

## THE MANUFACTURE OF WALL PAPER.

BY W. FRANK M'CLURE.

The interesting industry of wall-paper making begins with the drawing and hand coloring of the multitudinous designs which are to decorate the walls of American homes. This is followed by the transferring of these designs by pattern makers to wooden rollers, then the skillful mixing of the paint, the applying of the background to the rough paper, and subsequently the printing of the colors by machinery. The rough paper from the pulp mills comes in huge rolls not unlike those used in the office of a metropolitan newspaper. Much of the clay used in mixing the paints is brought from Georgia.

The wall paper designers are already at work upon the designs of 1906. The styles in wall paper change every season, and the designers work a year and a half and sometimes two years in advance. The designing room is to the majority of visitors to a wall

The making of the paints which are to decorate the wall paper is one of the most important branches of the work, for very much of the completed appearance of the paper depends upon the skill with which the tints are mixed and in keeping the mixture uniform throughout the printing of the different patterns. The white clay which forms a most necessary portion of the tinting mixtures is first ground to a powder. The clay is used chiefly in the paints for backgrounds, and in this mixture boiled glue is used as a sizing. In the making of tints for the subsequent decorations, oxide of zinc is extensively used, with potato dextrine for sizing.

Before going to the giant presses for the great mechanical operation of printing numerous colors at one time, the background must be applied by the brushes of a large mechanical device, through which the white paper passes as it comes from the huge rolls, each one of which, by the way, contains suffi-

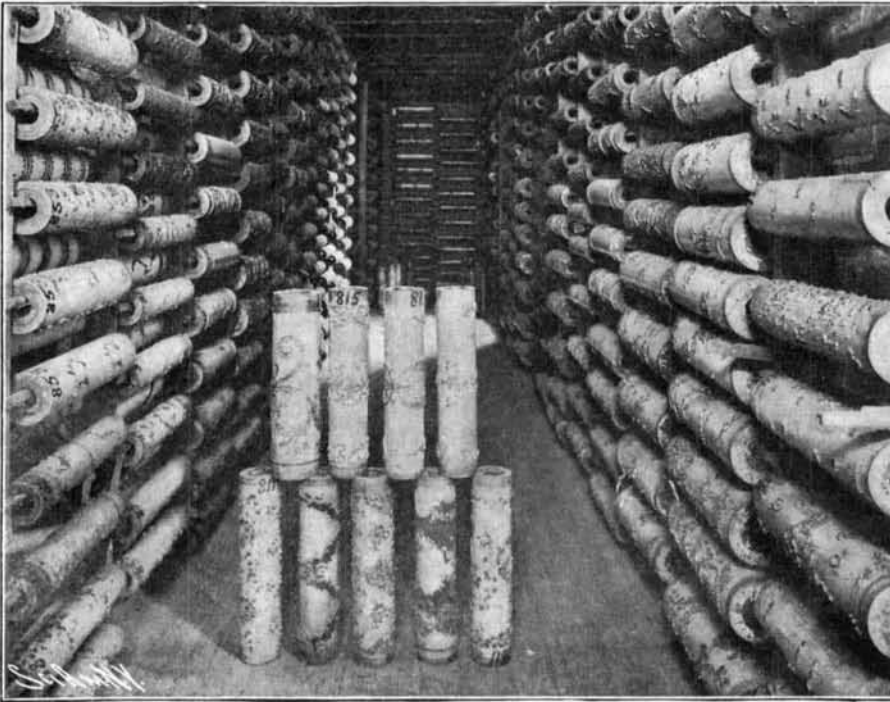
cient paper for 200 or 300 finished rolls. As the paper leaves this machine it is carried for some distance on racks, which allow it to hang in folds. Beneath its path on this trip are steam pipes, which together with the hot air that is blown into the folds, serve to dry the coating of paint which has just been applied. The paper is next returned over the same route by the aid of a cloth web, and goes at once into the color-printing machines.

The large cylinder of the printing machine receives the paper, and it is soon brought in contact with the various rollers or pattern blocks, each color being applied by a separate roller, which of course revolves in accurate register upon the paper. The paper passes through the machine but once, receiving at this one run any number of colors up to twelve. As the decorated paper comes from this machine, it is again carried in festoons or folds over steam pipes, after which it is reeled into bundles of 200 rolls each. By the register on each printing machine it is possible to ascertain at any time just how many rolls of paper have been printed of a desired pattern. Finally the

bundles are unrolled and made into lengths of sixteen yards each, which is equivalent to a double roll of paper. Usually a force of girls is employed in winding the double roll lengths upon spindles, twenty-five of which lengths go to make a bundle, which when tied is ready for shipment. In cutting the long rolls into pieces, each 16-yard length is determined by a mark automatically placed upon the roll while it is passing through the printing press.

Large wall-paper factories operate from ten to twenty printing presses, each having a daily output of some twenty miles of wall paper. The annual output of an entire factory sometimes exceeds 25,000,000 rolls.

