

KNITTING MILL EQUIPMENT.

One of the marked characteristics of the time, says M. A. Metcalf, in the *Textile American*, is the increased demand for ready-made garments. The first demand for hand-me-downs seems to have been by the sailors fitting out in New Bedford for long whaling voyages. So many going out of port at about one time or season of the year influenced some enterprising storekeeper to have a lot of clothing made up ready for the rush. This was before the sewing machine was invented; so, too, was the miners' rush in '49, which also caused a demand for ready-mades. The clothing, though far from stylish, was comfortable and durable. From this small beginning came the enormous clothing industry of to-day, with its many branches—men's clothing, ladies' clothing, muslin underwear, children's dresses, skirts, shirt waists, infants' wear, knitted underwear, etc., etc. Before the sewing machine came into use, the clothing industry was being rapidly developed, even though shapes were on the whole unsightly. The growth of this industry undoubtedly served, in a large degree, to spur on the inventive cranks to produce a sewing machine, and after its introduction, the industry grew more rapidly. Soon came the Civil War and with it came a demand for large quantities of clothing on short notice. Then after the war, when the soldiers laid off their uniforms for civilian clothes, hand-me-downs were in greater demand than ever. The growth of the industry has been marvelous. It is, and has always been, a great incentive to the sewing machine men to exert their inventive faculties, and in this large field special, as well as plain sewing machines, find a profitable market. Large and profitable industries have been developed in the ready-made garment business because the manufacture of garments in large lots make it possible to offer them at prices that command attention and in better style than those turned out by the average tailor or seamstress. While the work was farmed out, as was the custom, the results were unsatisfactory as to style and fit. Within the last two decades, the tendency has been to establish factories and bring the whole process of manufacturing all under one roof and under the eyes of experts. The results are apparent to even a casual observer. Such a condition of affairs, enables the manufacturer to take advantage of special machines, and the system of section work. The knitted underwear branch of the clothing industry early saw the advantage of concentrating its help under one roof and under the skill and guidance of experts, and they, quicker than any other branch, also saw the great advantages of special machines, and as a result, they have to-day the best equipped factories in the ready-made garment business. Almost every operation, in fact every operation has a special machine designed and adapted to perform that part of the work.

No other industry, in the textile line at least, has such a complete and thoroughly up-to-date equipment in its plants, for doing every part of their work. While almost all the other branches of ready-made clothing are struggling to adapt their manufacturing to the system of sectional work, the knit underwear manufacturers are enjoying the fruits of such system, and have been almost from the start. It is an unheard of thing for an operator to make a garment complete in a knitted underwear factory. After leaving the cutter in bundles of one dozen each, they pass successively through different operators' hands for almost every operation.

A well-equipped, up-to-date mill to-day has several features in the finishing department that the larger number of the mills have been slow to adopt. In these notable im-

provements are included an electric or power cutting machine, taking the place of the old way of cutting with a big, long knife, following a slot in the cutting bench and pushed by hand with an up and down motion as with a saw. Another departure is in the method of drying, a complete drying machine being substituted for the old way of a large room given up to drying and wasting heat.

In selecting the equipment for the finishing room, it is not always the highest price machine that costs the most in the long run. At the same time, there are some lower priced machines on the market that fill the bill quite satisfactorily on some portions of the work, more particularly on light weights and ribbed goods.

The arrangements of the tables—cutting, inspectors, makers, and other tables as well as the machine tables—depends greatly upon the size of the finishing room. The cutting tables should be in close proximity to the knitting frames. If the cutting is done on a floor above that where the loopers are, a chute can be arranged to slide the goods down near the loopers after they are cut and tied up in dozens. To each bundle should be attached a tag, on which is printed a coupon for every operator who works by the piece to detach, to show the number of dozens she has done; or the cutting may be done in the finishing room if more convenient on account of the floor space. If there is space in the knitting room, it is more desirable to do the cutting there, the rolls of cloth being more awkward to handle than the bundled dozens. Near the loopers should be the seamers. The nearer all these several operations are to each other, the less day-help is required to handle the goods, and it is folly to have operators of machines running after their work while their machines lie idle. It simply means more machines and more operators, and it is wiser in more ways than one to have little girls do what marking, and other preparatory work which they are capable of doing, carrying the work to the operators and taking it away, thereby getting the full production from the machines. This is the principal reason why some finishing rooms turn off more work with fewer machines than others. It is with sewing machines as with the larger machines—constant running gives greatest production.

A well regulated and well managed mill for making 100 dozen men's or ladies' fine underwear, flat goods, say half shirts and half drawers, should have for its finishing room a lay out something like the following, though, of course, the weight of the goods may make a slight difference.

One electric or power cloth cutting machine, with patterns.

Eight loopers or turning off machines.

Three seamers.

Drying boards—character of work will determine the number.

One power neck marker.

Patterns and shears for trimming.

Five finishing machines for shirts.

Six drawer finishing machines

One catstitching machine.

One button-hole machine.

One button sewing machine.

One strapping machine, for sewing suspender straps to drawers.

One single needle ornamental machine, for making pearl edge on binding.

One eyelet sewing machine, for stitching round eyelets, or one power eyeletting machine for metal eyelets.

One two-line taping machine, for covering back seam of drawers with tape.