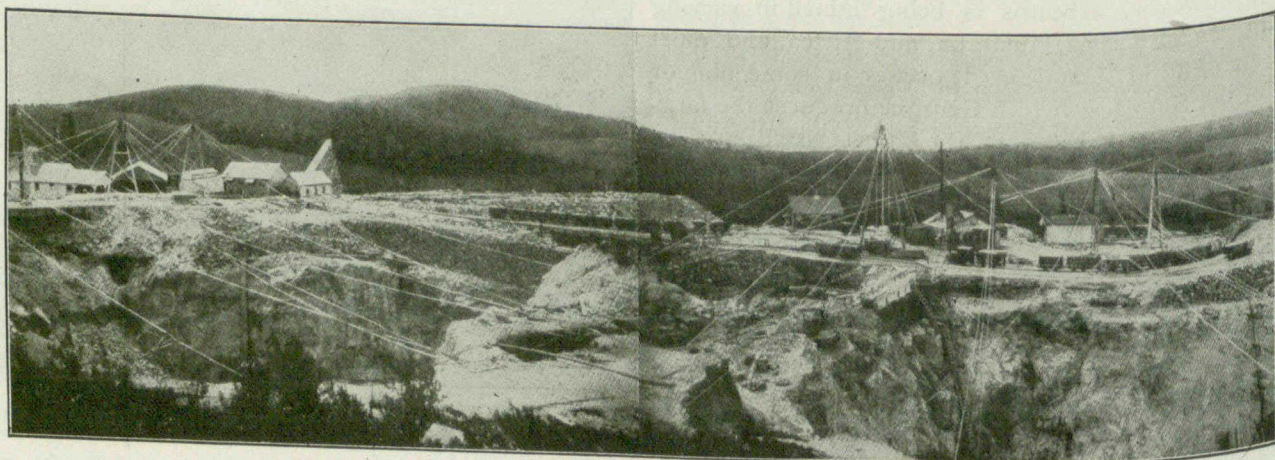


at the quarry. Two or more grades are selected according to the length of the fiber and are then sent on to the "cobbing sheds", where the further process of dressing goes on. This process is merely the separation of the asbestos fibers from the dead rock, and is done in some cases by hand but to an increasing extent by machine. Hand-cobbing is the very simple method of breaking the stone by small sledge hammers, throwing the fiber into one box and the waste into another. This separation is ordinarily not difficult, since the fiber lies in layers more or less loosely clinging to the rock, and can frequently be picked off with the fingers. The crude fiber, thus separated as cleanly as possible from the waste rock, and looking very much like mineralized wool, is packed in 100-pound bags, in which form it goes to the market and the manufacturer.

Hand dressing is not, however, an absolutely thorough method. The waste material from the cobbing tables, and the fine pickings from the quarries, have still some fiber in them; and the utilization of this frequently represents the largest profits of the mine. All these finer pickings are mechanically dressed. In case the asbestos contains a large percentage of water,

the uses to which it is put are almost unlimited, and depend entirely upon the length and quality of the fiber. The very fine fibers—those produced by the mechanical fiberizers from the tailings and waste heaps—are manufactured into various pulp and powder forms. As a fine powder, they are made up into fireproof paints, which are widely used for rough woodwork and possess quite remarkable fire-resisting qualities. As sold to the consumer, these paints are ready for use with the addition of water. Very fine fiber, of the best quality and thoroughly cleaned, is also of great value as a filter medium, the more so because it is proof against the action of acids and alkalies.

Fine-ground asbestos has often been experimented with as a stock for paper. As far back as 1866, some ingenious Italians attempted to produce a paper which they hoped would be adopted by the Government for securities and bank notes, but their experiments were not successful. Later and more satisfactory experiments were made in Paris and elsewhere, and a fair grade of asbestos paper has been produced. Its chief drawback is that it will not take a good sizing, remaining much like blotting paper; and while it is



PANORAMIC VIEW OF ASBESTOS MINES OF THE H. W. JOHNS-MANVILLE COMPANY AT DANVILLE, QUEBEC.

the moisture is first dried out, by exposure to the air, by steam pipes, or by rotary driers; and the rock is then passed on to the crushers, where it is broken by successively finer-set rolls. Cylindrical fiberizers and the cyclone machine reduce it still further. The latter is the most effective apparatus yet devised for asbestos separation. It consists of two beaters, of the screw propeller type, driven within a cast iron chamber at a violent speed, reducing the particles of stone almost to a powder. This is then passed over a shaking screen to remove the sand; and in some mills strong electric magnets are used to take up the particles of iron.

The natural qualities of the asbestos ore vary considerably in different localities, and methods of treatment vary accordingly. The general principles, however, are essentially the same. Of the total rock mined in the Canadian areas, from 30 to 60 per cent. is suitable for milling, the percentage of waste having been greatly reduced by the introduction of mechanical dressing; and of the rock sent to the mill from 6 to 10 per cent. is fiber. Each ton of asbestos mined and milled costs about \$17.50; and the market price runs from \$25 for the poorest grades, suitable for paper and mill-board, to \$200 for the best commercial grades.

When the dressed asbestos finally reaches the

itself quite fireproof, it does not retain the writing under a severe fire test.

Asbestos millboard, resembling in character and method of manufacture the ordinary wood-pulp cardboard, is already a commercial success. The fiber mixed with water is thoroughly beaten in large tanks; then ingredients that will bind the fiber together are added, and the pulp in this condition is passed over a wire cylinder, through which the water is drained off. The residue of pulp thus gathering on the wire forms the board, which is then pressed, cut, and dried like ordinary paper board. This asbestos millboard is used for box material, such as for fireproof deed boxes, etc., and more particularly as a joint packing for steam pipes.

Another of the paper forms in which the poorer grades of asbestos fiber are very widely used, is that of roofing material. Some varieties of this are made with a canvas center and asbestos felt or paper on either side, giving a fabric that is not only fireproof but of great durability. A later invention comes from Austria, where the very fine fiber is ground with a mixture of serpentine, then with asphalt and other ingredients. This process is now being introduced in the United States. Asbestos wall plaster is a similar production, also composed of fine fiber mixed with serpen-