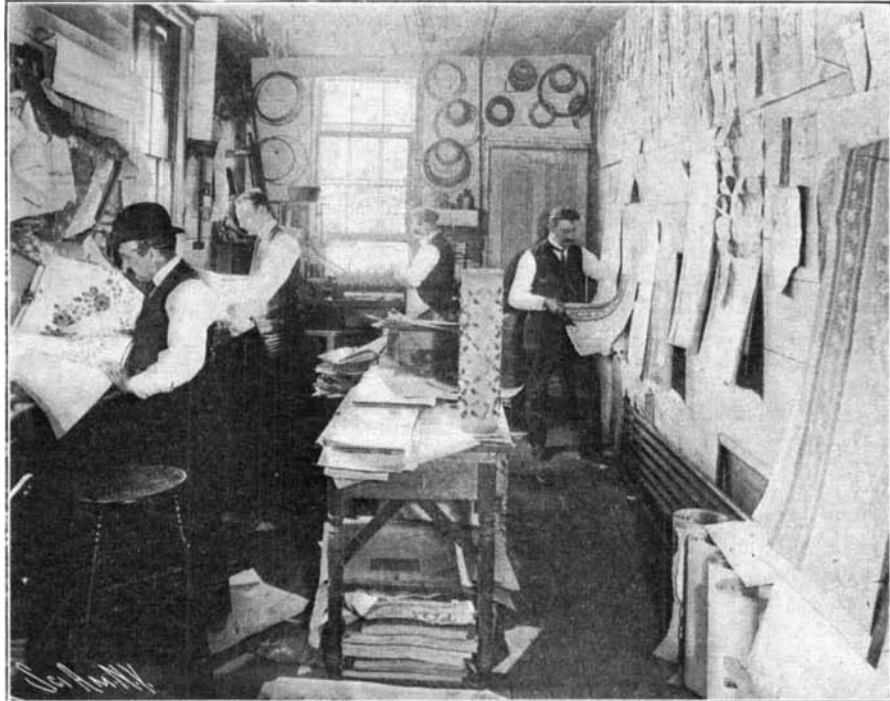
The prices of wall paper vary from a few cents up to dollars per roll. Few families nowadays are so poor but their homes may be rejuvenated from time to time with pretty wall paper. The cost is not dependent upon the number of colors which have been applied to the paper, but more upon the quality of the



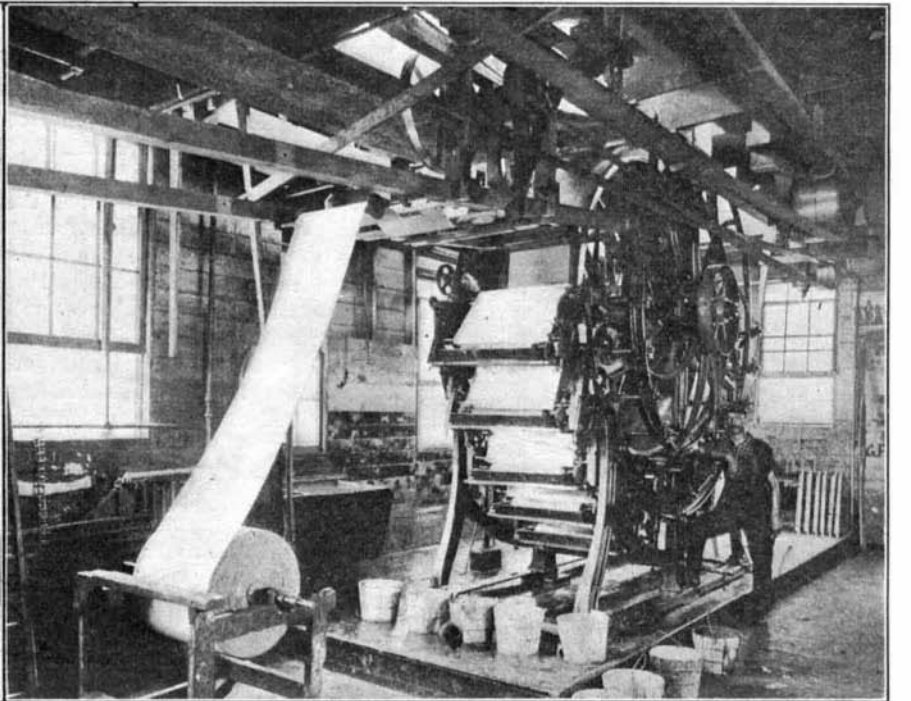
Where the Pattern Blocks Are Kept.



A Corner of the Paint-Mixing Room.



Designers at Work Making Patterns of Wall Paper to be Used Two Years Hence.



This Machine Applies Twelve Different Colors at One Time to a Roll of Wall Paper.

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paper factory the most interesting department of all. It is here that the pattern makers are at work, reproducing with brass and felt the designs upon the hard maple rollers. When the designs have been sketched and painted by hand, they very closely resemble the finished wall paper product. Into the wood of the rollers a thin brass tape is driven. This brass tape can, of course, be easily shaped to follow the pattern. The felt is packed within the space which the brass tape encircles. When the patterns have been completed, they are all properly numbered and go to a pattern block room. There are three distinct sets of these rollers necessary in the making of a complete pattern for a room—one set for the sidewall, one for the border, and one for the ceiling. The cost of making a new pattern is often more than \$500. A large factory usually carries at least one hundred complete room patterns, which with the different combinations of color admits of many hundreds of variations in the finished product. One of the accompanying photographs clearly illustrates a pattern block room.

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paper used. The demand for wall paper in this country is increasing with each year.

M. Max Wolf, in the Bulletin of the Société Astronomique de France, treats of the observation of nebulae, and states that the study of nebulae of great extent, like that of Orion, has become much easier since the use of objectives of short focus for star-photography. In the course of his observations he brings out the remarkable fact that the great nebulae are always surrounded by spaces which are nearly empty and thus form a veritable stellar desert, as was already pointed out by Herschel. But M. Wolf finds that the empty space lies on only one side of the nebula, and in this space the stars of low magnitude are entirely wanting. Only a few rare and brilliant stars are to be found. It seems that the nebula has grouped all the smaller stars around its center. He cites a number of the great nebulae which verify this law. But the nebula of Andromeda and the spiral nebula do not follow the same order, and apparently should be placed in a different category.