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REVIEW OF THE MEN'S WEAR TRADE.

The men's wear situation is one which requires careful consideration before the reason for certain conditions can be realized.

As a whole, the season on heavy weights as well as the Spring 1911-lines has been extremely backward.

In connection with the heavy weights, many mills concluded some time ago that the demand had been supplied, while others discounted the lack of interest among the cutting up trade, manifested in the early part of the season, and together with various authorities on trade conditions, ventured that there would be a heavy demand for this class of fabrics in September, when the attitude of the consumer would be better understood.

From the way the orders for the better grades have come forward lately, it seems apparent that they understood the situation and it is these houses who are profiting by their convictions.

The only hold back which is evident at this time is the lack of large stocks of the well styled fabrics, which are in demand, due to the curtailment policy of a number of mills.

A healthy demand for overcoatings, especially among the fancy lines is encouraging.

Among the many occurrences of the trade is one which has happened quite recently. As a matter of explanation it might be said that the situation fully explains the attractive prices of some fabrics and why they were priced so. It is reported that a firm of prominence in the market have delivered goods that should weigh 16 oz. from 1 to 1½ oz. short.

In the light weight market, there is a general feeling of dissatisfaction. Mill agents who have been styling and distributing both woolen and worsted men's wear for years, claim that in all their experience they cannot recollect a spring season more trying than this one. The question naturally arises *"Why."*

In one agent's estimation the buyers are to blame. For instance they balk at the new stripe effects, but do not take into consideration that the styler has racked his brain to produce something nobby and attractive. The field of variety in stripe effects is extremely limited and all the best ideas have been used.

Although the plaids and checks offer a better field they do not cut up as easily, requiring considerable waste in matching.

Another condition in the trade which is causing considerable anxiety is the pirating of styles, for instance the original line selling at a high price suffering a loss of considerable business by a line similar in appearance being put out, for example, at 30 cents less. Many houses, however, are frustrating these attempts by refusing to part with samples until obliged to do so, and are satisfied that the conditions are safe.

At the same time, the diversified lines of fabrics, the similarity of styles, the low prices at which the lines were figured, the hesitancy of buyers to decide whether it would be woolens or worsteds, and finally their going away without making their usual quantity purchases, might all be classed as reasons *"Why,"* but the situation requires a more careful study if it should be understood.

One of the surprising incidents of the season has been the lack of support given to serges. The excuse which was advanced last year for the backward tendency was high prices, but this season the revision has been downward to such an extent that even the most critical buyer could not find fault. Some keen judges of the market attribute this condition to the stock of serges on the hands of the larger consumers, a conclusion which might be given consideration on account of the extremely low values being offered by the tailors in general.

Supplementary lines have been put out by some houses, and in consequence they have secured some business, but it still seems that in the better grades, the market is short on new ideas, ranging from $1.60 to $1.80. A close observation of the market, as to styles and prices seems to offer an opportunity to the mill who is after the business.

Another feature, in cheviots, is the attention that is being paid to satin finished goods in preference the warm-finished goods, and the fact that a majority of the recent business has been done on this class of fabrics.

Observation throughout the market leads one to believe that the next season will see some radical changes in the method of manufacture, as well as styling and costing.

Some very neat designs on Scotch tweeds were seen in the market, and prospects for next season in this line seem very encouraging.

A cheviot fabric of homespun type is popular for sporting wear. Attractive colorings in brown, green and heather mixtures being shown and are enjoying a good sale.

A life saver for mills, who failed to get in on

other lines, is being found in the good demand for Scotch effects in coatings, and mills who can give buyers what they want are finding the business better than they anticipated.

A Review of the Dress Goods Trade.

The situation throughout the dress goods market has not been very encouraging this season, due to outside influences beyond their control.

There appears to be a general hesitancy on the part of buyers to decide what they want, the common expression being, what has so and so bought, and on being shown the best weaves and styles, fail to cover their needs until it is too late and the lines are entirely under order.

There seems to be a general feeling of dissatisfaction among the trade due to the fact that nothing definite can be gleaned by the styles as to ideas for the spring season which will naturally put the mills in a very embarrassing position and keep them groping around in the dark until they find something that will sell.

A suggestion in this direction, might be self colored checks in serges, in fact from all appearances they will be the thing.

Another fabric which seems to be wanted, is a storm serge, and from observation should prove an exceedingly popular line.

There seems to be a general complaint at present on account of the inability to secure nobby mannish effects, suitable for ladies wear.

It is expected that panamas will play an important part in next seasons demand and that a large quantity of this line of goods will be consumed during the next six months.

Among the various lines which are sure to be in demand, due to popularity, are included fine whipcords, neatly constructed basket weaves, cheviots and *etamine* effects, in plain colorings, especially cream. Black and white stripe effects on white and cream grounds are in favor, as are also shepherd checks. The various shades of *champagne* in certain effects have been ordered freely.

One of the features of the market is the lines being shown by woolen mills who failed to get their share of the men's wear business and are trying to make up the deficiency by manipulation in the dress goods market.

As a whole, the selling agents are not giving much attention to Spring lines, preferring to let the market take its time and allow the trade to straighten out their fall affairs before they approach them further.

The National Association of Cotton Manufacturers.

The semi-annual meeting of this Association will be held at Hotel Wentworth, Portsmouth, N. H., September 15 to 17, 1910.

The officers of the Association are:

Franklin W. Hobbs, president; George Otis Draper and Edwin Farnham Greene, vice-presidents; Robert Beatty, Albert F. Bemis, Frederick A. Flather, George P. Grant, Jr., David S. Johnston, Russell B. Lowe, Frederick B. Macy, Joseph Merriam and R. M. Miller, Jr., directors; C. E. Roberts, auditor and C. J. H. Woodbury, secretary and treasurer.

Papers are expected to be read on the following subjects: A New Textile. California Cotton. Cotton Mills of Mexico. Economical Lubrication. Economizers and Draft. Foreign Markets for Cotton Textiles. Illuminating Engineering. Moisture in Cotton. Natural and Artificial Draft:—Relative Advantages and Limitations of Each. Nature and Cause of Waste Fiber in Cotton Mills. Part Time Instruction for the Textile Industry. Producer Gas Engines. Purification of Water for Mill Purposes. Renaissance of the Water Fall. Rewinding of Weft Yarn. Russian Turkestan and its Products. Textile Industry in Hungary.

The Memphis Cotton Exchange, the largest inland cotton market in the world, under August 31, 1910, reports the following transactions in their *Annual Cotton Statement:*

Gross Receipts this year	785,485
Gross Receipts last year	984,370
Net Receipts this year	483,269
Net Receipts last year	640,271
Shipments this year	784,932
Shipments last year	990,534
Stock remaining on hand August 31, 1910	4,916
Average Weight per bale this year, pounds	522.80
Average Weight per bale last year, pounds	525.38
Average Value per bale this year	$77.11
Average Value per bale last year	$50.59
Total Value of this year's net receipts	$37,264,872.59
Total Value of last year's net receipts	$32,391,309.89
New Crop received this year	4
New Crop received last year	13

First Bloom, this year, June 22; last year June 17.

First Open Boll, this year August 15; last year August 3.

First Bale received, this year August 25; last year August 19.

First Frost, last year, October 12.

First Killing Frost, last year, November 17.

Average Prices of all Grades:

	1909-10	1908-09
Ord	Nom.	Nom.
G. Ord	13.15	7.98
Low Mid	14.11	8.84
Middling	14.75	9.48
G. Mid	15.00	9.78

The import into the United States of wool for clothing purposes, from Australia, has greatly increased last year, reaching 143,801,339 pounds, valued at $31,168,481, or more than double the imports in 1908, and even 50 per cent higher than in 1907. The direct imports of this wool from Australia last year were 35,177,946 pounds, worth $8,697,451. American buyers participated in Australasian wool auction sales to an extent that they had not hitherto. They purchased one-fifth of the 17,000 bales sold at Hobart, early in January, the value of such purchases being over $200,000. Shipments of New Zealand wool to the United States also advanced, from $265,686 in 1908 to $1,467,132 in 1909. The heavy import of clothing wool continues in 1910, the value for the first four months having been $18,275,178, against $15,858,807 in the same period of 1908, and $5,627,462 in the 1907 period.

A Review of the Silk Trade

The business throughout the silk trade is more promising than it has been for some time, due to the fact that silks are regarded as the thing abroad; advices from there indicate that wool and worsted dress goods are giving way to the preference for silks.

The foreign demand has stimulated the trade here, resulting in a wider interest in broad silks for the Fall and the Spring 1911 season.

At the present time, the greatest amount of business appears to be on *messalines*, and repeat orders have been frequent. The prevailing demand seems to be entirely for plain solid colors, black being most in favor, following the foreign demand.

The reception that *marquisettes* have received since the market opened has led many manufacturers to become interested in the line. Plain shades are most in demand, fabrics of special mention being those of very handsome glaces.

Satins of the most desirable shades, for foundation purposes, under *messalines* are selling quite freely, especially, the better grades in 36, 42, 48 and 54 inch widths.

Persian prints, in stripes and plaids, still continue popular, being in good demand by the waist trade, and leading manufacturers of that line are well employed.

Foulards are the centre of attraction, for Spring 1911, although from the manufacturing standpoint it is suggested that mechanical difficulties may interfere with their production, limiting the effectiveness of the fabric. Orders of substantial proportions are being booked and from indications, it is apparent that this class of goods will be very popular in the Spring. A majority of business has been placed with the larger manufacturers and it is presumed that there will be a number of new lines on the market, when the season opens in earnest. It is ventured that the printers on account of their limited facilities will not be able to produce the goods on time, a feature of which the larger manufacturers claim will work to a disadvantage with newer factors making prompt deliveries.

Another interesting feature of the market is the inquiries for *colored taffetas* for next Spring and if the use on the other side is a reflection on what we may expect later on, the silk industry will receive a much needed impetus.

The RIBBON and TIE SILK TRADE is improving rapidly and the demand is reaching good proportions. In the ribbon trade buyers are confining themselves to stock goods and avoiding large advance orders. The gradual reduction of the surplus stock on hand, in many of the mills will tend to put the industry in a normal working condition which it has lacked for a long time.

