planting the mule. Whether one system or the other is employed, the first point required in order to spin a good yarn is first-class carding.

The mule system first spins the thread of yarn, then winds it afterwards. For this reason the drag in mule spinning can be regulated to a nicer degree, and consequently a tenderer thread can be spun. The ring frame, on the other hand, both spins and winds at the same time; hence, if the roving is uneven, more threads will break at the spinning, because of the constant pull the traveller exerts on the yarn while it is receiving its proportion of twist.

Many fine goods manufacturers find that improving the carding plant improves the roving to such an extent that, when equipped with modern frames, the yarns can be produced cheaper, of as good quality, and be perfectly free from kinks, which latter consideration—in the weaving of filling sateens and twills—is a very important one. Hence the importance of good preparation.

The modern frame can and does compete with the mule (on certain counts), for the reason that it is a constant spinner, while the mule is intermittent, first spinning, then winding. And, as before stated, the mule for this reason is enabled to spin a weaker and poorer thread, because the drag can be altered to suit the yarn, and the mule spinner can regulate the tension so as to prevent the threads from breaking, whereas the tension cannot be altered on the frame except by changing the traveller, all of which takes time.

In these days the system that produces the least waste is looked upon with the most favor.

In all mills there are, more or less, a variety of yarns used, as the producing of various weights requires a variety of thickness of yarns, or, as they are termed, numbers or gauges. Besides this, there are the various colors used, and the different principles of yarns according to the fibre of which they are composed, and of the material from which they are spun.

These various sorts of yarns necessarily leave us at the end of the year with certain quantities of each, many of which, for some cause or other, we are not using at this time upon regular goods; and again, we may have certain numbers not in use because we had to change from the number first used to another number, to perchance cause a difference in weight or for some other object. None but those who are closely connected with the trade will understand how these accumulate, though the most careful watch may be kept on them throughout the year. But when stock-taking comes, whenever that may be, and all the corners are turned out, the little here and the little there, when added together, amount in figures to a number that often considerably surprises the principal as well as the manager of the department.

Another department will produce a similar surplus; I refer now to the manufacturing department. If we are making yarns, we have "oddments" of the various kinds that are the surplus of orders, or that may have been made wrong through some neglect. But all these should come to the surface at the annual stock-taking, and it is then a question of how to turn these to the best advantage.

Machine methods are used to reduce this accumulation to fibrous form, so that it can be used again, yet it is waste product, and not quite so good as at first. To employ a spinning machine so it will cause the least waste is a chief aim. While on the cotton waste question, it may be well to remark that cotton thoroughly cleaned will make less waste during the process of spinning than would be the case with cotton only partially cleaned. The old methods of picking and lapping in vogue a dozen years ago were not calculated to do what the present styles of pickers are doing. If there is anything to be improved in the spinning department now, we must look in the direction of the waste for it. Old pickers, such as we were using up to a recent date, and are using yet in some places, were great waste makers, and still did not produce as well-purified stock for carding as those we have now. Most of our overseers say, "What difference does that make? There is just so much refuse in cotton, and if you don't take it out at one place it must be done at another."

So I would suggest right here that in every place where the picking department has been overhauled, and in most instances a whole new set of picking machinery of the most improved pattern set down, good results have followed.

The machines are so enlarged in every direction that the old picking is in almost every case wholly inadequate to make suitable laps, so that when we decide to adopt the English system of carding we must also adopt the English system of picking, and all the other alterations incidental to it. These are numerous, and often very expensive, for one thing introduces another until both the inside and the outside of the works take on a different appearance. It must, therefore, be evident to all who have made this part of the work a study, that cotton coming to the cards thoroughly cleaned not only makes less waste during the process of carding, but also assists the cards in the production both of quantity and quality, and results in less waste at the spinning. All these things are learned by actual experience in the mill. No school can teach them wholly, but can well prepare the man to receive them. When a man takes hold of a mill, whether he come from a school or from another mill, he should not try to do too much at once. A mill proprietor once engaged a man and gave him full control of the works, from the spinning of the yarns to the finishing of the goods. The previous man turned out good work, but not enough of it. The goods were well made and immediately found sale in the market, but the profits were too small to be of interest to the proprietor of the mill, and so he changed bosses. The new man was engaged with the understanding that he should get more pay providing an increased product should be obtained from the machinery. He at once began to arrange matters so that he could increase the output. He began in the spinning department, and there he ordered that the