Posselt's Textile Journal

A Monthly Journal of the Textile Industries

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EUROPEAN AGENTS: Sampson Low Marston & Co., Ltd., 100 Southwark Street, London, S. E., England.

A Review of the Men's Wear Trade.

The opening of the Spring 1911 season has been the most important feature this month, and the wide range of patterns, fabrics and values seems to make one thing certain, and that is that manufacturers are bound to have the business to keep their plants in operation.

In their estimation the prices as they stand to-day are as low as could be made without losses, and they claim that there has seldom, if ever, been a season when costs were reckoned so close.

The amount of business that has been booked does not however measure up to expectations.

The best and heaviest buying has been on staple lines and several of the larger mills for this reason had to withdraw their lines.

The interest that has been manifested in the better grades of fancy lines has been very gratifying, although the lower grade faction realize that this attention to the better grades means undoubtedly an unsuccessful season for them.

Little is being done below popular prices, and the chances are extremely good for houses that have what the market wants in the better grades.

It is contended by some, that woolen goods will show a decline and that worsteds are going to be in greater demand this season than they were last. The price of worsteds have been placed at such a figure that buyers must interest themselves.

The market has had some very interesting features, one of which was the success that some of the western woolen mills had, due to their novel styling. These mills have the reputation for the fine quality, and in light weights produce unsurpassed values, always in the neatest effects of mixtures, pin checks, warp tricot effects, etc.

These mills, at the present time, lead in the way of novel and even audacious styles and colors. The line of fabrics shown by the small mills at South Bend, Davenport and La Porte are causing some of the Eastern designers to wake up. Their ability to make a quick turn on a fabric is noticeable, for instance, a heavy weight which sold at $1.75 for the light weight season is marked at 85c.

The Western mills are becoming a factor in style and leadership beyond what the relative importance would be if size alone were considered.

Another feature which met with success was the line of porous cloth, a new woolen fabric being shown by the Webster Woolen Co. The fabric has the style and other characteristics of the highest class of Scotch tweeds, of all wool, double and twist, so constructed as to allow ready circulation.

The similarity of styles due to copying them is very marked up to a certain price. This probably due to the fact that some sellers forget that it is the distinctive styles which score success, styles which originality by the designer only can produce.

Fake fabric structures are very much in evidence, made to meet a certain price. For instance, a fabric sold as all worsted at $1.02½ net, upon being tested proved to contain about 40 per cent cotton.

The production of these fake structures is caused by the anxiety of selling agents to get the business, and if they find they cannot interest a buyer at the prevailing price in their lines, they will confidentially tell him "You know if you want anything we will fix you up." Just such tactics demoralize the trade as there are too many buyers who are not above taking advantage of such a proposition and in consequence nobody gains anything.

From observation it appears, that among the finer grades, the dark colors will be most in demand, due to the conservative trend, the light colors having had the run for the past three years.

A Review of the Dress Goods Trade.

If it had not been for the curiosity aroused by the opening of the spring lines, the dress goods trade would have been classed as dead the past month.

The demand for this line of fabrics was at a stand still, due primarily to labor troubles in the cutting-up trade and the absolute indifference shown by distributors to any line of spring goods.

On fall weights, there is a slight demand for narrow, woolen fabrics, although it is thought that panamas, staple serges and other fabrics, that have been in demand the last two seasons, will be resorted to later on, in spite of the effort to push the rough faced fabrics.

The better grades of polo cloth are still enjoying a fair demand, while a limited trade is being done on the low priced grades.

It was a common expectation among buyers to expect very low prices on some of the staples in manipulated fabrics.

On all wool, narrow plain twills, a reduction of from

2 to 3 cents per yard was evident; cotton warp fabrics, in which fine lustered wools are used, opened 1 to 2½ cents a yard less than last season.

The small reduction in the price of the latter is caused by the high cost of cotton used in the warp, together with that of lustered wools used for filling compared with that of coarser grades.

Broad goods lines showed a reduction of from 5 to 7½ per cent.

A feature of the foreign styles is the increase over last season's prices and judging from the amount of business that has been booked it appears that the prices will have to be radically re-adjusted if they want to compete with domestic mills.

Some prominent factors in the dress goods market express the opinion that while business is quiet yet there will be a shortage of staple dress goods for winter wear. This opinion is ventured in view of the fact that curtailment of production, during the last few months, has considerably depleted the market and when the demand comes the mills will be utterly unable to meet deliveries.

An idea of the views of a dress goods manufacturer on the situation may be had from the following, which shows the hesitancy and care with which they are producing. In an interview he said "Orders are being received, although not in such volumes as we should like to have and these orders being for Spring 1911 lines, we are afraid to start on them for fear that there may be some change made in them or that they will be canceled altogether, thus leaving large quantities of goods on hand. Last year, about this time, we had orders for about 12,000 pieces, which came in early, and following our usual custom we placed them on the books but did not start filling them immediately. When we did come to fill these orders, we found that more than half of them were canceled. It is just such conditions which cause the manufacturer to become skeptical and hesitate before going ahead.

A Review of the Silk Trade.

From present observation there will be an enormous tendency in the direction of silks for fall and winter wear and it appears that an increased demand of a marked degree will be manifested within the next thirty days.

This conclusion is based on the extensive use of silks abroad and is regarded by keen observers as full of significance, it being contended, that when the demand abroad is reflected upon this market it is doubtful if the market will be in a position to take care of it.

Mills operating on the best known specialties are busier than they have been for several seasons past, and from reliable sources it is learned that Persian warp-prints and plaids are in greater demand than they have been for the past five years.

Messalines, peau de soie, taffetas, etc., are being booked in satisfactory quantities, the total yardage booked on the first mentioned line being very encouraging.

The trade has taken to these lines of fabrics and the demand can be gauged by the fact that manufacturers sent out sample tailored costumes of this class of goods and the returns were far beyond expectations.

There seems to be an inclination to lessen qualities and substitute lighter weights, but the trade is demanding that no adulterations be permitted as it is claimed such a thing will hinder the developing of the demand. This is one of the things which heretofore has made this class of fabrics unfavorable to fashion.

Silk manufacturers returning from abroad claim that heavy satins are being extensively used on the Continent. These heavy satins are filled with either wool or schappe. In color effects, black and white combinations are popular.

Piece dyed satins are expected to be in unusual demand by the largest producers, mainly for the millinery trade.

Foulards for the Spring 1911 season are in great demand, and it is said may be worn extensively very late in the winter season. It is customary for this line to be entirely cleaned up by July, this year being without a precedent, the most desirable patterns still being in good demand.

Silks for foundation purposes are much in demand, a steady trade being noted in silk taffetas of good qualities in varying colors.

The demand for ribbons is improving, but sales are in moderation.

From the way the trade is developing there is no reason why the silk trade will not be well employed within a very short time and from the merchants the general opinion is that better things in the silk trade are close at hand.

A Review of the Knit Goods Trade.