China's Silk Trade.

The quantity of Chinese steam filature silk exported from Canton last year exceeded that of 1908, although the value of the exportation was about $4,000,000 less.

The total quantity of silk goods exported in 1909 was a little less than that exported in 1908, although its value was about $5,000,000 less, due to the decrease in value of raw silk. This decrease, which began in 1907, will explain the greater part of the decrease in the exports. The reason for this decrease in the price of Canton silk is the deterioration in quality, and the large and cheap silk crop in Japan.

The values of raw silk invoiced from Canton to the United States during 1909 totaled $3,037,993, against $4,427,390 in 1908; of waste silk, $246,406, against $116,722; and of silk goods, $20,430, against $21,807.

The greatest amount of raw silk ever shipped to Europe was in 1907, when 36,243 bales were shipped, and to America, in 1908, when 14,766 bales were shipped. That in 1908 the shipment of Canton silk to America reached its maximum was due to the fact that in that year the American manufacturers began to make a fabric composed of silk and cotton. The falling off in shipments in 1909 was due either to lack of demand for this new fabric, or because the market was glutted.

Waste and Rereeled Silk.

The consumption of waste silk in America has greatly increased during the past calendar year, and everything indicates that it will continue to do so. During the silk season of 1906-7, 1,377 bales of Canton rereeled silk were shipped to America; for the season 1907-8, 961 bales, and for the season 1908-9 the same amount. The demand for Canton rereeled silk from America is slowly but surely decreasing.

The area of silk cultivation in the Province of Kuang Tung is sufficient to produce about 145,000 bales of 106⅔ pounds each. The native consumption is about 45 per cent of this amount. Each year increasing numbers of mulberry trees are planted.

The quality of Canton silk has deteriorated during the past two years, chiefly on account of the poor quality of the cocoons, which, according to experts, is not likely to be improved. The defects of Canton silk as regards fine ends and double ends, of which buyers complain so much, are not likely to be bettered. These defects are due mostly to the crude machinery used and to the fact that this machinery is not kept in repair. Also the matter of labor affects greatly the quality of silk. Sufficient skilled labor is unobtainable, and any dissatisfaction on the part of the proprietor must be put up with, as the laborers will brook no interference from him. This fact, in addition to the quality of the cocoons, is the chief reason for the deterioration in the quality of Canton silk. But as there is no substitute for Canton silk, the prospects are that each year will see increasing demands for this article.

Japan's Silk Trade.

A period of 3½ years shows that the exports of raw silk to America from Japan have increased about 50 per cent. The greatest business done was in the latter part of 1908, when prices were exceedingly high. During the early part of 1909 there was a decided slump, owing to complaints from consumers. On account of a change in fashion in America, both ribbon and broad goods were neglected. This, however, did not influence exportation to the United States. There was a considerable increase in the silk crop for the year, and as stocks accumulated, prices steadily fell. However, these low prices enabled the Japanese to compete with the Italian and French products, so that business in Europe was very favorable. A considerable speculative business was done with the United States in the anticipation of better prices.

In order to bring the piece-goods business to a profitable state, it was necessary during 1909 to handle very large quantities of merchandise to counteract the low market value. A better system of silk inspection has been inaugurated, which is calculated to prevent a repetition of complaints received as to the quality of goods. There seems to have been an ample supply of goods; in fact, at one time the market was almost overstocked. At the same time most of the chief centers were filled with large stocks of inferior goods, so that the price was low. This did not prevent a steady trade during the year, especially an increase in the goods manufactured for home consumption.

During 1909 there was a demand for the better grades of silk waste, and as these were exhausted early most of the business done was in medium and poor quality. There was considerable advance in price, which was maintained during the year. This seems to have been due to the fact that while the production of raw silk was very great, the total exportation of waste silk fell behind the figures for the previous years, as the local mills consumed more in producing spun silk for the trade with India. Most of the exports were sent to southern Europe.

Waste Silk Yarns.

Of all the silk spun by the silkworm, more than one-half is useless for the throwing process. The different classes of waste silk are: (1) Silk spun by the worm to attach itself, in the wild state to twigs or leaves of trees, and in the domestic state to straws used by the peasants, which is coarse and mixed with leaves and straw, dull and lusterless, and called wadding or blaze; (2) silk of the outer layer of the cocoon, also coarse and uneven; (3) the last layers of the cocoon, too fine to be reeled; (4) many cocoons, particularly those that have been pierced; (5) waste occasioned by reeling, rereeling, throwing and weaving.

The varieties of waste are as follows: (1) Steam or Canton filature waste, opened or unopened; the opened being subject to adulteration, the unopened is now preferred; there are several qualities of this steam waste; (2) tussah, exported from Shanghai, known as Shanghai tussah waste and filature waste, of two grades, and the throwsters' tussah waste, made during the process of throwing tussah raws. The spun or silk waste spinning industry is said to be the most active branch of the silk industry.

A few years ago the world's production of silk yarns was estimated at 15,500,000 pounds, viz, the Continent, 11,000,000; England, 3,000,000; China, Japan, America, and India, 1,500,000. On an average, 3 pounds of waste are required for each pound of yarn produced, taking into account all qualities produced, some of which are very coarse. The total quantity of waste silk consumed per year must amount to some 45,000,000 pounds, and the value of the world's production of yarns, at, say, $1.58 per pound, would be nearly $24,000,000.

The Continental spinners, who largely produce the schappe yarn, are more successful in its production in recent years, owing to their process of schapping the silk waste, freeing it from a certain amount of its natural gum or serecin, by steeping the waste until it ferments, thereby dissolving the gum. The smell and effluent are offensive, where the gum is dissolved by boiling. Schappe yarn is said to retain 2 to 15 per cent of the natural gum, which gives the fibre a resistance, enabling it to be dressed on a circular frame, which economizes in the dressing to the extent of 8 cents per pound on an average.

The water used in degumming the silk is of considerable importance. It should be very soft and free from iron and other substances that might discolor the silk or decompose the soap used.

As illustrating the growth of the silk industry in the United States, it may be stated that the exports from the Bradford, Eng. district, thereto, of silk seals, plushes, velvets, etc., which had reached their maximum in 1888, viz, $2,603,204, amounted to only $11,376 in 1909. The exports of silk yarn in 1909, however, amounted to $557,957. During the six months ending March 31, 1910, the demand from the United States for tussah yarns (20/2's being the count most frequently ordered) for the manufacture of silk plushes, etc., has been so great that prices have risen from 85 cents to $1.34 and $1.58 per pound, less the customary discount of at least 2½ per cent. The prices of white schappe yarn have not risen in proportion.

Silk waste is imported chiefly from Shanghai, Canton, and Yokohama in pressed bales of from 112 to 560 pounds each.

The tussah filature waste normally sells at about 16 cents per pound. Steam waste, used for white silk yarns, usually sells at about 49 cents per pound. These prices are net.

Preparation for Spinning.

The raw-silk waste, in its matted condition, is washed, mangled, and then dried, the drying process taking from three or four days to two weeks. It then goes to the dressing department, where it is passed through an opening machine, and, as it comes out onto a drum, after having undergone a rough combing or straightening process, the wide band of silk encircling the drum is cut into lengths of, say, 12 inches.

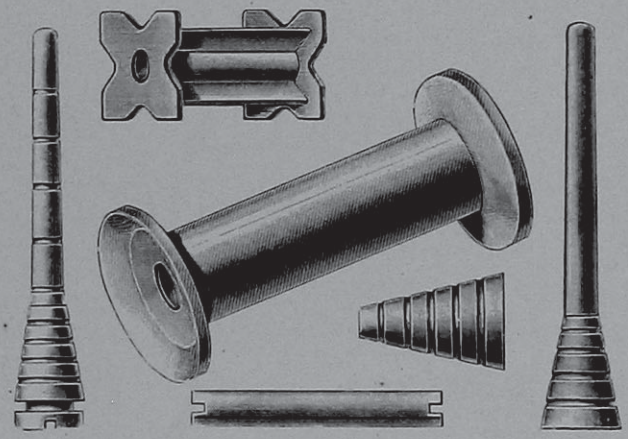
These lengths are then each placed in a flat wooden holder, half the length of the silk projecting. These wooden boards are, in turn, placed in the bed underneath a flat dressing or combing machine. The combs are attached to a wide band, which is adjusted so as to gradually just touch the silk, and in this way the first draft of the longest fibres of the silk is obtained and removed from the combs. The holders in the bed are then reversed so that the portion of the silk in the wooden holders can likewise be combed and the first draft taken. The holders are then removed to another flat dressing frame and the second draft, fibres of shorter length, obtained; and so on to the third frame, or fourth, if there be one, in order that the draft from such frame may be obtained. The residue, of course, constitutes the noils. The silk is then taken to the preparing department, where, before going to the roving machines, it passes through spreading machines. At this point various drafts of

silk are blended, which regulates the qualities. Spinning and doubling the silk yarn is similar to other textile industries, the processes being well known.

The yarn, being often rough and fuzzy, has to have the projecting fibres removed by means of heat —lighted gas and friction. The machines used are the gassing frames and the cleaning or frictioning machines. The process of gassing causes some loss in weight of the yarn, as is shown in part by the large quantities of burnt silk fluff given off, but gassing and cleaning add greatly to the lustre of the yarn. Gassing machines for this purpose are built by the Woonsocket Machine & Press Co., Woonsocket, R. I.

Paper Quills and Spools for Silk Mills.

Lately a new kind of quill, made of rolled and highly compressed paper has been placed on the market by Mr. Alfred Suter, Textile Engineer, 487 Broadway, New York City. These quills are made in any size and shape desired, and can be polished and varnished to the required smoothness for handling the softest of silk threads. For very smooth, raw, artificial and hard silk, adherence to the quill is secured in the usual way by means of providing circular grooves



in the cone and tube parts. They are all soaked in a liquid which makes them oil and water proof, and if lacquered, they will resist the softening influence of steam.

It is claimed that the advantages of the new quills, as compared to wooden ones, are that they will resist wear and tear to a considerable extent, will not warp, and besides in most cases their price is lower than that of wooden ones.

