

## HOW PAPER IS MADE

The first step in the process of converting a standing tree into a sheet of white paper takes place in the forest, it may be 200 miles or more distant from the paper-mill proper. The tree is cut down and in time—it may be a year or longer—it finds its way to the storage yards at the mill. The logs are usually floated down to the mill on nearby streams; where streams are not available they are carried by rail.

The first step in the process of converting the wood into paper after the logs have arrived at the mill is that of removing the bark. This is accomplished by one of two types of machines. The first type is called the tumbler. It consists of a large cylindrical drum. Into this drum the logs, in 2-foot lengths, together with a suitable quantity of water, are introduced. The drum is then caused to revolve, and the friction of the logs against the side of the drum and against one another removes the bark. The second type is called a barker, or rosser, and consists of a heavy iron disk, provided usually with three knives fixed to its surface and projecting about half an inch from it. The disk is rotated rapidly and when the logs are pressed against its surface the bark is shaved off by the knives.

After being barked the pieces of wood are converted either into "mechanical" pulp or into "chemical" pulp. The former is not suitable alone for paper-making because it contains only about 55 per cent. of cellulose, which is the essential ingredient of the finished paper, and the fibres are too short and stiff to felt or interlace together properly; hence it is mixed with a certain quantity of chemical pulp which is pure cellulose with fibres of greater length.

Mechanical pulp or ground wood is produced by applying the pieces of wood by hydraulic pressure to the face of a large grindstone, usually about 54 inches in diameter and 27 inches thick. This grindstone rotates at a high rate of speed within a casing, which is pro-