The knit goods trade seems to be destined to remain an uncertainty until such times as the mills and their agents come to the conclusion that the hesitation of buyers, to cover their needs, rests entirely with themselves. The actions of the agents, pushed by their mills for business, has developed conditions, which, if not overcome at once will cause a demoralization of the season's business.

An optimistic attitude and a firmness as to price and staple quality will put the market on a firm basis within a short time.

The situation of the market was started by some agents opening their lines at a slight advance and when business came slowly, made concessions which resulted in sales at last year's prices. Other agents, naturally became informed on these actions and went right into the market and booked orders without any regards to costs, and in consequence have orders on their books which cannot be profitably filled unless cotton should reach an 11c basis or extraordinary reductions are made in the cost of labor.

A number of buyers who placed their orders in this manner, are somewhat perplexed as to the prospect of deliveries when the goods are promised, but on the other hand were in a certain sense compelled to act because they felt that if the prices became generally known and were warranted by later developments in cotton and yarn, they might be subject to blame for not covering.

Houses with a reputation of quality and deliveries, in accordance with contract, have secured a moderate business, being satisfied to await developments; the buyers in the meantime use the low priced end of the market as a cue in attempting to secure quality goods at low prices.

The leading lines of fine underwear continue to hold their price. It is apparent that the mills will not listen to any overtures from the agent as to a reduction, since the opening prices were based on a full output and unless these are obtained they would operate at a loss.

Some of the leading mills, making quality goods, have done well under the circumstances and buyers have met them half way. A feature of the market of the last few days has been the amount of goods booked by those houses who have refused to lower the quality of their goods to meet fixed prices, which shows that buyers are awakening to the realization that the consumer demands the quality and class of garment that they have been used to and that they cannot sacrifice quality for price.

The new fine yarn union suits that are being offered this year in all popular shapes are selling very well indeed. Some of these lines have been ordered more freely by the jobbing trade than agents were prepared for.

A Review of the Hosiery Trade.

The finer lines of hosiery are booking considerable business and sizable orders are being received by mills who have bettered the quality of their lines since last season.

The demand for thin hosiery, that will wear well, has increased, and mills meeting the demand are getting the business while the mills using a coarser yarn are lagging behind.

Among the larger mills, operating on the better quality of goods, there is a tendency to ignore the current low prices in some quarters, and mills are instructing their agents to book orders only up to the first of the year and to cease selling when orders will take care of production up to that time, offering their lines at the best possible prices, with deliveries and complete satisfaction guaranteed.

The domestic full fashioned mills seemed to have secured the attention of the foreign buyers on account of the favorable prices and the mills whose quality goods are becoming better known and better established are making a marked headway, contrary to the conditions earlier in the season.

Colors are much in demand, especially among the better grades.

A very evident fact recently has been the tendency for buyers on staple colored lines to confine themselves to the finer yarn goods rather than to the softer twisted coarse yarns, due to their unsatisfactory wearing qualities.

Throughout the coarser grades a demoralization is evident. The market is full of goods made to sell at a price, without regard to quality. In many instances the samples are so poor that buyers are rather skeptical of the chances of delivery.

This condition has caused buyers to give distinct preference to mills whose lines are of known quality and deliveries guaranteed at specified time.

The hosiery trade as it now exists, seems to offer little profit to the manufacturer for spring, but it will not take long, from present observation, for buyers to learn that the so-called cheap goods, that are satisfactory in forcing the market, are not satisfactory as to wearing qualities to the consumer and are not going to be delivered as specified, in turn forcing them to cover their needs at higher prices, which may show a little profit for the season as a whole.

Rumors are current to the effect that the new big mill combination, which has been talked about so much during the past six months, has been finally consummated, and that the different mill owners affixed their signatures to the necessary papers. The report is also to the effect that Chas. Porter, Jr., is to be president, and Herman Waterhouse, selling agent. For the present lightweight season rumor has it that each of the mills will run along individually and complete the season's work as separate units, maintaining their present independent organizations, and conducting their business as heretofore until a completion of the delivery of the goods for the lightweight season; that the new combination will begin preliminary work on the heavyweight season, and take over and operate it for the fall and winter season of 1911.

The International Cotton Mills Corporation, just incorporated under the laws of the State of New York, has an authorized capital of $20,000,000, divided into $10,000,000 seven per cent cumulative preferred stock and $10,000,000 common stock.

Myron C. Taylor, president of the corporation, has long been identified with cotton manufacturing in New England, having organized the Bay State Cotton Corporation which controls the Leroy Cotton Mills Company, the Lowell Weaving Company and the Warner Cotton Mills.

The officers of the new company are: Myron C. Taylor, president; Charles M. Warner, Thomas M. Turner and P. T. Jackson, Jr., vice presidents; J. D. Armitage, general manager; Augustus P. Loring, treasurer; David H. Carroll, secretary; S. Davies Warfield, chairman of the board of directors.

The directors elected are: Augustus P. Loring, Boston, president of the Plymouth Cordage Company; Rodman P. Snelling, Boston, treasurer of the Saco-Pettee Machine Company; Edward Lovering, Boston, treasurer of the Masachusetts Mills; Frank J. Hale, Boston, manager of the Saco-Pettee Company; J. D. Armitage, Boston, former manager of the Arlington Mills; P. T. Jackson, Jr., Boston, president of the Boston Yarn Company; Albert L. Scott, Boston, treasurer of Lockwood, Green & Co.; F. A. Carpenter, Manchester, N.H., banker; Charles M. Warner, New York, president of the Warner Sugar Refining Company; E. A. Brinckerhoff, New York, vice president of the Merchants' National Bank; Thomas M. Turner, New York, president of the J. Spencer Turner Company; Myron C. Taylor, New York, president of the International Cotton Mills Corporation; S. Davies Warfield, Baltimore, president of the Continental Trust Company; David H. Carroll, Baltimore, president of the National City Bank; J. H. Wheelwright, Baltimore, vice president of the Consolidated Coal Company, and William H. Graflin, of Baltimore.

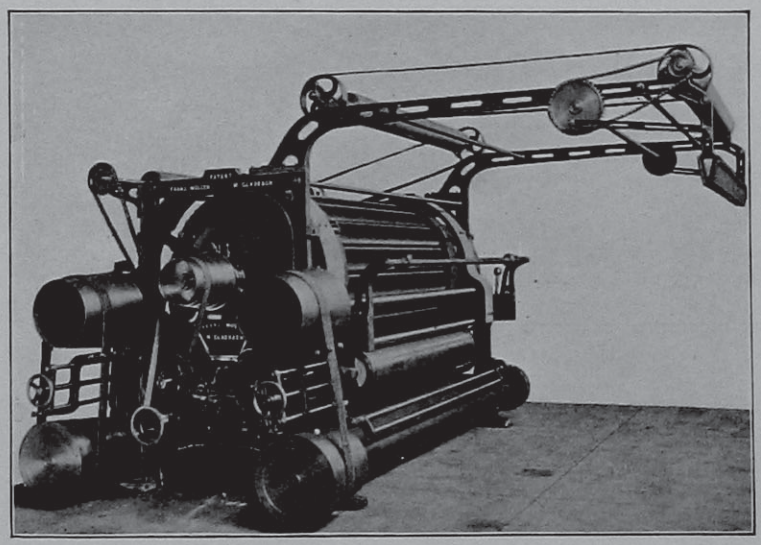
This consolidation of cotton mills is said to be the largest of the kind ever undertaken in the United States. The properties represented number 22 mills, employing from 10,000 to 12,000 operatives. The annual sales of the new company will approximate $18,000,000.