This means a saving in the matter of mill supplies, hence must be of interest to silk manufacturers. The accompanying illustrations show a few types of these compressed paper quills and spools as used in the broad silk and ribbon trade. Mr. Suter will gladly furnish samples as well as further information to parties who are interested in these new quills and spools.

Combination Let-off and Take-up for Silk Ribbon Looms.

The objects of this new combination device are:

(*a*) to provide for winding the finished goods on spools so as to avoid tangling and damage, frequently met with when depositing the finished goods in boxes under the loom;

(*b*) to make the delivery or warp spools rotate the spools for the woven goods, and thus effect the necessary take-up, in turn avoiding the occasionally replenishing of exhausted slack by releasing the warp spools and paying out more warp.

Of the accompanying plate of illustrations, Fig. 1 is a vertical sectional view of a narrow ware loom, provided with the new let-off and take-up. Fig. 2 is a similar view, on a larger scale, of the upper rear part of the loom; Fig. 3 is a rear view of what is seen in Fig. 2, the spools being omitted; Figs. 4 and 5 are side and end views of one form of spool, and Fig. 6 a side view of another form of spool.

Letters of reference accompanying our illustrations indicate thus: *a* the loom frame, *b* the breast beam carrying glass bars *c*; *d* is the batten, *e* the harness, and *f* the beam, supporting glass bars *g*.

The warps *h* extend from their supply spools *i* over rollers *j* as are journaled in a superstructure *k* on the frame *a*, suspended loops *l* being formed in the warps between said rollers, sustaining the tension weights *m*. From said rollers, the warps *h* extend under glass bars *g*, thence forward through the harness and over the batten.

The finished goods *n* extend over the glass bars *c*, around the sand rollers *o*, over the pressure rollers *p*, back under a guide bar *q* and up to the spools *r*.

An inclined frame *s* is arranged at the back upper part of frame *a*, the upper and lower beams *t* of which are connected by oblique parallel strips *u* from which project skewers *v*, on which are arranged spools *i* and *r*, interlocked, so that the rotation of the spools *i* under the pull of warps rotate the spools *r* in the same direction. The woven goods are thus wound on spools *r* as the warps are unwound from spools *i*.

Figs. 4, 5 and 6 show how the spools may be interlocked:

In Figs. 4 and 5, each spool has segmental projections *w* formed diametrically opposite each other, one at one end and the other at the other end of the spool. When two such spools are placed end to end on a skewer, they will be interlocked for rotation together, the interlocking action being augmented by forming the acting side of each projection with the undercut *x*.

In Fig. 6, a screw *y* is driven into one end of the spool and a staple *z* into the other end thereof, screw and staple interlocking when two spools are brought together face to face.

To guide the woven goods properly onto the spools *r*, a series of light slats 1 are kept in reserve on lower beam *t* of frame *s*, and as a complete coil 2 of finished goods forms on each spool *r*, and the goods have been shifted to start a fresh coil, one slat is removed and set flatwise against the rear face of the beam or the slat previously so placed, being supported by the spikes 3.

Spacing strips may be laid across each horizontal row of skewers, as at 4, to keep the inner face of the end of each spool *r* in the plane of the rear faces of beams *t*, which is the proper position of these spools for receiving the first coils.

Weights *m* maintain the necessary tension, while the loops *l* afford compensation under all conditions for constantly changing differences in diameter as between the spools *i* and *r*.

When the loom is started, the warp spools being full and the fabric spools empty, the weights fall gradually as the weaving proceeds, because on each revolution of the member comprising the interlocked spools *i* and *r*, a greater length of warp is paid out

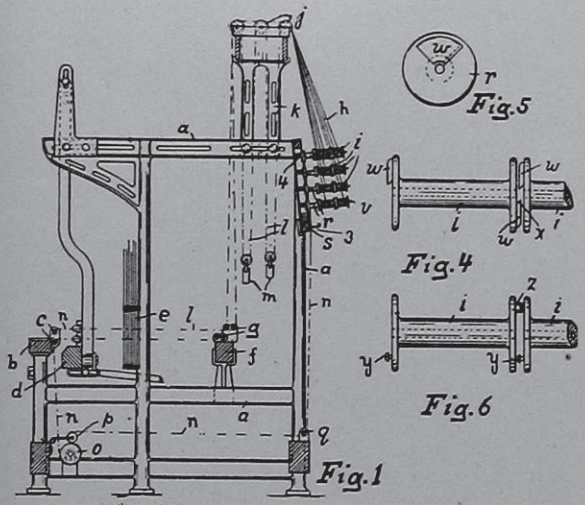


Fig. 1

Fig. 5

Fig. 4

Fig. 6

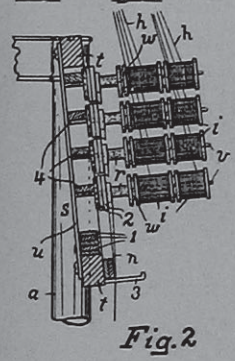


Fig. 2

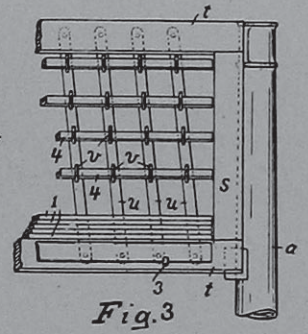


Fig. 3

than length of goods is taken up. This continues, though at a diminished rate, as the goods spool augments in diameter, until the diameters of the spools are equal, whereupon, the weights now rise gradually, at a constantly increasing rate. When a pile of goods has reached a predetermined height, the goods are shifted to start a fresh pile. In this way, the extent of movement of the weights is controlled to suit the conditions, the weights beginning to run down again any time a fresh pile of goods is started.

The flax yield of the State of Victoria, Australia, for the past season is estimated at 1,800 tons, or double the quantity produced for the previous season. The renewed attention being given by farmers to this industry is largely due to the bonus offered by the Commonwealth Government, amounting to 10 per cent on the value of the fiber and the linseed. The plant grown in Victoria is the linen flax, and buyers of the past season's crop are highly pleased with its quality. The fiber realizes from $20 to $25 per ton, and the yield is about 1½ tons per acre. The linseed amounts to about 18 bushels per acre, and sells at $1.82 to $1.94 per bushel wholesale. The returns for the new season's crop planted in June will probably show a large increase in acreage.

THE MANUFACTURE OF LINEN YARNS.

(Continued from page 8.)

RETTING.—The next process, and one of the most important, is retting, steeping or watering, which requires from 10 to 14 days. The object of retting is to dissolve, by means of decomposition, the gummy or resinous matter which exists between and binds together the outer membrane and inner stalk, by submersion in water for the previously mentioned time. Pure soft water is claimed to be best for this purpose. Hard water, or water containing lime, must be avoided, and water containing iron will give the flax a rusty, or what spinners call a foxy color. The size of steeping pools or retting dams may vary from 8 to 20 feet in breadth, 30 to 50 feet in length and from 3½ to 4 feet in depth, according to the requirements of the district. These pools must be thoroughly watertight, and after the flax is put in, no water admitted or run off until the flax is taken out. The color of the flax is also affected by the nature of the soil in which the dam is located. In Ireland, which is the country most famous for its flax industry, a rich blue, or what is called clay color, is liked best. The *beets* or sheaves are placed loosely and in regular rows with the root ends downwards. They are next covered with rag-weeds and sods, and weighted with stones to keep the flax firmly under water. If the weather is warm, fermentation commences in two or three days, and generally in 13 or 14 days this fermentation has proceeded far enough to permit the removal of the flax from the pool. To ascertain if the flax is ready for removal, take out four or five reeds; if you find them covered with a greenish substance, and if the woody shore separates freely from the fibre on breaking the stem about six or seven inches apart, the operation is complete. The coverings must then be taken off, and the flax removed from the pool carefully by hand, and allowed to drain and dry for a few hours preparatory to being spread evenly and thinly on a meadow.

GRASSING.—The object of spreading the stalks, called grassing, is, that by the action of the air and sun, the drying process is completed as well as the fibres bleached. This process of grassing also renders the wood part, *Shove*, short and brittle, and easily crushed and broken. The most suitable place for spreading, is grazing land of short and thick grass. In spreading the flax, the same must be laid down thinly and evenly over the field and in a few days turned so as to finish the process more rapidly and perfectly. About 5 or 6 days is the average length of time required for grassing, but this, of course, depends greatly on the atmosphere. Under no circumstances should flax be spread in wet or damp weather. As heretofore mentioned, by means of the grassing operation the woody part of the flax gets brittle and breaks, easily separating from the fibre. The general method for testing if flax has been spread long enough is, to crush and rub a few stalks between the fingers and ascertain if the wood breaks easily or not. If found so, the flax is ready for lifting, tying in bunches and storing for the scutch mill.

Another method in use for retting flax is what is called—

Dew Retting.—In this process, the flax is grassed (spread on meadow land) without steeping, simply exposing it to the action of the weather for six or eight weeks. Damp weather is the most suitable for this system of retting, since all fermentation ceases if the flax becomes dry. Some of the best flax produced, either by dew or pool retting, is such as raised in the country of Waes and Brabant, Belgium, and which is known as *blue flax,* from its very dark color.

A third method of retting is what is termed—

Cold Water Retting.—The best flax gotten in this manner is the creamy Flemish flax, as found in the neighborhood of Curtrai, in Belgium. It is steeped in the soft, slowly-running, almost sluggish waters of the river, The Golden Lys, which, although not stagnant, has the property of causing fermentation, and gives it a fine cream color. The finest grades of this flax, after being steeped and dried, are stacked until the following year, and then steeped a second time. In addition to the well adapted quality of the water of the Lys for retting purposes, there are other important factors which aid in the result of producing

Fig. 5.

this excellent fibre. They are: a soil preparation, with systematic rotation of crops and extent of fertilizing that few, if any, of our flax farmers have ever practised; the use of only the best of seed, and lastly, the most careful handling and skilful manipulation from the time the crop is ready to pull until the straw goes to the scutch mill.

As will be readily understood, the methods of retting flax thus explained are slow work, and can be carried on only in sections of the world where labor is cheap, hence since years the chemists have tried to solve a quicker process for it. By means of one of the latest processes, the pulled and rippled flax is placed in vats and kept immersed by strong framework. Steam is admitted until the temperature of the water is raised to about 194 deg. F. Acetous fermentation is developed, which causes the gummy cortex of the stem to be decomposed. About sixty hours' maceration, it is claimed, is sufficient for the retting. The flax is afterwards dressed in the open air.

