

try to hurry a thing through, as is quite natural, for upon the way in which the machines are run, to great extent, depends the financial success of the mill, and so they are anxious to keep the belt of the card on the tight pulley all the time if possible.

They do not like to see a card stand idle for a half day to allow a main cylinder to be ground, even though the grinding of the same may result in better and more work. They see that the stopping of the first breaker or the second for five hours means that the finisher must be stopped an equal time, and perhaps the mule will run out of roving and have to stop, and then the weavers will be crying for filling.

So the mill proprietor urges the carder on, and the carder tries to grind the cylinder in $2\frac{1}{2}$ hours instead of 5, and to do it he tries the rushing process, which consists in putting the emery close to the teeth of the cylinder; then there is a grind, a buzz, a wear, and a terrible grating going on all the time. The cylinder is ground in $2\frac{1}{2}$ hours, the card is started, the mule has not been stopped, and the weavers have not had to wait, and the manager is happy. Now for the results. The costly wool is run through, the fibres are more or less torn, and although the work comes off, the goods made from this stock are not so good as regards substantiality as those made from the stock carder before the teeth were hooked by the racing process.

Only a few years ago days were consumed in grinding a card's main cylinder, and even now two or three days are needed to grind the first time, but modern machinery has come into use, and now the grinding process is done very quickly; but that is no reason why the thing need be rushed to such an extent that the wire points are made worse than before.

Give the carder plenty of time to grind, and it will pay in the end, if not in the beginning.

The best grinding is that which produces a point nearest in form to that of a needle point, and when a good ground point is once obtained it can be retained by the action of card against card in the working, as a card is the best sharpener of a card, when the machine is once got fairly to work. The stripper, properly set, keeps the worker in full point, and the fancy, properly set to work sufficiently deep into the large cylinder or swift card, will keep the point in good working order. The angle stripper will keep the doffer in point, except the last doffer, to which there is no angle, and which frequently needs a card-roller to keep it in point.

An essential consideration in producing good results from the woolen card, whether the cylinder be ground well or not, is employing a good lubricant. A requisite of oil, as an emulsion, should be a sufficient fluidity to secure its thorough distribution, and it should have body enough to prevent its running when the stock remains in bulk, also freedom from gumminess, and staying or non-evaporating qualities, and it must positively be devoid of any ingredients of a nature that would be injurious to the fibre of the wool or to the fabric and in the treatment of the same. With all

the so-called wool lubricants, or, as they are commonly termed, emulsions, the several makers will wildly exclaim: "Ours contains all of these good qualities, and still more, if what they claim is true. There are quite a variety of oils on the market, and one must be pretty well posted in order that he may secure the best.

An oil must be used that will conform with the condition of the wool fibre. In order to clean some wools thoroughly, manufacturers employ soda for the washing. Thereby a chemical process is carried out, since the soda combines with the grease contained in the wool, causing saponification. Thus the wool-fat itself is rendered serviceable as detergent.

The grease or suint is then recovered from clearing (settling) basins, in the same way as oil is recovered, and finally used for the manufacture of lighting gas. This washing method is very good, and especially efficient for these heavy and dirty classes of wool; but it is not to be overlooked that it renders the wools harsh and crisp. Applied to the fine Silesian wools, it would completely ruin them.

In the two classes, Silesian and La Plata wools, we find as regards quality two extremes, the highest and the lowest grade of the Merino race. Besides, we find here also two extremes as regards the condition of the clip, since the one requires the sharpest and the other the mildest washing process.

The Silesian wools are extremely easy to wash, and the old method of employing the steeping tub and the rinsing box is the best. The washing as formerly done was simple and little expensive. The scouring bath consisted in 75 per cent. water and 25 per cent. urine or dilute ammonia, and was heated to a temperature of 48 to 55° C. The wool was for 10 or 15 minutes soaked in this bath, and then rinsed twice in the rinsing box. With this treatment the quality of the Silesian wool remained better than with the application of the most laborious process. The low temperature of the suint-bath prevents the felting of the wool, while its little strength is not injurious to the fibres, and the rinsing renders the wool clear, loose and open.

Now it will not do to use an oil in carding that will in any way interfere with the condition of wools thus prepared. Thus the carder has to remember that his oil must be right for the wool, both before and after carding. The lighter oils usually on the market are good, as there are combinations of stock that need but little, if any, lubrication. But for those that do require it, true economy can be better practised by using a smaller quantity of the better article than much of an inferior.

Water is used largely now by some carders, and with good results. Of course the water is used only in conjunction with the oil. Sometimes the stock is moistened with clean water, and can be kept in such condition through the working process, and but a very small quantity of good oil will be sufficient, and will give excellent results; and the fact of it is, for the proper manipulation of the wool itself, will give fairer