It is stated that a controlling interest in the preferred and common stocks of the Consolidated Cotton Duck Co. will be acquired. This company, in addi-

tion to owning directly the Stark Mills, Manchester, N. H., and several Southern mills, also owns the group of mills comprising the Mount Vernon Woodbury Cotton Duck Co. Other properties comprise the group of mills constituting the Bay State Cotton Corporation of Massachusetts, which company owns mills in Massachusetts and New York. Among the other mills controlled are two mills in Canada, also the selling company, the J. Spencer Turner Co., New York, and the Boston Yarn Co., Boston.

NAPPING.

The relative value of the process of napping in the appearance of the finished fabric is readily recognized by the finisher as well as the manufacturer, and in order to have his goods equal to those on the market, it is necessary for him to install the machine which is capable of producing a fabric second to none.



THE NEW DOUBLE-ACTING MUELLER NAPPER.

In view of this fact, attention is called to a 36-roller Napping Machine, which is in successful operation in some of the most prominent mills.

The machine is adapted for napping cotton, woolen and mixed fabrics, from the lightest to the heaviest weight, and is provided with various features not found in other machines of this class.

It is very rigidly constructed, the main drum, rotating within true bearings, acts in conjunction with the 36-rollers, one-half of which have their card clothing point in the opposite direction to that of the other half.

Those pointing in the direction of the travel of the cloth are known as the *pile rollers,* and those pointing in the opposite direction as the *counter-pile rollers.*

The driving mechanism of the Napper is based on the principle of the cone drive, thus producing a true, even contact of both sets of card clothing, eliminating any possibility of an uneven starting of the machine.

Movement is imparted to the rollers by means of an endless belt, which comes in contact with the bearing on each roller, resulting in the same being equally moved in every position at the same angular velocity as the conical drive.

The regulation of the raising energy of both series of rollers may be obtained independently, so that either more *pile* or a more *counter-pile* effect is secured.

This regulation may be obtained while the machine is in operation, by shifting the belts on the conical pulleys. If a greater variation is desired, one of the pulleys is changed to a larger one, producing then what might be termed a *half-felting* effect.

A feature of this machine is the cleaning arrangement, which consists of two clothed cylinders, operated by silent pulleys. They are situated directly beneath the large drum, in such a position that they will act on both sets of rollers.

The forward cylinder cleans the counter-pile rollers and the one to the rear the pile rollers, and for accumulating the lint and refuse, a dust cage, constructed of metal, is provided.

For varying the speed of these cylinders, together with that of the delivery bowls, a clutch is provided, which acts in conjunction with the bowls, which are situated underneath the large drum, the action of the clutch tending to produce more or less interval between both cylinders and in turn the necessary tension on the cloth.

This change of speed and tension on the cloth can be changed while the machine is in operation, thus eliminating the loss of time in starting and stopping the machine.

For evenly distributing the face of the fabric over the surface of the drum so that every inch of the face of the fabric will receive the same treatment, a cloth stretcher is used, which can be regulated while the machine is in motion.

At the same time, for regulating the tension on the cloth, the cloth beam is provided with a five-fold changeable pinion, the adjusting of the same regulating the delivery of the fabric to the cloth stretcher.

There is also provided an electro-welded copper heating tube designed to keep the temperature uniform in order that all portions of the fabric may be operated on under exact atmospheric conditions.

In some of these machines, when the goods under operation are handled damp or wet, the tube is replaced by one or two rotary stretching holders.

Another feature of this machine is the patented oil lubricator which discharges automatically, and may be refilled while the machine is in operation, without spotting the goods in process.

The machine requires at full speed 4.2 H. P.

From the explanation of the mechanical construction of this machine thus far given, an idea of its value may be readily seen, but to make it even clearer it might be interesting to follow the course of a fabric through the machine, the latter being capable of producing a variety of effects.

For instance, a *pile* and *counter-pile* effect is desired.

In this case, the napping rollers are in their usual position, one-half having the points of the card clothing pointing in the direction the cloth is going, and one-half against this direction, a pile roller working next to a counter-pile roller.

The cloth is passed over the cloth beam onto the cloth stretcher and from there passes onto the drum, the latter turning in the direction the cloth is going, the napping rollers acting on the cloth as it passes around, is brought out the rear, passes over the guide rollers and is laid upon the floor in folds after having passed through the plaiter. The average speed of the fabric through the machine is 16 yards per minute.

This method produces an excellent, long, even nap, by the double raising action.

Where an *uneven* or *shorter* effect is desired the drum is made to revolve in an opposite direction to that which the cloth is going. At the same time this process also makes felting practically unnecessary.

To secure a *half-felting* effect: This process is sufficient for many fabrics, taking the place of felting, but should not be confused with the real felting effect and can only be used on goods which have been previously well raised on the double acting principle.

In this case, the speed of pulleys is changed in such a way that one set of the rollers are caused to revolve at a much higher rate of speed than that of the other, thus allowing only one set to come into actual operation, the speed of the other set being so fast that they barely touch the fabric.

For *felting,* this machine has an excellent reputation. For this process, which goes in conjunction with the double action napping, the rollers are changed around so that the card clothing points all go in the direction of the cloth.

On Cotton Blankets an effect of the highest character is secured by running the blanket through the double action on an average of three times and once on the felting principle.

These are but a few advantages of this machine, and evidence of the work done, which will be a surprise to most every manufacturer, will be gladly furnished, together with other data, by Mr. A. W. Buhlmann, Textile Engineer, 487 Broadway, New York, who is the American agent of the Franz Mueller Works, M. Gladbach.

DIRECTORY OF TRADE MARKS RELATING TO THE TEXTILE INDUSTRY.

Registered July, 1910. (*Complete.*)

1, 2, 3 and 34. Silk Piece Goods and Silk and Cotton Mixed Piece Goods.—Rogers & Thompson, West New York, N. J., and New York City.

4. Percales.—Carson, Pirie, Scott & Co., Chicago.

5 and 6. Knit Scarfs and Mufflers.—N. J. Rich & Co., Cleveland, O.

7. Worsted Cloth Piece Goods.—Martin Sons & Co., Ltd., Huddersfield, Eng.

8. Denims.—Ely & Walker Dry Goods Co., St. Louis, Mo.

9, 10 and 20. Silk, Cotton, Mercerized and Machine Sewing Threads.—Gudebrod Bros. Co., New York.

