trade on special orders before Christmas. Tendency of prices of raw material once more in favor of the seller. This is unusual at this period, and is regarded as a hopeful augury for the New Year.

* * *

OILING OF WOOL AND ITS INFLUENCE ON DYEING.

The question of the effects of oiling the wool upon the subsequent processes of mordanting and dyeing is one which has not received much attention in the technical press, and yet it is well worth notice.

Between the shearing the wool from the sheep's back and its appearance in the form of a finished fabric the wool has to pass through quite a series of operations which need not be given in detail here; the two preliminary treatments and the final ones of dyeing and finishing are all with which we are immediately concerned. The raw wool is first of all subjected to a washing treatment to remove from it dirt, fat, and impurities with which it is naturally associated, and after this it may or may not be carbonized. The wool fibre has essentially a scaly structure, and it is found that when cleansed it does not spin or weave easily, as the scaly structure enables the wool fibres to interlock too readily, and therefore they do not move over one another with the freedom that is essential in order to spin a thread to the greatest perfection or to weave a fabric uniformly. It is found that by oiling the wool before spinning it becomes lubricated, so to speak, and may then be spun into thread and woven into fabrics with the greatest ease.

For the purpose of oiling the wool a variety of oily bodies are used, all more or less costly, and each wool manufacturer has his own idea as to the best for his purpose, being guided by the question of cost and by the consideration he gives as to the carrying out of the subsequent processes through which the wool must go. There are some wool manufacturers who take these subsequent processes into consideration and who regulate their mode of working accordingly, but unfortunately there are others, however, who do not, and aim only at getting through what they have to do without any consideration of the subsequent treatment of the wool.

Fatty oils, like olive oil, lard oil, neatsfoot oil, etc., are used, and these are excellent for the purpose, but they are expensive. Such oils as rape oil, cotton oil, and linseed oil have been used, but are objectionable, as they have been found to lead to spontaneous combustion of heaps of wool oiled with them. Another product is oleic acid, or, as it is called oil, a by-product in the candle-making trade, which is somewhat less expensive than the oils above named. This is also good, and has been found to give satisfaction. Olemes, mostly obtained from crude or recovered greases by distillation, have also been used. These are of very variable composition, and are more or less complex mixtures of oleic acid, unchanged saponifiable oils and unsaponifiable oils. They are cheaper than either of the other two kinds of oily products. They are more or less satisfactory in use, but much depends upon their composition; the more oleic acid and saponifiable oil they contain, the more valuable they are and the better do they work. Then there is the class of hydro-carbon oils derived from paraffin shale, and American or Russian petroleums—oils which have been found of considerable service in the lubrication of machinery. These are the cheapest of all oils capable of being used for oiling wool. As mere lubricants for the wool, they are good, but, viewed from the standpoint of the woolen dyer, their use is most unsatisfactory, for reasons which will be seen presently.

Wool oils, as they are called, are offered by oil dealers to wool manufacturers which may be blends of the four classes of oils just described, and these are sold at prices which may or may not bear some proportion to their real value.

Woolen yarns as they come from the spinning frame, or woolen fabrics as they come from the loom, are, in consequence of the oiling operation, naturally oily. Now every dyer and colorist knows that oily wool yarns and piece goods will not dye properly; the oil acts as a resist to the dye liquors, and prevents the fabrics from taking the dye as they should and moreover there is a great tendency to uneven dyeing, which is a great defect from the dyer's point of view. The grease or oil has therefore to be removed before dyeing, and this may be effected by the use of volatile solvents, such as benzol, benzine, carbon bisulphide, etc. Practically, while many attempts have been made to adopt such a process, at present probably one is not in use in the woolen mills of this country.

The next plan is to use an alkaline solvent for the oil, such as soda, potash, or ammonia, and here the idea is to convert the oils into soaps or soapy emulsions, which can be washed away with water. The easiest of all the wool oil preparations to convert into soap is oleic acid, and hence this is the easiest to remove from the wool. The next are the oleines, which contain some 50 to 70 per cent. of oleic acid, and the soap which is formed by the union of the oleic acid and the alkali helps by its emulsifying powers to remove the rest of the constituents of the oil from the wool. Oils, like olive oil, hard oil, neatsfoot oil, are more difficult to saponify with the alkali that is used; in fact, only the small proportion of free fatty acid present in these oils is changed into soap. Soda and potash have no saponifying action on the oils themselves. If these alkalies contain traces of caustic soda or caustic potash, as is often the case, then the caustic alkalies will bring about the saponification of the oil, or part of the oil in proportion to the amount present.

Ammonia has but little saponifying action on the boil. It therefore follows that there is always a risk that, when oils, like olive oil, neatsfoot oil, or lard oil are used in oiling the wool, the whole of the oil may not be removed from the wool; and strange as it may seem, the purer the oil and the better its quality the greater this risk is. Now the presence of this residue of oil left in the goods must exert some influence on the dyeing of those goods; at the least it may retard the dyeing, and hence lengthen the time required to produce a given shade. In some cases, as, for instance, in dyeing with alizarine and mordant dyes, it may have a beneficial influence on the shade. It is well known that oils do brighten these colors, and they may assist in the mordanting process by bringing about an easier decomposition of the bichromate of potash. Much depends upon whether the oil is uniformly distributed over the wool or not as to whether the dyeing is done evenly or not. The probabilities are that the oil will be distributed in patches, and hence in the event of the oil not being completely extracted, uneven dyeing is almost certain to result.

The hydro-carbon oils, or, as they are sometimes called, the mineral oils, are characterized by being unacted upon or unsaponified by alkalies, and therefore an alkaline treatment does not ensure complete removal from the wool. The removal of some of the oil is effected more by the emulsifying quality of the oil than by chemical action. Consequently, when these oils are used, scouring does not eliminate them sufficiently from the wool, and uneven dyeings are bound to result. For this reason this class of oils ought not to be used