month sees an active demand established for heavy woolens—chiefly sorting orders from the retailers, who find business brisker, owing to the cold weather.

## VAT BLUE WOOL SLIVER.

Wool intended for sliver has been well scoured before combing, and so is clean enough to be dyed in dark colors. When it is to be dyed in pure and bright indigo shades, however, it must be freed from every trace of fat and dirt which may have adhered to it in the combing machine. The process adopted in Germany is thus described in Reinam's Faeber Zeitung : If light indigo shades are to be dyed, it is well to make the skein of less than twenty loops. The bales are wound upon a reel 9 feet 10.11 inches long, and 27.56 inches in diameter. The reel is broad enough to afford space at the same time for five or six hanks from as many balls. A girl can readily attend to the unreeling and binding. The skeins are then mounted upon galvanized iron rods, bent into such a shape that the sliver during the dyeing operation is constantly kept beneath the surface of the dye bath, while the handles of the rods are on the outside of the liquor. Before dyeing, the hanks are washed in lots of 100 lbs., in water of 122° F., and to which 17# ounces crystal soda were added. When the sliver has been thoroughly washed and issues from the soda solution, it is ready for dyeing. A strongly calcareous fermentation vat is not suited for the purpose, for it has been proved that the sliver is attacked in such a vat, even when the lime is neutralized in a warm hydrochloric acid solution after the dyeing. A warm hydrosulphite vat is best suited for the dyeing of sliver. If the dyer uses a calcareous hydrosulphite vat, however, he may readily make it suitable for the purpose by an addition of soda or carbonate of ammonium, and it is evident that, for light colors, a weak vat must be used. Before entering the material to be dyed, the vat must be made so alkaline with aqua ammonia that it has a feeble smell of ammonia, and, in this case, the vat will rapidly clarify of itself.

The hydrosulphite vat is best prepared in an open wood box of about eleven feet in length and breadth, and strengthened by iron bolts, and the deeper it is the less facility there is for stirring the sediment during the dyeing operation; so that a height of 40 to 45 inches is, therefore, most generally sufficient. The vat fluid is heated to 86° F., which is done either by an iron coil or direct steam. The sliver hanks, mounted on sticks, are next entered into the vat, and slowly moved to and fro in it, care being taken that the material is constantly underneath the surface of the liquor, which must be sufficiently strong that the desired shade is obtained in fifteen minutes. This being effected, the sticks with the material are pushed to one end of the vat. Over the other end a few wooden bars are laid, and the sticks with the material are lifted out and laid upon them, which enables the vat liquor to drip off and return into the vat. When sufficiently dripped, the material on the sticks is taken away and left to become green. The

hanks are then washed in warm water, after which the material is taken from the sticks to be whizzed and dried. The indigo shade obtained can be essentially brightened by treating the dyed material in water of 140° F., to which sufficient hydrochloric acid was added to give it a feebly sour taste. If the dyer has large quantities of sliver to dye, he can use a small crane for entering and withdrawing the material. This arrangement is of special advantage when the vat blue is to be shaded with acid dyes, in which case a bath of Glauber's salt, sulphuric acid and the necessary dye is used. Too strong a warning cannot be given against the use of vats containing lime for the dyeing of sliver. Trifling quantities of caustic lime will even attack the wool fibres to such a degree that it becomes dry and brittle, loses its elasticity and capacity for combing, and becomes perfectly unsuitable for spinning. The majority of the fermentation vats are frequently nothing but a solution of indigo white in a strong caustic lime fluid.

## THE MILL FIRE DEPARTMENT.

A circular has lately been issued by a Boston insurance company which contains a very full outline of the organization necessary to an efficient fire department in a mill.

The excuses which are sometimes given for neglecting the organization of a mill fire department are very trifling. That a fire department exists to which many of the men in the mill or works belong, and which may be depended upon to assist in extinguishing a fire, may be true, but it has no connection with the subject under discussion. It might as well be brought forward as a good reason for not putting pumps or other appliances which depend upon individual action for their use into any mill. The town fire department and the men belonging to it in the mill or works will only know how to work the town apparatus. Other men should be chosen in every mill or works, who should be trained to operate the pumps and other appliances of the mill.

Instancec have frequently been given in THE JOUR-NAL OF FABRICS where the time and money spent in equipping and drilling a fire company in the mill itself was more than repaid in one emergency. The department should be divided into two divisions. No. 1, the fire department proper, consisting of the chief, assistant chiefs, hose companies, etc. Division No. 2, composed of the overseers, second hands, etc., of the different departments of the mill. The officers should be chief of department—agent or general manager. First assistant—superintendent of mills. Second assistant master mechanic. Engineer—chief engineer of mills. Assistants—assistant engineers of mills.

The assistant chief should make a weekly inspection of all pumps, and fire apparatus, such as hose, hose carriages and all fire tools; see that they are in good order and ready for immediate use, and report their condition. He has charge of the pipe and hydrant system, and makes each year at least two examinations and trials of all hydrants in the yard. The engineer should see that all fire pumps are kept in good order