11. Cotton Duck.—Ashland Mfg. Co., Hillsdale, Md.

12. Knitted Undershirts, Drawers and Union Suits.—The Piqua Hosiery Co., Piqua, O.

13. Bed-Hammocks and Couch-Hammocks.—Fellows & Co., Boston.

14. Hosiery.—Marshall Field & Co., Chicago.

15. Worsted Yarn Wound with Mercerized Cotton.—Bernhard Ulmann & Co., New York.

16. Cotton Piece Goods.—Charles Kohlman & Co., Inc., New York.

17. Hosiery.—E. M. Townsend & Co., New York.

18. Piece Goods of Woolen, Worsted, Silk, Mohair and Cotton and Combinations of Such Fibres.—George J. Geer, New York.

19. Cotton, Velvet and Fustian Piece Goods.—N. Erlanger, Blumgart & Co., New York.

21. Interlining.—Printz, Biederman Co., Cleveland, O.

22. Ginghams, Shirtings and Chambrays.—G. A. Stafford & Co., Greenwich, Conn., and New York.

23. Linen and Hemp Piece Goods.—John Wilsons' Successors, Ltd., London, Eng.

24. Dress Goods in the Piece Formed of a Mixture of Silk and Wool.—Th. Michau & Co., Paris, France, and New York.

25 and 26. Cotton Wadding and Cotton Batting.—The Stearns & Foster Co., Cincinnati, O.

27, 28, 29, 30, 31, 32 and 33. Cotton Piece Goods.—Boott Mills, Lowell, Mass.

35. Cotton Piece Goods.—Kraft & Cutter, New York.

Silk scarfs are the fashion abroad, a fact of the greatest interest to our silk mills. Such as made of satin messaline, of some decided color, lined with white satin, are those most popular, with bordered Persian silks as a second selection. Their shape is straight, with their ends caught into a tassel, or knot. They are either worn straight across the back and twisted across the arm, the tassels dangling in front, or are made up into little wraps with tassels and fringes. Another fad abroad is a long chiffon coat or tunic, trimmed with a deep double edging of silk, satin or velvet.

Sea Island Cotton Crop in Georgia.

Georgia farmers are raising more sea island cotton this year than ever before in their history. The demand for this cotton has been increasing the past few years, owing to the fact that a number of mills have been established in the State which use the sea island almost entirely, and to-day the largest crop in the State's history is growing. This grade can be produced at very little more expense than the other cotton and it is worth considerably more on the market. The early cold weather had little or no effect on it, the crop having been somewhat slow in coming up and it escaped almost entirely. Therefore, it is in much better shape than the other cotton and from present indications a record breaking crop will be produced this year.

DICTIONARY OF TECHNICAL TERMS RELATING TO THE TEXTILE INDUSTRY.

(*Continued from page 24.*)

Lisse:—From the French *Leece*. In tapestry weaving, warp threads taken together. The manner in which they are disposed, determining the kind of tapestry, whether *Haute-lisse* or *Baise-lisse*.

A sheer fabric having a similar construction as tarlatan, the difference being that *lisse* is constructed with a finer texture, of either silk or cotton, and is a much more delicate material; used for ladies' neckwear, and in the manufacture of ruching. When fluked or crimped, it is called *Crape-lisse* or *Crepe-lisse*.

List or Listing:—It is derived from *liciæ*, which in the age of corrupt Latin, was used for the inclosure of fields and cities, as being anciently made with cords interlaced; or from *listæ quia campum clandebant instar listarum panni;* as enclosing the ground after the manner that a list does a piece of cloth. List, in manufacturing, denotes the border of a stuff, or that which bounds its width on each side. In addition to being a necessity to the fabric, they contribute to good appearance. (See also *Selvage.*)

Stripes of cloth; as, a list (rag) carpet.

List Work:—Appliqué-work made by sewing list on a garment, edge to edge or overlapping.

Litmus:—Used as a test-paper. Alkalies turn it blue, while acids turn it red.

Llama:—The Llama or Yamma, is also called the American camel, and has been known to Europeans

The Llama or Yamma.

since 1544. Four species of llamas are acknowledged: namely, the *Vicugna,* the *Guanaco,* the *Yamma* and the *Alpaca,* all four being natives of America. The *Vicugna* is found in the most elevated localities of Batavia and Northern Chili, and so far has been found to be very wild and untamable. The short, soft, silky fur of this animal is very valuable. The color of the vicugna is a nearly uniform brown, tinged with yellow on the back and fading into gray on the abdomen. The *Guanaco*

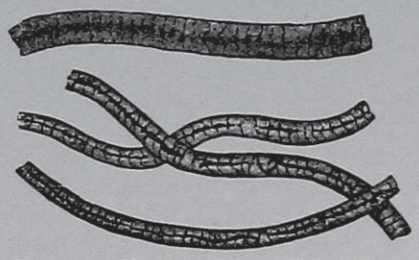
is of no consequence in regard to the value of its hair for textile purposes. The *Yamma* or *Llama*

LLAMA: *The Alpaca or Paco.*

is used by the natives for carrying burdens. As a beast for carrying burdens it is now more and more supplemented by the ass, while the European

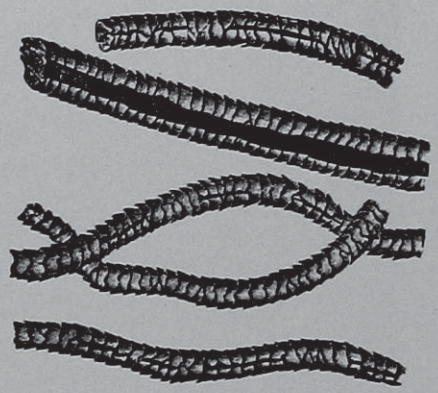
LLAMA: *The Vicugna.*

sheep is gradually taking its place as wool bearer. The hair of the llama is of a brown or variegated color, and of very much less value than the hair



LLAMA: *Vicugna Fibres* (Magnified).

of the vicugna. Of the same value as the vicugna for producing a raw material for textile purposes is the *Alpaca* or *Paco*. Its color is generally black, though frequently variegated with brown and white. The wool of this species is long, soft, silky, and extremely valuable. It is also exclusively South American, and found in the lofty ranges of



LLAMA: *Alpaca Fibres* (Magnified).

the Andes. The alpaca is smaller than the llama, and in its form resembles the sheep, but has a longer neck and a more elegant carriage of the head compared to the latter. The hair of the alpaca, if the animal is shorn each year, is about eight inches long, but if allowed to grow will attain a length of from twenty to thirty inches. It is rather less curly than sheep's wool, but fine and strong in proportion to its diameter, and is used for producing the yarn for some of the finest dress goods (Alpacas) as well as coatings, the face of overcoatings (Montagnacs), etc.