Fig. 5 shows specimens of flax fibres magnified.

(To be continued.)

The Manufacture of China Matting.

In certain districts in Southern China, the matting industry is the chief means of livelihood for many people, especially in the districts of Tung Kun and Lintan. The straw seed is planted in sheltered spots in November and transplanted about the end of January or beginning of February into fields previously covered with several inches of water. The fields are frequently irrigated and carefully cultivated until harvest time, which is July for the common grades of straw and August for the better. The straw varies from 5 to 7 feet in height. When harvested the three-cornered reed is split and laid out in the sun to dry. This work is usually done by women and children.

When the straw is dry it is tied up into bundles of one picul (133⅓ pounds) each and sold in the open market at various prices, based on demand. The dealers usually buy their straw for the whole season's business, store it in godowns, and dispose of it on demand.

For manufacture into matting it is carefully assorted for quality and size. Straw selected for dyeing is generally of the poorer quality, as its defects do not show up after the process.

The loom commonly used is made of two timber uprights, with a crossbar above and a roller below. The machine is a very crude one and does not allow of variety in weaves. A Chinese sits above the loom and pulls the strings, which are tied to the warp to make the pattern. The regularity of the weave depends upon the eye of the operator. These looms require three operators—the feeder, the weaver and the string man.

Previously to weaving, the straw is dampened to make it pliable, and this necessitates drying the matting immediately after the weaving is completed. There are generally drying grounds, covering large areas near the godowns.

In Tung Kun, the patterns are given to weavers, who furnish their own straw, and as soon as a roll of matting is completed (which takes two men four days to do) they take it to the market and sell it at the price agreed upon, or, if they can do better, they will sell it to another dealer, who wishes the same pattern and is willing to pay a higher price for it. This is one of the causes of fluctuation in the price of Chinese matting. As soon as there is the slightest demand above the average the dealers raise their prices. Before the dealer takes delivery of the matting it is examined by an inspector, and if deemed of suitable quality is accepted and stored in godowns. It is then packed and sent to Canton or stored in Tung Kun until wanted by a buyer. Most of the matting used in the United States comes from the Tung Kun district, whence it is sent to Canton for inspection by the foreign exporter before shipment.

The better quality of matting comes from the Lintan district, about 200 miles to the west of Canton, but as this district does not grow sufficient straw to meet the demand, the deficiency is met by importation from other districts.

1776 — 1910

The evolution of the method of weaving is shown by the accompanying illustration.

The space of one hundred and thirty-four years shows the vast difference encountered in the weaving trade. Then, the equipment was crude—production limited and the work laborious. To-day, through the introduction of the marvelous Northrop loom—equipment is of the best—production of the highest, and instead of an operator running one loom it is possible for one to run as many as 28.

The illustration gives an idea of the perfect construction of this loom, on account of the difficulties under which it was operated, while being conveyed throughout the town of Greenville, N. H., during the annual celebration on July 4th. Side by side of this modern Northrop loom there was shown a specimen of a loom as used one hundred and thirty-four years ago, the same being operated by a lady equipped in costume suitable to the occasion.

In the calculation of cotton, woolen or worsted, double and twist yarn, the custom is to consider it as twice as heavy as one of its minor threads; thus double and twisted 40's (technically 2/40's) cotton, equals single 20's cotton for calculations.

In the calculation of spun silk the single yarn equals the two-fold in the number of yards per lb.; thus single 40's and two-fold 40's require the same number of hanks (40 hanks equal 33,600 yards). The technical indication of two-fold in spun silk is also correspondingly reversed if compared to cotton, wool and worsted yarn. In the latter, the 2 indicating the two-fold is put in front of the counts indicating the size of the thread (2/40's), while in indicating spun silk this is reversed (40/2's), or in present example single 80's doubled to 40's.

To Find Number of Threads in Warp to Use, if Counts of Yarn, Lengths and Weight of Warp, are Given.

Rule: Multiply counts by basis of yarn and weight of warp, and divide product by length of warp.

Example (Cotton Yarn): Find number of ends for warp, 40's cotton, 50 yards long to dress, weight of yarn on hand $4\frac{1}{8}$ lbs.

$40\times840\times4\frac{1}{8}=140{,}000\div50=2{,}800.$

Answer: Use 2,800 ends in warp.

Example (Woolen Yarn—Run System): Find number of ends for warp, $4\frac{1}{2}$ run woolen yarn, 40 yards long to dress, weight of yarn to use 20 lbs.

$4\frac{1}{2}\times1{,}600\times20=144{,}000\div40=3{,}600.$

Answer: Use 3,600 threads in warp.

Example (Woolen Yarn—Cut System): Ascertain number of ends for warp, 32 cut yarn, 45 yards long to dress, $22\frac{1}{2}$ lbs. weight of yarn on hand.

$32\times300\times22\frac{1}{2}=216{,}000\div45=4{,}800.$

Answer: Use 4,800 threads in warp.

Example (Worsted Yarn): Find number of ends for warp, 2/60's worsted, 60 yards length of warp required, $21\frac{3}{7}$ lbs. amount of yarn on hand.

2/60's worsted=1/30's.

$30\times560\times21\frac{3}{7}=360{,}000\div60=6{,}000.$

Answer: Use 6,000 threads in warp.

HOSIERY AND KNIT GOODS.

A Yarn Changer and Severing Device, for Circular Knitting Machines.

In the manufacture of hosiery it is often the case that two, three or more different colored yarns are used in producing the hose.

For example, the top may be one or two or sometimes three colors, while the leg and foot are of one color, the toe and heel being of another color.

This is better explained by the fact that in producing a sock, the top of which is pink, blue and white, the leg and foot a solid white, the heel and toe of pink, all three colors have been used.

In knitting by means of three feeds, it is customary to allow the idle yarn or threads to travel or rotate with the sock, until the same is completed, severing them when taking the sock out, in order that the inside surface of the same may be even and smooth.

Another method sometimes used is to have the idle yarn secured to the feeds in such a manner as to prevent it from twisting and insure its being thrown off from the needles after each loop is formed.

As can be readily seen, these methods result in an unnecessary amount of waste. Again, in the first instance, the idle yarn frequently becomes entangled and twisted, drawing the fabric so far up in the needle cylinder as to result in a jamming of the

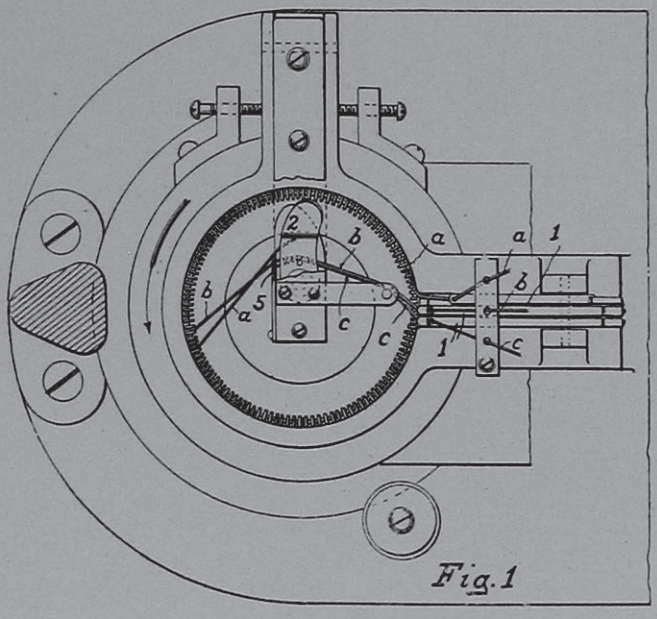


Fig. 1

needles, in many instances causing considerable loss, due to breakage of needles as well as damage to the sinkers. In all, the method means considerable expense added to cost of production, both from damages to the machine and time lost by the operator in cutting off the twisted and entangled loops by hand.

With these conditions in view and a good demand for this class of goods, an improvement has been lately patented and brought before the trade by Harry H. West of Plymouth, Pa., which will, from all appearances, overcome existing objections.

It consists in having flexibly connected to the presser foot a keen edge for severing the idle yarn as soon as it is out of action and before it can do any damage, leaving it in position to again engage in action with the needles as the pattern chain calls for it.

To better explain the idea, reference is made to the two accompanying illustrations.

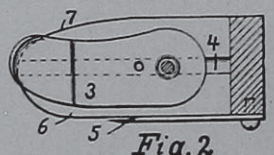


Fig. 2

Fig. 1 shows the sectional view of the head of a circular machine with the improvement shown, looking down from above, while in Fig. 2 the relative position of the blade and the presser foot is shown.

The three colors of yarn are shown as *a, b, c.*

These are guided by the thread or yarn guides, the action of which is controlled by the pattern chain as usual.

In producing the sock, one yarn is thrown in operation by the guide 1, is picked up by the needles and is used the required number of courses, until the thread is thrown out of action for the insertion of another different colored yarn by the pattern chain. When the yarn changes, the first yarn is still attached to the fabric and in rotating in the needle cylinder, comes in contact with the underneath side of the angular extension 2 of the presser foot 3 and is in turn guided into the tension groove 4 where it is held taut against any feeding action and gradually comes in contact with the knife edge 5, being drawn over the same is severed without any injury to the sock.

The free end is held between the presser foot and the leg 6 and is maintained in this position until it is again brought into action by means of the pattern chain.

When this occasion occurs, the yarn is picked up by the needles as usual at a point nearest the guide, the loose end being held between the presser foot and the leg 6 until it is gradually drawn around the rounded edge 7 of the leg and pulled out of engagement with the attachment.

This is better explained by taking into consideration the three threads, *a, b, c,* for convenience, blue, pink and white in color, being fed to the machine.

The pink thread *b* runs direct to the fabric and is in a position to be cut. The white thread *c* is shown in an idle position severed at its end and retained by the presser foot and the leg 6, ready for action.

The blue thread *a* is shown as having just become engaged with the needles, the end which was free being still held by the presser foot and in this position is ready to be released as soon as the yarn has been reasonably secured in the course of the fabric.

