printing from wood would wear down or break off, are inserted by coppering or building up with thin strips of brass bent to shape and driven edge-wise into the wood. Where large surfaces of solid color occur the background is cut away and replaced by felt that gives a better impression than is given by a large surface of wood. Besides his blocks the printer needs a table and a color sieve. The top of the table is a slab of stone that is covered with a thick woolen blanket. The color sieve is a shallow box which floats in a swimming tub of starch paste, and which has a bottom of fine woolen stuff over which the color is distributed evenly with a brush. The cloth comes from a roll on the right of the table, and after being printed is carried to the ceiling on rollers, from which it hangs until dry and ready for its next color. When the first section of the cloth has reached its table the printer

inks the block by applying it twice in different directions to the color sieve, and then presses it hard against the cloth, driving home the impression by striking the back of the block with a heavy wooden mallet. The impression with the second block on the second section of the cloth is made to join the first exactly by means of the guide pins at the corners of the blocks. These pin marks are one of the most obvious features that distinguish block from roller prints. The perrotine is a block-printing machine invented by Perrot of Rouen in 1834, and still occasionally used in France and Italy, which automatically prints three colors from long narrow blocks, infusing the second and third colors on the first while it is still wet.

**Roller Printing.** While the design in block printing is cut in relief on wood the design in roller printing is engraved on copper rollers. The process was patented for a six-color machine by Bell in England in 1785. In this machine, that now carries sometimes as many as sixteen colors, the rollers of the different colors are mounted around the circumference of a huge drum, the surface of which, wrapped with several thicknesses of lapping, takes the place of the block printer's table. As the drum revolves, the cloth is pressed between the drum and the rollers, each of which leaves its color and pattern, so that the cloth that comes to the drum in the gray, leaves it completely printed with all the colors. Each roller is inked by a wooden roller revolving in a color box below it, and has the surplus color (i.e., the color on the surface of the roller, as distinguished from the color in the engraved incisions) removed by a knife called the doctor. The roller printing is rapid and inexpensive, one machine producing from 10,000 to 15,000 yards a day. The pattern on the copper rollers is produced by etching, or by indentation from a mill. In the first process the pattern is photographed, magnified on a zinc plate, and colored by hand. Then the outlines of each color are engraved by hand, and transferred and reduced in the pantograph machine to a varnished copper roller which is then etched with nitric acid, the acid eating copper away only where the design has been pin-pricked with the pantograph needle. In the mill process the design is first engraved by hand on a soft steel roller, which is the die. The die is then hardened and rotated against a softened steel roller until the latter has the design in relief. This is the mill that when itself hardened and rotated against the copper roller produces this pattern on the latter in intaglio.

**Stenciling.** This process is nearer painting than printing, the colors being applied with a brush through sheets of thick paper or thin metal from which the pattern has been cut completely out with a sharp knife, the uncut portions covering the parts of the surface that are to be left uncolored. A peculiarity of stenciled patterns is the ties that have to be left to keep, detached or nearly detached portions of the background connected with the rest of the stencil. These ties spoil the design when badly placed, but when skillfully used add distinctive charm. The Japanese are especially skillful in the use of stencils, often employing them in connection with painting and with block printing. As of blocks, so of stencils; there must be a separate set for each color. A special method of applying the color that produces results of unusual delicacy is spray printing with the air

TEXTILE PRINTING



AMERICAN CRETONNES, TAFFETAS, AND REPS

TEXTILE PRINTING



A QUAIN AND CURIOUS CHINOISERIE



A RICH FRENCH RENAISSANCE PATTERN



THE STRAWBERRY THIEF  
BY MORRIS



AN ANCIENT TOILE DE JOUY



FROM ONE OF GRINLING GIBBONS'  
FAMOUS CARVINGS



\* ORIGINATED FOR KING GEORGE V

EUROPEAN HAND-BLOCKED DRAPERIES

brush, invented in Lyons and first practiced in America about the year 1908. Discharge printing stamps upon colors dyed in the cloth acids or alkalies that remove the colors or the mordants, producing patterns in white upon a colored ground. Resist or reserve printing stamps upon the cloth before the dyes are applied substances that prevent the dyes or mordants from fixing themselves. The effect is similar to that of discharge printing, and to that produced in a more primitive way in the Orient by tying knots in the cloth before dyeing, or by covering certain portions with wax. The printing of woolen and silk cloths is similar to that of cotton, except that the woolen cloth requires more preparation before printing and the silk cloth less; and that silks are particularly adapted to discharge and reserve effects. (See DYEING.) Consult: J. Persoz, *L'Impression des Tissus* (Paris, 1846); Rothwell, *Printing of Textile Fabrics* (Philadelphia, 1892); R. Forrer, *Die Kunst des Zeugdrucks* (Strassburg, 1894); Gerogievic, *Chemical Technology of Textile Fabrics* (Eng. trans. by Salter, London, 1902).