LOGWOOD, OR CAMPEACHY WOOD:—The wood of a large tree Hæmatoxylum campechianum, which grows abundantly in the West Indies, Mexico and parts of Central America. Logwood was introduced as a dye soon after the discovery of America. Logwood extracts are prepared by extracting the wood with hot water and evaporating the solution under reduced pressure at a temperature not too high. The wood is extracted a second and a third time, yielding inferior grades of extract. The wood contains woody fibre, water, mineral matter, hæmatin, hæmatoxylin, and other substances. It varies in composition. Logwood as a direct dye produces a reddish brown color of no practical value. Combined with iron, aluminium, chromium, or copper, logwood produces valuable dyes of different colors. That is to say, it requires metallic mordants. Wool has enough affinity for the coloring principle of logwood to absorb sufficient of it to produce a good color when afterwards mordanted. Cotton, even when strong solution is used, absorbs only enough logwood to fix the mordant; for a good color, a second dyeing is necessary. Cotton or wool mordanted and then dyed with logwood retains an excess of the coloring matter held somewhat loosely. Where a high degree of fastness is required, the excess is fixed, or made insoluble, by a second mordant bath. The operation is called *saddening*. The appearance of cotton dyed with logwood is improved by *soaping*. Soaping often follows dyeing, to remove coloring matter held only loosely by the fibre and to soften the material. Chip-logwood sells for less than the logs themselves, because, after cutting up into chips, they increase in weight.

(To be continued.)

LONDON SHRINKING.

STAMPED in bold letters, upon the end of a piece of cloth, the sentence: *Thoroughly London Shrunk,* carries a guarantee that the fabric so marked has been shrunk as far as it will go. The legend also bears the name of the firm of shrinkers, also known as Spongers or Re-finishers, who are responsible for the work.

London shrinking is a trade quite distinct from ordinary or mill finishing, and, as a general rule, those who follow it, confine themselves to shrinking only, although any mill with the necessary plant can work the process.

In many cases, the cloth, after having been finished, is sent by the owner to be London Shrunk, and this, of course, entails a certain amount of re-finishing by the shrinkers. By sending the fabric to another firm to shrink after finishing, the owners are then assured that the most thorough treatment has been given, and the material has shrunk to its utmost limits.

When the finisher of a mill receives a number of pieces, he is held responsible for whatever defects they exhibit after passing through his hands, unless the faults are obviously in the raw material, or in spinning and weaving; and shrinking, when properly done, shows up many faults which were covered by the previous finish. On this account, shrinking is rarely done so thoroughly by mill finishers as it is by those who make shrinking a specialty, as, while the mill finisher is concerned about faults developing, the professional shrinker cares nothing about these, his business being to get the cloth up all it will go.

Without doubt, the methods used by London Shrinkers are the most drastic ones known, and, after ordinary shrinking, it is nearly always possible to get a little more by putting the goods through the London process. Once properly shrunk, the weather has no further action in causing them to run-up, but it will be obvious that many low thin cloths will not stand it, owing to lack of back-bone. As a case in point, take a light weight, cross-bred worsted. If this is shrunk, it loses all character, and becomes exactly like an old dish cloth; but a cloth made from better stuff, such as merino, will shrink up, and look none the worse.

At times, finishers receive instructions to shrink the goods, but are also given the width and length the cloth is wanted; under these conditions, perfect shrinking is impossible, as the width requirements make it an absurdity. It is not an uncommon thing to hear of pieces being sent to re-tenter half an inch wider after going through the fuller's hands; this is, of course, simply undoing all the fuller's work, as a tentered piece cannot, by any stretch of imagination, be called shrunk.

THE PROCESS.

Different firms have various modifications of their own, but the following system is in general use, and will be found to give the maximum of shrinkage.

Assuming the cloth to have come in the finished state from the commission house or the mill, the first operation is to open it out into full width, ready for the wetting out machine, a specimen of which is shown in Fig. 1. Here the fabric passes, at open width, through the water trough *a* and under the two submerged rollers *b* and *c*, from where it is drawn between the heavy squeezing rollers *d* and *e*, and up and over the guide roller *f*, from which it travels over the drawing roller *g*, and is folded down by a common plaiter device *h*.

The two squeezing rollers *d* and *e* are pressed together by a hand wheel and spring at each end, and may be covered with a few yards of fine cotton to form a bed, or one roller may be clothed with rubber, and its mate roller of metal. The nip between the two rollers must be close enough to thoroughly impregnate the cloth with water, and yet not leave it wringing wet.

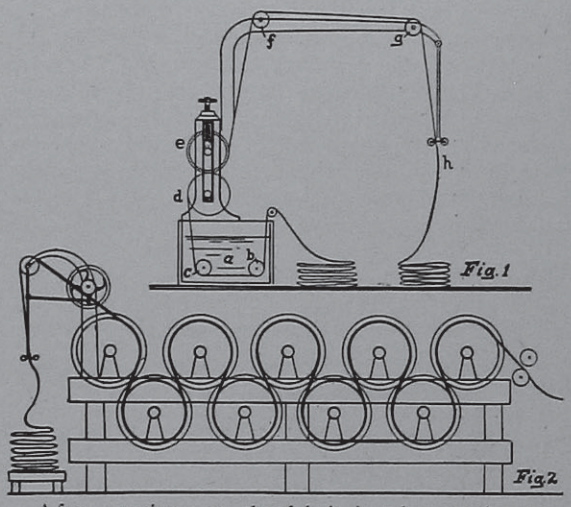


Fig. 1

Fig. 2

After wetting out, the fabric is taken to the steam drying cans, and here the actual shrinking takes place. A specimen of such a Can Dryer is shown in Fig. 2.

This machine, often regarded as belonging to the finishing department of a cotton mill, gives very good London shrinking results, and is a most useful adjunct to the finishing department of any woolen mill.

FREEDOM FROM TENSION IMPERATIVE.

As the fabric goes on to the steam heated cans, it must be quite free from any tension or brake action. To guard against this, all the cans are geared one to another, so that the cloth passes around them without the slightest strain. Coming on to the surface of a hot cylinder, with the material in a thoroughly saturated condition, gives it every chance of creeping up, particularly as there is no tension whatever on the cloth, either in width or length, and the softened fibres are at liberty to assume a natural position. From a scientific standpoint, shrinking is equivalent to balancing a number of strains, all of which are pulling in various directions, and, by allowing these the best conditions to adjust themselves in, constitute the entire process of shrinking.

Heavily fulled fabrics, such as box cloths, army goods, meltons, and vicunas, are practically shrunk as much as they will go to after fulling, providing,

however, that tentering does not pull them out.

For practical purposes, it is found necessary to pull out the width during tentering, in order to straighten out creases, &c., which would interfere with the other operations of finishing; but, as a general rule, the process of pressing, followed by steaming, allows the cloth to regain its normal width in a gradual, easy manner.

Spun threads of either vegetable or animal origin, increase in thickness when subjected to moisture and heat—that is, each individual fibre contracts in length, increases in diameter, and takes on more or less of a curl. Wool fibres show this elasticity in a much higher degree than either silk or the vegetable fibres, their complicated structure partially accounting for this, in addition to their varied constituents.