As the blue thread leaves the presser foot, the pink thread will be cut, leaving it ready for engaging with the needles at the required time.

Removing of Grease and Stains from Worsted or Woolen Knit Goods.

The method of removing grease and other stains from woolen and worsted fabrics varies considerably from the principle of that involved in cleaning cotton-fabrics.

With the latter, grease and other stains are in a certain measure saponified by the application of strong alkalies, soap, etc., in solution, at a boiling temperature, while in connection with woolen and worsted knit goods, a high temperature would tend to affect the life of the fibre.

In saponifying the grease and other stains in woolen and worsted knit goods, very concentrated alkalies must be used at a low temperature, and under such existing conditions as will insure the fibre maintaining its normal properties.

It is customary for this process to scour the goods well in a solution of soap, sufficiently strong to retain its lathering properties throughout the process. An addition of 1½ to 2 per cent of GRAN-CARB-SODA is essential and the entire solution retained at a temperature of never more than 90 to 110 deg. F.

After a suitable time has elapsed for a thorough softening and penetration of the fibre, the goods are then taken from the bath and thoroughly rinsed in luke warm water until all traces of the alkali are removed.

The length of time of immersion must be determined by observation, but should the grease not yield to this treatment, a further application is necessary. It is very rarely that such conditions occur, but in such an instance a cold weak bath without the use of soda, but in its place the addition of a volatile liquid such as bisulphide of carbon or benzine will generally produce the desired results.

It is preferable to use the benzine, the goods being allowed to stand in this solution for a considerable time.

As this solution may be needed from time to time and as its properties are in no way impaired after the working of the goods, it is customary to retain the liquor for future use, and by the addition of a small amount of alkali and benzine bring it up again to the desired standard of strength.

In storing the solution as well as in working the goods, caution should be observed, on account of the combustible nature of the solution, and it is best to keep the same under cover while not in use.

In conclusion, after the goods are taken from the bath, they are well rinsed in luke warm water until all traces of the soap are gone.

A Review of the Hosiery Trade.

The hosiery trade as a whole, appears to be in a very unsettled condition and manufacturers are somewhat anxious regarding the future developments.

They are going ahead slowly, and it is a common thing for a manufacturer to express himself as being satisfied to sell small quantities now, with the hope that later on buyers would place larger orders on which advances could be secured.

The prices at which the lines under order were booked were on a very close margin, and it is thought that on duplicate orders the prices will be advanced; the contention being that this is the only way that manufacturers will be able to show any profit during the first six months of 1911.

This conclusion is further strengthened by the fact that mills are already asking prices for spring deliveries which show that they have no intention of operating for occupation only, and buyers who failed to cover themselves when the spring lines first opened will be forced to pay the advance.

There has been a complete change on the part of the American Consumers the past few years. The more expensive lines of hosiery are being bought and the demand continues in favor of the light weight sheer goods, much to the dissatisfaction of the manufacturer of heavy staple hosiery which has always been in demand in former years.

The use of combed yarns on full seamless hosiery has made a more desirable article, and is saleable at a better price, the use of silk for men's and women's seamless having also received the approval of buyers.

It is a well defined fact that the women of to-day are wearing a better and costlier grade of hosiery than they did a year or so ago, as can be verified by the most casual observer.

Taking the situation as a whole, the best business in the lower grade seems to be on the new 25 cent lines, made of fine mercerized yarns. It might be said that some of these goods have proven exceedingly popular and that large initial orders have been booked.

The reason for their popularity is explained by the fact they are of unquestionably better quality than have ever been shown before.

From observation it appears that the best business for spring delivery has been done on sheer mercerized goods in black, tan and other staple, solid colors like navies, grays, etc., odd and flashy colors being out of question.

Fancy hosiery is not selling as well as usual, while silk is in good demand, a substantial business being booked on spring lines at 75 cents.

In fact, the market is calling for lighter weights that will wear well and from all appearances it is thought that the new mercerized goods will meet the requirements.

A Review of the Underwear Trade.

The underwear trade as a whole, presents a two sided situation, the better grades having a steady demand at prevailing prices for established lines, while the trade on cheap ladies' ribbed goods and on cheap fleeced goods is extremely irregular.

The initial business is about all in, and the majority of mills making the former lines, have booked all the business they care to, at the prevailing prices. Some of the mills, however, were not as fortunate and are still in the market.

The chief source of discouragement throughout the entire trade, arises from the fact that many large sales were made on the opening of the market, on the assumption that cotton yarns would be lower, if not as low as last year, by this time; in fact some based their quotations on a 10 to 12 cent cotton, and if they are to be held to deliveries at the present price of yarn, they see nothing ahead except a loss on the production.

The demand for union goods has been extremely good and many mills are taking up this line, but the demand is so great that the mills who have been in the business for years have all they can handle and do not feel the competition.

It is not expected, however, that light weight goods

made of Egyptian yarns will be much in evidence, due to the high price asked for them, and the unwillingness of buyers to meet these prices at the present time.

Orders for duplicates on the best qualities of fleeced goods are coming forward quite rapidly, and from appearances, there will be a scarcity later on in the fall. On the lower qualities, the prices have been very irregular and for this reason it is difficult to form a very conservative opinion of the exact conditions.

It is presumed that there will be a scarcity in the supply of well made ribbed goods in heavy weights, due to the increasing demand. A very embarrassing situation is making itself manifest on the market: in the early part of the season the prices named were very low, and in view of existing conditions the prevailing sentiment was that mills would have to do a lot of substituting to come out at all.

This conclusion is verified by the fact that buyers are refusing to accept deliveries of fall goods that are being made to them, on the grounds that they are not up to sample and unmerchantable. In a majority of cases the goods have been far below weight and imperfect in finish.

This condition has led many buyers who placed orders on spring lines, to notify the mills that if deliveries do not prove up to standard when initial shipments are received, the entire order will be canceled.

Winding Machinery.

That hosiery manufacturers are looking forward to increased business in the near future is shown by the fact that they are overhauling their equipment and installing improved machinery which will mean an increased profit to them.

Machinery builders are profiting by the manufacturers foresight, for instance Jacob K. Altemus, the well known Builder of Winding Machinery, 2824 N. Fourth Street, Phila., is running his plant to its full capacity on his well known Hosiery Winders and other labor-saving machinery, for the hosiery trade.

A machine of special interest built by him is the one for splitting mercerized yarns for hosiery. By its use he has demonstrated that it is a necessary part of the equipment of every mill using mercerized yarns.

Chemnitz has exported, during 1909, the following amount of knitting machinery to the United States:

193 large automatic cotton machines, 9 Jacquard and Paget machines, 588 circular and small flat machines, and 668 loopers. The bulk of these were shipped after the passage of the new tariff act, which increased the duties on cotton hosiery. Prior to this time large automatic machines, knitting simultaneously 18 stockings, were exported to the United States at the rate of one a week. After the act became operative the shipments were at the rate of one a day. A large volume of American orders is to be filled during 1910.

It is of interest in this connection to note the productive capacity of the 193 cotton machines before mentioned. They include 136 *leggers* and 57 *footers*. In the large Chemnitz mills there are usually found from 50 to 100 of these knitting machines, each tended by a single operative, and each producing on an average 18 stockings at once. When making half-hose, one legger and one footer are capable of an annual production of 6,000 to 9,000 dozen pairs of socks under normal conditions. Three leggers and one footer yield 6,000 to 8,500 dozen ladies' hose, according to quality. It may be stated in a general way that five machines produce annually 11,000 dozen hose and socks, and that each machine corresponds to an annual production of 2,200 dozen. The cotton machines exported to the United States in 1909 have, on this basis, an annual capacity of 425,000 dozen. This quantity is equal to 8 per cent of the present annual exports of cotton hosiery from the Chemnitz district to the United States.

Export of English Lace Machinery to the United States.

The values of lace machines and parts exported to the United States during the two months ending July 11, 1910, were: New Levers and Gothrough machines, $227,238; accessories accompanying the machines, $7,883; accessories not accompanying the machines, $6,903; second-hand Gothrough machines, $1,582; extra parts for lace-making machines, $343; total $243,949.

During the two months under consideration there was no lace curtain machinery exported, and only two machines were exported during the last six months, as compared with eleven during the previous six months. This is probably to be accounted for by the fact that lace curtains are manufactured extensively in the United States for some time, so that the plants are now well supplied with machines, also by the removal of duty on Levers machines and the increased duty on foreign lace made on these machines, American lace manufacturers have been induced to turn their attention less to the curtains and more to the Levers laces.

A noteworthy feature in the shipping of these machines has been the diversity of points for which they are destined. This means that while the lace trade in other countries is centralized—in England at Nottingham in France at Calais, in Germany at Plauen, and in Switzerland at St. Gall—in the United States the trade is scattered.

The growth of the textile industry can be readily recognized by comparing the following statics:

In the first six months of this year there were 213 new textile plants built or projected, representing an investment of $15,000,000, against 136 for the corresponding period in 1909. Of these 213 new mills 92 are cotton, 40 are knit goods, and 36 are wool, the remaining 45 being of the allied branches.

The Southern territory is developing almost exclusively in cotton, while New England still clings to wool. In the middle states, knit goods and the allied branches are in majority.

The renewed activity in American carpet factories is indicated by the heavier importation of wool for this purpose, amounting last year to 136,220,511 pounds, worth $16,706,728, or more than double that imported in 1908. The increased importation has continued in 1910, amounting in the first four months to $5,203,876 worth, against $4,827,022 in the same period in 1909, and $1,993,843 in the 1908 period. China furnished $4,000,000 worth of the carpet wool imported by the United States during 1909. Large quantities also came from Asiatic Turkey.

The Success of The Hunter Wool Washing Machinery Abroad.

The wool growing industry of the Chinese Empire is rapidly realizing the importance of their bearing on the export markets.

They raise considerable wool and until a short time ago were accustomed to send their wool away in a dirty greasy condition, which naturally tended to retards its demand.

Realizing the necessity of washing the wool previous to exporting and of the advantages to be derived, one of the wool exporting houses of that country decided to adopt American ideas and install wool washing machinery.

