can also be comparatively tested to ascertain the uniformity, firmness, or strength. The microscope is a means of distinguishing the relative value of the different wools better than is possible by any other mode. For this purpose, a "wool gauge" has been constructed, consisting of a brass frame screwed to the stage of the microscope, into which the wool fibre is fastene in such a manner that it is first loose, but is gradually tightened with a screw for that purpose, when the diameter can be measured with a micrometer and an exact measurement of the fibre obtained. But as all the fibres are not equally thick, it is necessary, of course, to measure several, to obtain the average. To measure the elasticity and strength of the fibre, it is first drawn tight, the index placed upon zero, and the tension increased by the gradual drawing with the screw mentioned until the fibre breaks. The index will show on the scale how many millimeters a fibre may be stretched before it breaks. It is evident that this experiment must be repeated with several fibres, and that the same apparatus can naturally be used for this purpose for all kinds of fibres.

Other animal hair used for textile fibres, goat hair, horse hair, etc., can also be recognized and distinguished by the microscope. As for silk, it presents no peculiarities, but is simply a homogeneous cylinder without the scale layer, marrow, and bark substance of hair. The optical difference of all these fibres is aided by the micro-chemical investigation. Iodine and sulphuric acid may be used as reagents, whereby the vegetable fibres, consisting of cellulose, are always colored blue, which is not the case with animal fibres. Silk differs from the latter in that it is dissolved in concentrated muriatic acid.

MOULD IN WOOLEN GOODS.

(TRANSLATED FROM DAS DEUTSCHE-GEWERBE.)

Every warm season brings a number of disagreeable incidents to the business of the woolen goods manufacturer. Among these is the appearance of mould spots, which frequently cause great injury to the goods. Mould spots are the product of a fermentation produced by moisture and heat. Fungi are developed at first, which not only destroy the colors of the material, but by continued operation the wool fibre itself. This explanation gives at once the origin and action of the mould spots. Whenever, therefore, in hot weather, wet or moist goods lie for a length of time, the cause of the mould spots exists, especially when the pieces are piled up, because the pressure prevents the admission of air and causes heat.

Mould spots act with greater or less effect upon dyestuffs, according to the intensity of the dye. Sometimes no effect is produced at all, at others it is very slight. In a higher state of development the mould destroys the wool fibre entirely. The cloth can be pressed through readily on the mouldy spots, and the mechanical operations of fulling, washing, or teaseling cause holes to appear in the cloth. Mould spots are found most frequently in white or light vat-blue material intended to be dyed in the piece.

In this instance, in consequence of the indifferent behavior of the affected places toward every color, the mould spots do the greatest damage. They also destroy the color of cloth dyed dark blue in the wool—that is, dyed a "pure vat," although not so readily as light blue. They do not so often occur in cloth dyed in the kettle, the wool having been boiled for some time in this operation. The boiling of the wool appears to a certain extent to be a preservative against mould, which is perhaps explained by the circumstance that it partly destroys impurities adhering to the wool, such as yolk, fat, etc., or else converts them into substances less hurtful. It is also possible that the mordants used for kettle colors, such as alum, tartar, sulphuric acid, chromate of potash, sulphate of iron, etc., act as a preservative in some cases. The greater tendency of vat-blue goods to mould justifies this assumption, because indigo-blue wool is not boiled in dyeing, and the dyestuff is inclined to fermentation.

By observing the various stages of the manufacturing processes, the mould spots seem to occur most frequently in the crude cloth as it comes from the loom and in the unwashed pieces from the fulling mill, but not when they are washed immediately afterward. Nothing accelerates the process of moulding so much as the natural impurities clinging to the material and the various ingredients introduced during the stages of manufacture. This accounts for the greater inclination of the crude cloth to become mouldy. Residues of yolk, dyestuff, oil used for lubricating, glue, sizing, etc., in combination with the moisture used for the filling, all contribute largely toward the heating of the cloth, so that in sultry weather storing for twenty-four hours under the loom or other badly ventilated place suffices for the formation of mould. For this reason attention must be paid to secure the greatest cleanliness under the loom, and to the airing of the cloth lying there. The beaming of the cloth is, for this reason, not to be recommended. It is better to pass the cloth through a roller and let it drop loosely underneath the loom; not, however, directly upon the floor, as is too often done, but into a flat wooden box. This is to be recommended especially for ground floors, where to the proper humidity of the cloth is added that of the ground. The floor as well as the cloth box must always be kept clean and free from mould and fungus formations, as the development of mould in the cloth progresses much more quickly in a place where it already exists. It is advisable to impregnate the box and floor with some antiseptic agent, which, of course, must not exert an injurious influence on the cloth.

It is, of course, necessary that the pieces as soon as they come from the loom should be dried at once. Weavers generally have a custom of leaving the ends of the warp in the loom, and to knot the fresh warp ends to them. This should never be permitted, especially in summer, and particularly with indigo, light blue,