Probably the best illustration of a wool fibre is seen in a ram's horn; in this both shape and composition are the same, the serrations are plain, and the curl is evident, by the increased cell growth at one side pushing it over into a curved form. In a similar manner to woolen fabrics, horn may be softened by heat and moisture, and will, if dried, retain whatever form is given to it while in the plastic state, thus imitating exactly the behavior of a woolen cloth dried under tension.

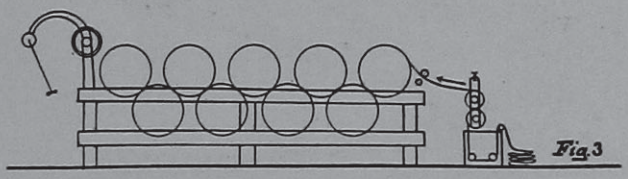


Fig. 3 shows an arrangement of London shrinking machinery by means of which the fabric may be fed continuously through the wetting out trough straight away on to the steam cans. This method is more economical than piling the cloth down before drying, but the latter method is best with very heavy cloths, as it insures thorough impregnation.

Faults Developed by Shrinking.

By assisting the wool fibres to get back to their normal position, shrinking frequently shows up defects which were quite invisible prior to this operation.

An example is seen in crimps, caused by running the fabric in the process of wet finishing, in rope form too long a period. In this case, a weakness of fibre is formed along the lines of the crease, the cloth losing its power of springing straight. If tentered, however, under considerable tension, the creases are pulled out, and remain so, when dried in this condition. On coming to be London shrunk, such a cloth would reveal the old faults. The cross tension being removed all the strains would balance themselves, and the creased portion, having less elasticity, would again show the fault. Precisely the same occurs with fabrics having cockled places caused by imperfect filling, which shows as a series of depressions across the cloth. When not too severe, these may be covered by pulling well out in width during tentering, following this up by leaving plenty of press finish on, which keeps a straight surface and imparts slip to the hand.

After shrinking, all cloths require pressing up again, and for this nothing but the old style of pressing between papers of the hydraulic press will do. Rotary presses, by reason of the friction upon the bed, pull out the fabric in length, and thus upset the balance of strains equalized by the shrinking, while the finish imparted is more approaching frictional polish than press condition.

London shrunk cloths are usually finished with very little lustre on. This may be done by pressing cold, but, if the extra condition is wanted, there is no reason why this should not be given, without detriment to the shrinking.

Other Methods of Shrinking.

Besides the system just dealt with, there are other methods of shrinking fabrics, the oldest of which consists in winding two pieces of cloth onto a roller, one being dry and the other wet. On leaving them in this state for some hours, say for the space of a night, the dry one will be found to have absorbed considerable moisture from the other, as well as having shrunk up in length and width.

The winding on must not be too tight, or it will defeat its own object, as the fabric then will be too hard for allowing the fibres to shrink.

Another plan was to run the cloth over a steaming table for, say, twenty minutes, blowing steam into it all the time; then take it off, give a good damping, and allow to lay in that state some hours before pressing up.

Another way was by wetting out the fabric and hanging it up over wooden spars in a fairly dry room. This gave a gradual, natural shrinkage, but, unfortunately, left the cloth rather baggy and irregular, which rendered further work on it more difficult. The Dyer and Calico Printer.

(*To be continued.*)

Silk and Its Treatment.

This fibre was dyed in the degummed state in China as early as 4,000 years ago. From this country the industry spread to Japan and India. Although China was actually the cradle of silk production and dyeing, India developed it very largely, as cotton dyeing was already well known, the dyes, of course, being all of vegetable origin excepting cochineal.

Raw silk consists of two fibres; both these are of extreme tenuity, cemented together by an outer layer of gum. This outer covering or bast determines the color of the fibre, the inner parts of pure fibroine being always white. Before the degumming or boiling off the bast, raw silk is hard, rough, and brittle, and affords no clue to the quality of the actual silk fibre within. Many substances have been tried for the purpose of removing this outer layer of silk gum, but up to now nothing yet which does the work so well as a bath of good neutral soap, the term neutral, of course, meaning non-caustic.

Olive oil soaps are the best and despite their cost will be found to leave the silk more readily and in a better condition than cheaper ones. The loss in de-

gumming varies greatly in the kind of silk treated, Japanese losing from 18 to 22 per cent., while China silks lose as much as 30 per cent.

After boiling off, the soap must be completely removed, and for this purpose soft water is absolutely essential. Should lime be present it forms a sticky lime-soap which clings to the fibres and deteriorates

SILK: SHOWING THE TWO DELICATE THREADS THE FIBRE IS COMPOSED OF.

the handle, besides interfering with the brilliance of the future dye. Should the natural water supply be hard, then it will pay to soften it by one of the many mechanical water softeners on the market, the agents being caustic lime and carbonate of soda. Thorough rinsing with soft water cannot be over-emphasised after the boiling-off process, and the well-known ancient reputation of Lyons silk was in a great measure due to the workers having a pure source of water available.

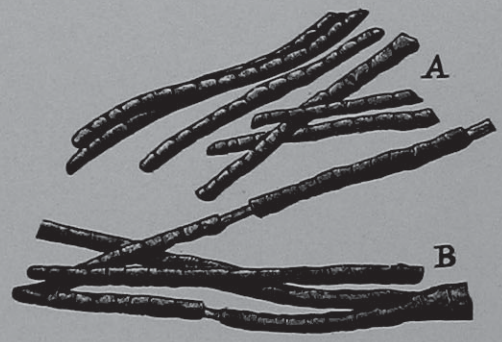
After rinsing, an acid bath is required to bring back the peculiar rustle or scroop which was removed by the soap. For this purpose sulphuric acid may be used of such a strength as to taste perceptibly acid, but not so strong as to burn. Pure silk thoroughly stripped of its outer gum and not sophisticated with any loading material forms the most durable fabric known, many very valuable old silk brocades being still extant which retain their brilliancy and strength although woven many hundred years ago.

SILK WEIGHTING.

Although this practice is very many years old, before it was originated it was the pride of silk manufacturers to endeavor to outdo each other in the purity of their silk both in feel and lustre. Unfortunately it was discovered that silk lent itself most readily to combine with metallic salts as weight-givers, and from that time onward the loading of silk fibres has increased to the utmost limit of carrying power. Blacks are commonly weighted from 60 to 70 per cent. and colors 30 to 40, the degummed silk having a greater absorbing power for easily dissociated salts than any other fibre.

One system used for blacks was to pass the silk after ungumming through a bath of iron mordant, then through hot water and into a hot soap bath in which it was worked for a time, and then blued in a luke warm bath of prussiate of potash and hydrochloric acid. Following this came two passages through stannic chloride, the tin being fixed after each passage by treating with phosphate of soda, while a final bath of cutch was given at 185 deg. F. Colored silks had the iron bath omitted and were given three to four passages through stannic chloride, fixing after each by a passage through phosphate of soda at 167 deg. F., a final bath of water glass finishing up the series. After fixing from the first weighting bath, the fibres are now in a position to absorb more tin, so that it is by no means uncommon to give four weighting and fixing passages before the material has reached its maximum absorption. To obtain the absorption required, the weighting baths must be very strong, 30 deg. B. for the iron ones and 22 deg. B. for the tin, so that the baths must necessarily be standing ones.