In view of this fact, their representative in the United States was instructed to make a careful investigation of all wool washing machinery built here, and after considerable deliberation decided that the Wool Washing Machines built by the James Hunter Machine Co., of North Adams, Mass., was the best machine, in his estimation, for the work in question. Although their price was considerably higher than any in the field, a complete outfit was ordered sent to Tien Tsin, China.

The success of these machines is readily seen by the fact that another shipment of the same machinery is again in transit for the same point.

This record of the success of the first machines, in so short a time, tends to further strengthen the already strong reputation of The "Hunter" Wool Washing Machinery in all parts of the World.

Considerable attention is now paid in Australia to improvements in methods of packing wool, to exclude vegetable fibres of the packing, which if becoming intermixed with the wool decreases its value. It is also desired by the use of more scientific packing appliances to decrease the labor cost of producing and exporting wool, and to lessen the chances of spontaneous combustion in wool cargoes.

One of the largest wool export houses of Australia has devised a new process of packing and heading the bales, which prevents twine from entering the wool. The demonstrations of the new process seem to have won the approval of the trade both in Australia, and other wool centres.

In packing wool by this new process, packs with prepared heads and loose tops must be used for the purpose. The pack and the loose head are placed in the wool press in the usual way, the packs being cut down 15 inches from the top. No further cutting is required. After the bale is pressed, the front and back flaps are thrown temporarily over the bale, and the head is then firmly secured to the bale by two steel skewers, both front and back, at the same position as the stitching is done under the old system. While the bale is in this position it is not necessary to cut down the four corners, even when they project considerably, as when the skewers are released the corners fill up and form a stiff, even surface, making a package much superior to the old bale. The front and back flaps are tacked together in two places, across the top of the bale about 8 inches from each side. The side flaps are then brought the usual way, tacked, and lock-stitched, and the skewers may then be released from the bale.

The chief feature of this process is that no twine or string can possibly enter the bale, the only stitching necessary being on the two outside flaps. There is also a great saving of twine, as nine bales can be treated with the same quantity of twine which, under the old system, was used on one bale. Another important feature is that by simply cutting the stitching on two outside flaps the bale is ready for inspection by the wool valuers and buyers.

Apparatus for Moistening Yarns.

To condition yarn for proper work on the loom is a most important item for any mill. With yarns on spools (cops, cross-wound bobbins, etc.) it is rather difficult to quite evenly moisten the yarn. To overcome this difficulty is the object of the new apparatus to be explained herewith, and of which Fig. 1 shows a partly sectional elevation, and Fig. 2 a ground plan.

The new apparatus comprises a chamber into which finely evaporated water is forced by means of a strong current of air. Said water may be warmed or heated previously. In this chamber there are a number of trays to receive the baskets which contain the yarns to be treated. These trays consist of open frames, or

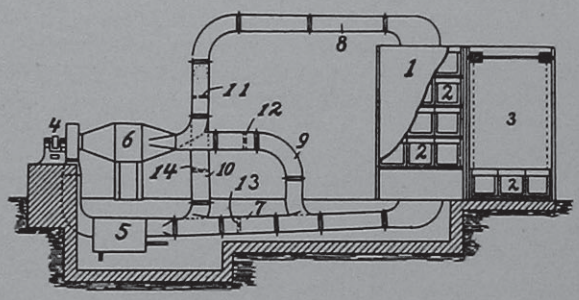


Fig. 1

they have bottoms made of wire netting or the like, the baskets having sides and bottoms which are perforated or made of open wirework. The moistened air of necessity is forced through the cops or bobbins lying in the baskets and during its passage therethrough gives up a part of its moisture to the yarns. Thereafter the air is sucked off from the chamber, the apparatus being so constructed as to regularly alter the direction of the current of air, *i. e.*, to send same alternately up and down the chamber.

With reference to our illustrations, the chamber 1 consists of a closed iron frame, inside which the trays 2 are arranged, so as to be moved downwards. Adjacent to the chamber or chambers, there is a lift 3 with a hoist, by means of which the trays 2 are separately let down.

If the trays 2 inside the chamber 1 are moving downward, making room for a new tray at the top, those inside the lift will move upward to the top of chamber 1 to be there placed uppermost on the column of trays 2 therein. As will be readily understood, there must be suitable intervals between the emptying of the bottom trays to allow of the yarns in the apparatus being subjected for a sufficiently long period to the moistening process.

The apparatus consists further of an air fan 4, and a water evaporator 5, also, if so desired, of an

apparatus for heating the air, and finally of connecting tubes. The steam is absorbed by the current of air while the same passes above the evaporator.

At work, the air fan 4 sucks up the air from the heating apparatus, or from the surrounding atmosphere, forces it through the evaporator 5 and then through a tube 7 leading to the bottom of the moistening chamber 1, through which it is subsequently driven. The air after having lost its moisture while

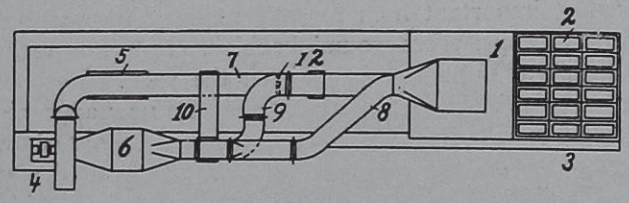


Fig. 2

traveling through the chamber 1 escapes into the open, or is conducted through a pipe 8 either to the heating apparatus 6 or direct to the inlet of the fan. It is possible to reverse the current of air by opening the branch air pipe or tube 9 hitherto closed. The air then first passes into the heating apparatus 6, thence through the fan 4, through the evaporator 5, and then through a second branch pipe 10, which was hitherto closed, into the pipe 8 ascending to and leading into the top part of the chamber 1. The closing of the various connecting tubes is effected by means of flap valves, which can be operated from the outside, so as to open communication for the air in either direction. The pipe 8 is provided at a point below its junction with the pipe 10, with a valve 11. The pipe 9 is provided with a valve 12; the pipe 7, with a valve 13 and the pipe 10 with a valve 14.

With this arrangement it will be seen that when air flows through the pipe 7, upwardly through the chamber 1 and returns through the pipe 8, the valves 13 and 11 are opened and the valves 12 and 14 closed. When the direction of the air current is reversed, the valves 11 and 13 are closed and the valves 12 and 14 are opened. In such a case the air will pass through the moistener 5, the pipes 10 and 8, downwardly through the chamber 1, being returned by the pipes 7 and 9 and the heater 6. By taking advantage of this arrangement, *viz*, forcing the moist air into the chamber, alternately from above and from below, the result aimed at is to subject all the yarns evenly and equally to the influence of the air, thereby imparting to them an equal degree of moisture throughout.

A single moistening installation composed of a fan, evaporator or distributer, with the necessary tubing and flaps or valves may feed a number of moistening chambers, and several chambers may be arranged in such a manner as to necessitate only one lift.

The Sipp Machine Co., of Paterson, has just completed an order for seventy-three of their improved horizontal Swiss sixty-six-inch warping mills fitted with the Hover patent Swiss attachment. This order, which is for one mill, is believed to be the largest that has ever been placed in one plant. The Sipp company is much pleased in regard to this order as these machines replace a number of new warping mills of different makes.

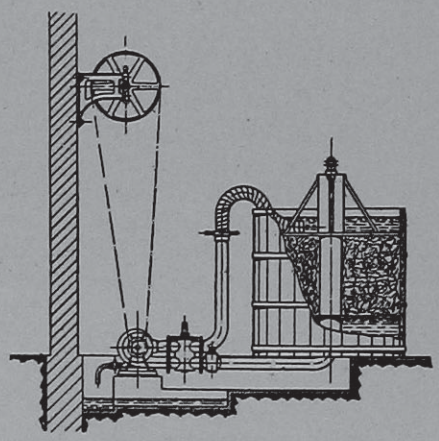
A New German Dyeing Machine.

Its construction is shown in the accompanying illustration and consists in a round dye tub, made the same as the other parts of the machine, either of wood, copper, nickel or iron, to suit the goods and dyes to be used. This tub serves for holding the material to be treated (wool, cotton, rags, skeins, etc.), as well as the dye liquor, and is provided in its interior with a horizontal, perforated double bottom as well as a perforated tube, closed on its top. It also contains the necessary set of steam pipes, furnished either open, *i. e.*, for direct steam, or closed, *i. e.*, for an indirect heating of the dye liquor.

When loading the dye tub, the material to be dyed is placed evenly distributed upon the perforated double bottom, after which, a perforated cover is placed upon the material.

This cover serves for pressing down the material under operation as far as such is required, as well as for holding it in place when changing the direction of circulation of the dye liquor. The cover is so constructed that it lowers itself automatically, and in every position remains locked against raising.

Two pipes produce the connection to a specially designed valve, one-quarter movement of which towards one or the other side directing the rotation of the liquor either from top to bottom or vice versa through the material.



Circulation to the dye liquor is imparted by an intensive acting pump, connected to the valve previously referred to. An outlet valve permits the quick drawing off of the liquors.

Provided the baths are to be saved, one or two three-way valves are provided for directing said baths into respective reservoirs, or to enter fresh water for washing purposes.

For dyeing skeins, specially constructed inserts are furnished, *i. e.*, they are not dyed as a compact mass like is done with raw stock but are handled in layers, one above the other. Not only is a most level dyeing the result, but at the same time, a massing or felting is excluded, a most important item when dealing with woolen yarns.

Special inserts are also furnished for handling bobbins, cops and cones. Bobbins and cops are placed on perforated spindles.

Fulling by Means of an Electric Current.

This is one of the latest methods in the line of Finishing, patented abroad.

The claim of advantage for the procedure consists in that by means of the electrical current being made to pass through the goods under operation, the oil and grease in its yarn is quickly saponified, the process of felting accelerated and thus the time required for the fulling of the goods considerably shortened.

