boss spinner make the different grades of yarns a little heavier than usual. The yarns being heavier, less twist was, of course, needed, and so the mules and frames could spin more, and the output was increased here. Then, when the yarns reached the machines, of course more work could be turned out, as the heavier yarns did not require such close setting, and so a little time was gained, and still the goods came off same weight on account of heavier yarns. The yarns being heavier they broke less. The looms were speeded up, the goods rolled off. But there came an end. The commission houses began to complain, stating that the goods were not up to the standard as regards fineness of texture. The man was discharged and the experiment proved costly to the mill. Any man can go into a mill, and, by increasing the weight of the yarns, enlarge the output, and for a short time be looked upon as a wonder. But when it comes to placing the goods on the market the matter takes on another phase, and some one gets left, usually the manufacturer of the goods.

The proper way to enlarge the output is to manage everything to its best advantage, and to give strict attention to business. To get best results from the spinning, the roving should be in good shape. The operation of the roving frame is really the same as the drawing frame, except being on a much finer basis. The drawing operation is for the purpose of making the sliver uniform in its weight per yard, and at the same time to keep the fibre parallel. It is quite important that a skilled man be in charge of this department, otherwise bad and costly work will follow. If the roving is made too fine for the grade or condition of the stock, it will be impossible to make good yarn of it, as when it is spun it will not hold together, and if it did would not be strong enough for any practical use; on the other hand, if the drawer knows the stock cannot be properly drawn to the size of roving required for a certain fineness of yarn, and he reduces it as much as he considers safe, and leaves it for the spinner to do the rest, the spinner is apt to have considerable trouble to make good yarn out of it, as the spinning frame will have to do its own work and the work of the roving frame too.

BAW MATERIALS OF TEXTILE PABRICS.

WHAT THE MICROSCOPE REVEALS CONCERNING THE STRUCTURE OF FIBRES.

Sometimes an examination with the naked eye of the thread set free by picking out, is sufficient to distinguish the material used in the construction of a fabric, but usually either a chemical or microscopical examination is necessary. The simplest method is by means of a microscope, says E. A. Posselt in his new work, "Textile Calculations." On account of the different surface structures of various fibres used in the manufacture of textiles, the microscope at once determines which of them have been employed. An enlargement of about 200 times is necessary. Pick out a few threads, then untwist some of these and arrange the fibres on a glass slide, retaining them in place with a cover glass or by moistening the slide with glycerin or gum water.



Cotton fibres under the microscope appear as spirally twisted bands with thickened borders and irregular markings on the surface. The spiral character is less evident in the better qualities of cotton. Wild silk also shows the spiral twist, but other tests may be used if any uncertainty exists on this point. In fully ripe cotton the twisted form is more regular than in anripe, half ripe, or structureless cotton. Sce Fig. 50, where A represents unripe cotton fibre, B half ripe fibre having a thin cell wall, and C the ripe fibre with a full