Into these standing solutions the silk brings salts from the rinsing waters, particularly lime salts, which at first are removed from the silk by the tin, but as this latter bath grows richer in lime it re-deposits it upon the fibre. Lime on silk diminishes the lustre and also the scroop, and it has been found that the more concentrated the stannic baths the more thoroughly is the lime eliminated, while acid baths are more effective than neutral. Exceeding a certain strength, the absorbing power of silk for iron or tin becomes constant, so that a bath containing stannic chloride at 22 deg. B. will not impart any more weight than one much weaker.



SILK: SHOWING THREADS WEIGHTED.
A shows silk threads weighted from one and one-half to twice and *B* such as weighted from three and one-half to four times the weight of the silk.

The bath of water glass following the last phosphate bath is to neutralise all acid which is present; besides helping to increase the weight, it is found most difficult to make silk take up dye evenly and properly when acid is present. The Dyer and Calico Printer.

The manager of the Fuji Gassed Yarn Co., of Japan, has just patented a process with regard to waste silk. From reports received, it appears that the new process consists in boiling the waste silk while it is still wet, instead of drying it first. At present the silk-reeling establishments dry their waste, and sell it either for consumption in Japan or for export in the shape of dry waste. This dry waste has then to be boiled.

By the new process this boiling of the silk is to be done up country by the reelers themselves before the waste has had time to dry. The inventor estimates that in this way, seventy pounds of boiled dry waste will be obtained for every one hundred pounds of ordinary dry waste, but that the former will produce thirty-five pounds of dressed silk, as compared with only thirty pounds from the latter. He also claims that the quality of silk produced by the new process will be much better.

HOSIERY AND KNIT GOODS.

LONG AND SHORT STITCH RIB EFFECTS.

A new method for producing ribbed fabrics of a fine gauge, the wales of which present the appearance of alternately long and short stitches, has been recently brought to the attention of the trade.

In order to make the idea more comprehensive, reference is made to the accompanying illustrations, of which Fig. 1 is a sectional view of the parts of a multi-feed rib machine; Fig. 2 shows a flat view of two individual cams of the set of cylinder cams of the cam ring, while Fig. 3 is a view of the cams on the dial cam ring.

Before going into detail, attention is called to the various parts of the machine which have a bearing on the method. The needle cylinder is referred to in Fig. 1 as 1, while the cam ring is shown at 3, the latter being provided with cams which give a reciprocating motion to the cylinder needles, the motion being given to the cam ring by the rotable ring 2, to which it is secured.

The needle dial shown at 4, is attached to the shaft 5, and by means of the lugs 6 and 7, is held stationary with the cylinder 1, while the dial cam ring 9 has secured to its under side the dial cams which give a reciprocating motion to the dial needles.

From the foregoing, it will be seen that reference is made to that type of a machine where cylinder and dial are stationary and the dial and cam rings rotate, but the principle may also be used on such machines as are just the reverse, or on flat bed machines.

At the same time, by referring to Fig. 1, it will be seen that both the cylinder and dial cam rings are provided with cams for clearing the needles, by pushing them to such a point as the loop on the needle is slipped back of the latch and also for retracting the needles or knocking off the loop from the head of the needle to again take another stitch or loop.

To make the explanation more simple, reference is made to Fig. 2 and in which the cylinder cam ring is shown at 10 and the draft cams at 11 and 11^a; and Fig. 3, the dial cam rings with their dial cam ring at 12, with the draft cams at 13 and 13^a.

From this explanation a general idea of the principle may be derived, and from the following data its use in manufacturing will be readily understood.

In the manufacture of ordinary ribbed fabrics the needles of the machine are usually divided into two sets—the primary or cylinder needles and the secondary or dial needles. The co-acting cylinder or primary needles do not reach the knocking off point or full retraction at the same time as the secondary or dial needles, the former being first.

The difference in operation of these sets of needles is due to the fact that the cams of the cylinder cam ring are comparatively short and present a rather abrupt angle as shown in Fig. 2 at 11, while the cams of the dial cam ring are curved and present a lesser angle as shown in Fig. 3 at 13^a.

The purpose of this construction is to delay the action of each secondary needle until the primary needle in advance of it has completed its action, thus preventing the latches of both needles closing at once, which would naturally cause the yarn to be trapped by the latch of the needle to which it was last fed, causing the yarn to break.

For example, in a machine having 14 needles to the inch in a set, the primary or cylinder needles will first draw at the rate of fourteen to the inch and the secondary or dial needles at the same rate, whereas if

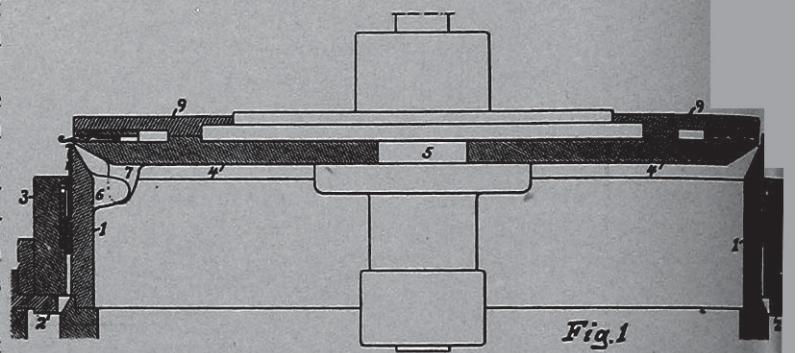


Fig. 1

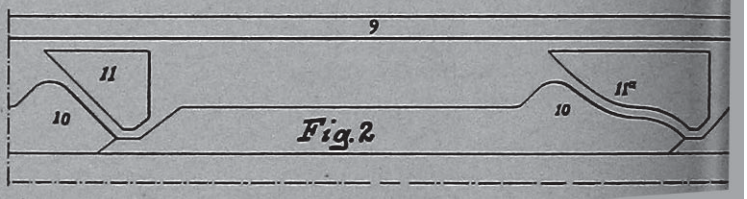


Fig. 2

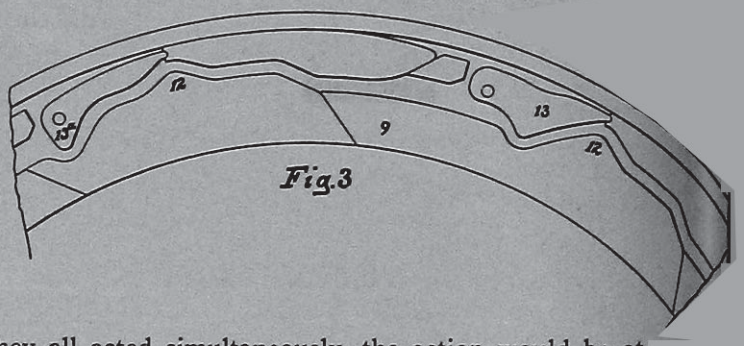


Fig. 3

they all acted simultaneously, the action would be at the rate of 28 to an inch and the yarn would be caught by the closing latches, and the feeding motion restricted would cause the yarn to break under the strain. The 14 needle machine has been used, for example, because it is a fine gauge and the principle mentioned applies to it. In a coarser gauge, for instance an 8 needle to the inch machine, it might be possible to draw stitches upon both sets of needles simultaneously, due to the relatively wide spacing of the needles, the coarseness of the latter, and the size of yarn used; but such is not practical in fine gauge machines as used in the manufacture of webs for underwear, etc.