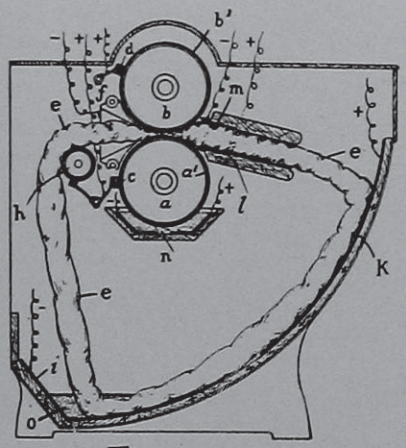


Fig. 1

Of the accompanying two illustrations, Fig 1 is a section of a fulling mill, showing the applications of the elctrical current to the machine and in turn to the goods under operation; Fig. 2 shows a plan view.

a and *b* indicate the two squeeze rollers of a fulling mill, the same being in the present instance covered with a layer of rubber or another non-conductor of electricity, carrying on top of the latter a conductor of electricity, *i. e.*, a metal covering *a'* and *b'* respectively.

The electric current is transmitted to the metal surface of the two squeeze rollers by means of brushes

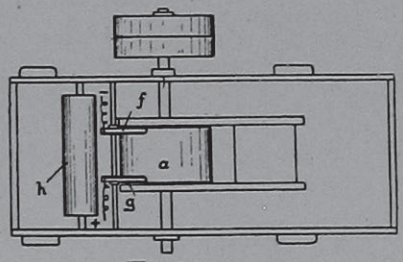


Fig. 2

c and *d*, and in traveling from one roller to the other naturally has to pass through the goods *e* under operation.

To still further accelerate the process of fulling, the electric current may be also passed through the goods by means of suitably connecting with the electric current guide brackets *f* and *g*, guide roller *h*, trap or clapper *l* and *m*, as well as the lining *i* and *k* of the fulling mill, all being parts of the machine with which the goods under operation are constantly in contact with.

During the kneading action of the two squeeze rollers *a* and *b* upon the cloth as saturated with electricity, and the continuous action of the electrical current, the grease and oil in the goods is readily transformed into a saponified liquid. If using soda ash lye in the process, sodium hydroxide is produced, and which, with the greases and oils in the goods, forms soap.

In place of pouring the liquor during the process of fulling onto the goods, receptacle *n* may be provided for holding a quantity of the liquor, the lower squeeze roller *a* feeding from this liquor. Again the receptacle for the liquor may be placed at the bottom (see *o*) of the machine.

The Dyer's Trouble when Handling Odd Lots of Yarns.

With most mills odd lots of yarn will accumulate during the year, again odd lots are often times offered to a manufacturer by a spinner or a yarn merchant at such reduced prices that he may be tempted to make purchases of this sort. In using such odd lots of yarn trouble almost always arises in the dyeing, since the bulk of the yarn may consist of many lots, varying one from the other in the quality of the cotton, as well as the amount of twist, although apparently all the yarn is of the same counts. This mixing of different lots of yarns will invariably give rise to trouble in dyeing; it will show irregularities as soon as the yarn is entered into the dyebath, more particularly if dealing with a light or medium shade produced by the use of direct dyes.

No sooner has the yarn been entered into the dyeing liquor than differences in depth of shade may be seen in the hanks, and as the dyeing proceeds, become more pronounced. The dyer seeks to effect all sorts of possible and impossible remedies, but in the end has to deliver the yarn in the streaky condition, and the dispute commences.

It is known that the various kinds of cotton, of different origin, absorb coloring matters to different extents, under equal conditions. Moreover, every dyer should also know that irregularly twisted yarns will become colored irregularly. The less twist in cotton yarns the more readily do they take color. Consequently, by placing unevenly twisted yarn in a solution of a direct dyestuff, the portions of the yarn loosely twisted naturally become colored at a quicker rate than do the portions more tightly twisted.

When the yarn has to be dyed black or a dark color, the irregularities are, of course, not so pronounced.

Irregularities in color make their appearance not only with the direct dyestuffs but also with the basic dyes, and more especially with Methylene Blue. The least trouble from this cause arises when the batch has been dyed in very slowly exhausting baths, such as Alizarin Red. From public dyer's standpoint, the only course of action lies in refusing at once any responsibility in the dyeing of assorted stocks of yarn, and if such yarns sent to him are not so labeled, taking the preliminary precaution of examining the batches of yarns before he puts them into process. It is a rather big undertaking to have to examine all yarns received, but experience gives ability to detect a parcel of as-

sorted yarns; in many instances the style of make-up is an indication.

Another difficulty arises in the re-dyeing of batches of colored yarns so that they may be taken out of stock, and worked up; but it is only the inexperienced public dyer who would undertake this job other than at the manufacturer's risk.

Colors of a certain class, the direct dyestuffs, may, of course, be topped or re-dyed without much trouble, but when the yarn to be re-dyed has already been dyed to a medium shade with mineral colors, or by means of coloring matters fixed by a mordant of tannin and antimony or of oil and alumina, the capacity of the dyed fibre further to absorb coloring matters is very small and a poor effect is the result. Any color so absorbed can only be fixed superficially, and defects due to this are bound to arise later on through the colors rubbing off. At the commencement of the slashing operation the trough contains clean size, which will soon become discolored; if there are white ends in the warp, these then become soiled before much of the yarn has run through the size. On the other hand, if the sizing is accomplished in the absence of any other yarns but those which have been topped, yet are subsequently associated with white warp, the trouble will show itself during the weaving, by the color rubbing off mechanically. Further still, should no visible trouble show itself in the weave room, such is bound to come during the finishing. By the passage of the pieces through the finishing paste, and subsequently between heavily weighted squeezing rollers, the paste becomes discolored, and thus in turn also any white or light colored threads in the goods under operation.

After starching, the goods have either to be calendered, submitted to friction, mangled, or napped etc.

In calendering, the defective colors mark the rollers, and when in the course of some length of the material having been run through, eventually cause the cloth to become smeared.

In mangling, the loosely fixed colors are rubbed off in the form of a powder which settles on the cloth to give it an undesired appearance.

In napping, the defect becomes very greatly pronounced, because the superficially-held coloring matter is displaced by the tearing of the fibres and lodged on joining fibres, where it is, most likely, not at all wanted. At any rate, a pattern containing much white may become completely unsaleable after napping. A case is known of a quantity of yarn dyed with catechu, having been re-dyed with Aniline Black. In due course this was associated with white in a cloth which had to be napped; the mechanical effect of this operation caused the white portions to become soiled, with the result that hundreds of pieces were spoiled. In this instance the losses, however, were by no means so considerable as they would have been to a public dyer, since the opportunities that a colored goods manufacturer with his own dye-works usually possesses, and the willingness to make the best of things, were at hand. But imagine the cost of this mistake to a public dyer who had undertaken it without the precaution of refusing to accept the risks. E. Hastaden.

Bradford's Exports to the United States.

The exports declared for the United States from Bradford, England, for the months of May and June amounted to only $871,847 and $852,781, respectively, as compared with $1,742,779 and $1,595,157 in the corresponding months of 1909. So small a monthly total has not been reached since the depression in 1908.

The striking feature of the June exports from Bradford was the exceptionally small amount of wool shipped, $27,933, as compared with $618,182 in June, 1909. For more than a year the monthly exports of wool have greatly exceeded $500,000, and even for the first three months of this year the exports reached $2,011,907, so that the exports for the month of June are the smallest since the month of March, 1900.

Another rather disturbing fact to Bradford has been the return of fairly large quantities of wool from the United States. This, however, while naturally depressing the Bradford market to a slight extent, has not had a serious effect on prices, for at the midsummer colonial wool sales in London prices were said to be firm, only the coarser kinds of crossbreds and the lower classes of slipe wool declining slightly.

The total declared exports from Bradford to the United States for the six months ended June 30, 1910, amounted to $8,540,219, a decline of $587,207 as compared with the corresponding period of last year. Here again the most striking feature is the slump in the exports of wool, the total for this period being $2,730,816 (British, $1,207,070; colonial, etc., $1,523,746), as compared with $4,146,968 in 1909, a decrease of $1,416,152. Worsted dress goods reached $1,062,364, or $36,102 in advance of the same period last year. Cotton dress goods also increased from $195,228 in 1909 to $358,703. Cotton linings, however, fell from $1,313,447 to $785,611. There was a large increase in the exports of spun silk yarn to the United States *i. e.* an increase from $205,809 last year to $514,261 this year. The exports of machinery, the greater portion of which refers to the textile industry, amounted to $677,853, as compared with $362,364 last year.

Wages paid to Lace Workers in England.

Each machine, going at full time, requires, in round numbers, the services of 6 men and boys; 2 men for operating the machine itself, and the other 4 (men or boys) to warp the threads, wind and press the bobbins, thread the carriages, and afterwards to strip the bobbins or jack the threads back on spools. Operators of machines in Nottingham earn, on the average, $12.50 per week, while their assistants average only from $2.50 to $5.

The number of women and girls required are 5 to every man. Female labor is used in nearly every department after the lace comes from the machine, being employed in the dressing rooms to stretch and starch; in the finishing department to separate the breadths, to clip and scallop, to mend, and finally to wind the lengths on cards and pack the boxes for shipment. For these services the wages average $3.50 per week.

From August 1, 1909, to the end of June, this year, 146 shuttle embroidery looms, such as are used in the manufacture of laces and embroideries in Saxony, were shipped from that country to the United States. Their total value, with extra parts, was $242,002. All the looms were of the high spanned model, with boring apparatus.

BUYERS' INDEX

BUYERS' INDEX—Continued

Dyeing, Drying, Bleaching and Finishing Machinery.
Allen, William, Sons Co.
Buhlmann, A. W.
Curtis & Marble Machine Co.
Hall, Amos H., Son & Co.
Hunter, James, Machine Co.
Klauder-Weldon Dyeing Machine Co.
Parks & Woolson Machine Co.
Philadelphia Textile Machinery Co
Suter, Alfred.
Textile-Finishing Machinery Co., The
Tolhurst Machine Works.
Woolford, G., Wood Tank Mfg. Co.
Woonsocket Machine & Press Co.

Dye Sticks.
Haedrich, E. M.

Dyestuffs.
American Dyewood Co.
Cassella Color Co.
Farbenfabriken of Elberfeld Co
Innis, Speiden & Co.
Klipstein, A. & Co.
Metz, H. A. & Co.
Scholler Bros. Co.

Electrical Warp Stop Motion.
Mossberg Wrench Co.

Engineers.
Helick, Dr. Chauncey G.

Feeding Machinery.
Harwood, Geo. S. & Son.

Filters
Hungerford & Terry.

Finishers.
Firth & Foster Co.
Schwarzwaelder Co., The.

Flyers, Caps and Tubes.
Calder Machine Works.

Fulling Mills.
Hunter, James, Machine Co.

Harness Builders.
Crompton & Knowles Loom Works.
Halton's, Thomas, Sons.
Lentz, F. G & Co.
Ulrich Company.

Harness Makers.
Gowdey, The J. A., Reed & Harness Mfg. Co.

Heddles.
Steel Heddle Mfg. Co.
Suter, A.
Ulrich Company.

Hotels.
Hotel Cumberland.

Hydro Extractors.
Dienelt & Eisenhardt, Inc.
Tolhurst Machine Works.

Jacquards.
Crompton & Knowles Loom Works.
Halton's, Thomas, Sons.
Suter, Alfred.

Jacquard Card Stamping, Lacing and Repeating Machinery.
Royle, John & Sons.
Suter, Alfred.

Knitting Machinery.
Brinton, H., Co.
Ludwig, H. Alban.
Wilcomb Machine Co., Inc.

Logwood.
American Dyewood Co.

Looms.
Crompton & Knowles Loom Works.
Draper Co.
Hindley, E. B.
Kilburn, Lincoln & Co.
Mason Machine Works.
Suter, A.
Whitin Machine Works.
Widmer Bros.

Measuring Devices.
Draper Co.
Sipp Machine Co.

Mercerizing Machinery.
Buhlmann, A. W.
Klauder-Weldon Dyeing Machine Co.
Textile-Finishing Machinery Co., The

Mill Supplies.
American Textile Specialty Mach'y Co.
Bond, Chas., Co.
Hindley, E. B.
Suter, Alfred.
Ulrich Company.

Mohair.
Littauer, Ludwig.

Napping Machinery.
Buhlmann, A. W.

Oils.
Borne, Scrymser Co.
Harding & Fancourt, Inc.
Scholler Bros. Co.

Patent Attorneys.
Crosby & Gregory.
Howson & Howson.

Pneumatic Conveyors.
Philadelphia Textile Machinery Co.
Schnitzler, Chas. H.

Presses.
Buhlmann, A. W.
Woonsocket Machine & Press Co.

Printing Machinery.
Textile-Finishing Machinery Co., The

Quillers.
Buhlmann, A. W.
Lever, Oswald Co., Inc.
Royle, John & Sons.
Sipp Machine Co.
Whitin Machine Works.

Quills.
Pratt, Robert G.
Suter, Alfred.
Ulrich Company.

Rain Proofing.
Schwarzwaelder Co., The.

Reeds.
Gowdey, The J. A., Reed & Harness Mfg. Co.
Ulrich Company.

Reels.
Draper Co.
Scott, Henry L. & Co.
Sipp Machine Co.
Whitin Machine Works.

Revolving Flat Cards.
Mason Machine Works.
Whitin Machine Works.

Ribbons and Piece Silks for Trimming Knit Goods.
Cheney Bros.
Sauquoit Silk Mfg. Co.

Scales and Weights.
Suter, A.
Troemner, Henry.

Sewing Machines.
Singer Sewing Machine Co.

Sheet Metal Work.
Bonner, A. J.

Shuttles.
American Textile Specialty Mach'y Co.
Pratt, Robert G.
Ulrich Company.

Silk Machinery.
Altemus, Jacob K.
Buhlmann, A. W.
Crompton & Knowles Loom Works.
Halton's, Thomas, Sons.
Hindley, E. B.
Johnson, Van Vlaanderen Machine Co.
Mason Machine Works
Parks & Woolson Machine Co.
Sipp Machine Co.
Suter, A.

Silk Yarns.
Cheney Bros.
Littauer, Ludwig.
Ryle, William, & Co.
Sauquoit Silk Mfg. Co.
Suter, A.
Villa, Stearns Co.

Size.
Corn Products Refining Co.

Soap.
Harding & Fancourt, Inc.
Holbrook Mfg. Co., The.
Scholler Bros. Co.

Spindles.
Draper Co.
Calder Machine Works.

Spinning Frames.
Mason Machine Works.
Whitin Machine Works.

Spinning Rings.
Draper Co.

Spools.
Marshall Bros., Agts.
Ulrich Company.

Starch.
Corn Products Refining Co.

Stop Motions for Looms.
Crompton & Knowles Loom Works.
Draper Co.
Mossberg Wrench Co.

Tanks, Vats and Dye Tubs.
Hall, Amos H., Son & Co.
Woolford, G., Wood Tank Mfg. Co.

Tapes, Braids and Edgings.
Chapin, George W.
Weimar Brothers.

Temples.
Crompton & Knowles Loom Works.
Draper Co.

Thread Guides.
Palmer, The I. E. Co.
Whitin Machine Works.

Threads.
Chapin, George W.
Littauer, Ludwig.

Tinsel.
Littauer, Ludwig.

Trade Mark Stamps.
Kaumagraph Co
Parks & Woolson Machine Co.

Twisters.
Draper Co.
Mason Machine Works.
Whitin Machine Works.

Twist Counters.
Buhlmann, A. W.
Scott, Henry L. & Co.
Sipp Machine Co.
Suter, A.

Ventilating Fans.
Philadelphia Textile Machinery Co.

Winding, Beaming and Warping Machinery.
Altemus, Jacob K.
Draper Co.
Globe Mach. & Fdy. Co., Inc.
Hindley, E. B.
Lever, Oswald Co., Inc.
Sipp Machine Co.
Whitin Machine Works.

Wiping Cloths.
Crowther, Harry.

Wool Combers.
Crompton & Knowles Loom Works.

Wool Oils.
Borne, Scrymser Co.
Harding & Fancourt, Inc.

Woolen and Worsted Machinery.
Altemus, Jacob K.
Buhlmann, A. W.
Crompton & Knowles Loom Works.
Curtis & Marble Machine Co.
Harwood, Geo. S. & Son.
Hunter, James, Machine Co.
Klauder-Weldon Dyeing Machine Co.
Lever, Oswald Co., Inc.
Parks & Woolson Machine Co.
Philadelphia Textile Machinery Co
Speed & Stephenson.
Woonsocket Machine & Press Co.

Woolen Yarns.
Littauer, Ludwig.

Wool Washing Machinery.
Hunter, James, Machine Co.

Yarn Testing Machinery.
Buhlmann, A. W.
Scott, Henry L. & Co.
Sipp Machine Co.
Suter, Alfred.

MILL NEWS

Philadelphia. The Schadewald Mills, manufacturers of haircloth and bedspreads, have resumed a full time schedule in their haircloth department. Their bedspread department is also running steadily, with plenty of orders on hand.

Philadelphia. The Dresden Carpet Co., Richmond and Pacific Streets, and to which reference was made in the August issue, has ordered eight new Wilton looms, which will be received and set up in time for the opening of the spring season.

Philadelphia. The Star and Crescent Mills, Hancock and Lehigh, which have been operating on a 40 hour a week schedule for a couple of months, are increasing their schedule time.

Philadelphia. The Wright Textile Co., Jasper & Orleans Sts., are being rushed with orders, and may soon have to get commission weaving done.

Philadelphia. The Philadelphia Winding Co., Inc., who are having a new mill erected, will vacate their present quarters in the Lomax Mill some time in October.

Philadelphia. The Almeda Mills, 1839 Madison St., dressgoods, which have been dull for several months, have received sufficient orders to start up a number of idle looms.

Philadelphia. The Copley Winding Co. has moved to Jasper and Clearfield streets. They are going to incorporate, add additional winding machinery, also narrow ware looms.

Philadelphia. The Quaker City Sweater Mills have been incorporated with a capital of $25,000.

Philadelphia. Fire in the plant of the Harrison Looping Co., 5815 Jackson St., caused a loss of $600, principally machinery.

Philadelphia. The Higgins Waste Factory, 2644 Sepvivia street, suffered loss by fire of several thousand dollars to building and contents.

Philadelphia. Fire in the Franklin Dye Works, owned by Masland & Co., caused a $40,000 loss, partially insured.

Philadelphia. The waste mill of Ford Bros., Orchard and Van Dyke streets, Fkd., was damaged by fire.

Philadelphia. The Prudential Worsted Co. is still running on short time.

Philadelphia. The United Knitting Mills, manufacturers of sweater coats, 332 Market street, have moved to 335 Market street.

Philadelphia, Pa. The Peerless Mills have been incorporated by John O. Crisman and other with a capital of $25,000 to manufacture fabrics of wool, cotton, silk, hair; etc.

Philadelphia. Herman Schloss, pres. of the Roxford Knitting Co., has transferred to that concern the six story brick building occupied by them at Randolph and Jefferson streets.

Philadelphia. Hiram E. Perry, owner of the Edgewater Print Works and the Keystone Finishing works, is erecting a new three story re-inforced concrete plant, at an estimated cost of $90,000. opposite the present plant at Frankford and Adams aves. When completed both plants will be moved to the new building.

Philadelphia. The Aberfoyle Mfg. Co., located at the northwest corner of Cressen street and Walnut lane, Manayunk, are to make improvements to their plant, to cost $1,200.

Philadelphia. Arthur Lofler of Chicago has purchased the interest of Hughes Faucett in the Courtrai Linen Thread Co., Unity and Elizabeth Sts., Frankford.

Bath, Pa. The Bath Silk Mill, of which Jonas Frederick is manager, has resumed operations, after being idle for several months.

Bloomsburg, Pa. The Bloomsburg Hosiery Mill, of which Chas. C. Barger is the supt., has added five more knitting machines. This concern has been very successfully managed, enlarging their plant continually since they started business.

Carlisle, Pa. R. R. Todd, of the Todd Carpet Mfg. Co., reports that they will erect a new mill building in a short time, and that additional machinery will be installed which will materially increase their production.

Chambersburg, Pa. The Melville Woolen Co., whose plant at Fredericksburg, Va., was entirely destroyed by fire, have leased the plant of the Chambersburg Woolen Co., which they will probably purchase later on. At the present time extensive improvements will be made which will enlarge the plant. They report that at the present time they have