In a circular machine, the trapping of yarn by the latches may be prevented by *tucking* upon the needles of one or both sets which are being acted upon by the draft cams at such a time, such needles failing to slip their stitches back of the latches which will consequently remain open when the needles are retracted. This would only happen when the latches of adjoining

needles close at the same time as one of the primary cams is being shifted from an operative to an inoperative position and vice versa.

In a flat machine, the position may be changed after the cam has passed the needles at the end of the bed.

The use of the primary and secondary needles also allows the one set to draw longer stitches than those of the other set. It is to be understood that this can be readily accomplished by adjusting the primary cam 11 on the cylinder cam ring Fig. 2, and at 13 on the dial cam ring Fig. 3, and also the secondary cams in each case and vice versa.

From this explanation, it will be seen that the stitches of one course upon one face of the fabric will be primary stitches and the stitches of the same course on the opposite face will be secondary stitches, while in the succeeding course, the relation will be reversed and both faces of the fabric will appear the same, and as the one cam draws a longer stitch than the other, there will be in the courses and wales of the face of the web a series of long and short stitches.

A New Method of Forming Gussets or Other Elastic Knitted Fabrics.

The principle involved in producing this fabric is applicable to either the circular or the flat machine.

For convenience, explanations are confined to the latter type of a machine, involving the principle of *wedge knitting*.

The fabric is formed by incorporating a strand of rubber with each course of knitting. In between these complete courses, shorter courses are formed which extend laterally into the gored portion from either direction.

These shorter courses are so constructed that either they extend only the length of the flat portion or throughout the length of the gusset from end to end.

These incomplete courses may be all of the same length, in which case their inner terminals would define the borders of the gusset portion and the gusset portion would be sharply contrasted with the flat portions, or the incomplete courses may be of varying length, in which case there will be a gradual merging of the gusset portion into the so-called flat portions.

In order to more fully explain this principle of construction reference is made to illustration, Fig. 1, representing the lay out of a flat bed machine.

The needles, as shown at 1, are inferred to be in stationary series and of the bearded type. Alternating with the needles are the sinkers 2, while the yarn guide 3 is carried by the reciprocating bar 4; the rubber strand is introduced by the yarn guide 5, carried by the reciprocating bar 6.

The relative position of the yarn guides 3 and 5 is so designed that they are at right angles with the plane of the needles and in such a position as to effectually introduce the yarn, or rubber, to the beards of the needles at the proper time.

In knitting, the yarn guide 3 is moved to and fro in the usual manner, the guide 5 being so adjusted as to act in conjunction with the yarn guide 3, and the rubber thread is buried in the body of the fabric between the loops so that it does not appear on either face.

The mechanical production is better shown by reference to Fig. 2, where the first complete knitted course is shown by the irregular line 7 and the incorporated rubber strand by the straight line 8. The yarn guide 5 carrying the rubber thread and starting from the point 9, having traversed the entire bank of needles to the point 10 remains stationary at the left hand side of said bank of needles.

The yarn guide 3 is next moved to the right to form the short course 11, this course terminating at the point 12, and thus defining one border of the gus-

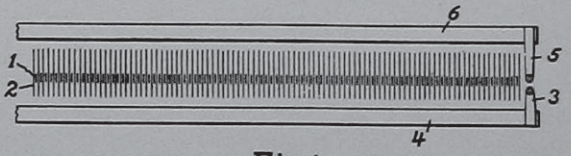


Fig. 1

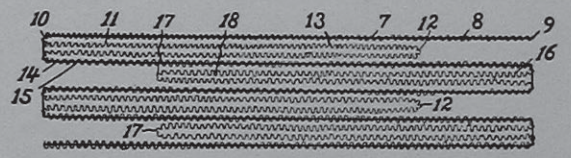


Fig. 2

Fig. 3

set area. The yarn guide 3 is then returned to the left, to form the next incomplete course 13. Thus, the incomplete courses 11 and 13 extend from the edge 10 of the fabric through to the point 12, which indicates one border of the gusset area. After the formation of the incomplete course 13, the yarn guide 3, which is then at the left hand edge 10 of the fabric, moves entirely across the same to form the complete course 14 and immediately following the formation of said complete course the yarn guide 5 moves from left to right, so as to incorporate with the complete course 14 the rubber strand 15. The thread guide 5 then remains stationary at the right hand side 9 of the fabric, and the yarn guide 3 then moves to the left to form the incomplete course 16, this course extending to the point 17 which defines the opposite border of the gusset area. The yarn guide 3 is then returned to the right forming the next incomplete course 18, which extends to the edge 9 of the fabric, and thus completes one cycle of operation.

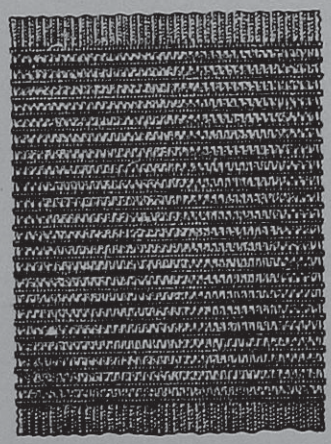
The cycle of operations thus described is repeated to the desired extent, and in this manner is produced a fabric having a concaved or gusset or gored area, as shown in Fig. 3.

A New Idea for Elastic Garter Tops.

In the manufacture of certain lines of hosiery and underwear it has often been thought advisable to

make use of an elastic portion, which would have incorporated with the web, strands of pliable rubber.

Such was the case with the elastic garter top as applied to ladies' hose and to some extent to men's half hose and children's. The great drawback in the use of the system has been that special machinery was necessary to introduce the strands into the web, for which reason it found little application except in special cases like that of surgical appliances such as elastic belts, stockings, etc.



While the idea applies indirectly to the latter, it appears that it might be used to advantage for garter tops on hose and half hose as well as gussets for drawers, etc.

In connection with these, the piece of web is put under the presser foot of a sewing machine while the strand of rubber is fed across the fabric and attached to the same, preferably by means of any overlock, interlock or zig-zag stitch, as shown in the illustration.

As the stitches are freely elastic in the direction of the length of the wales, the elasticity of the fabric is in no ways impaired.

It is suggested that when applying the elastic to the top of a hose or any circular fabric, that the strands be attached in parallel rows around the top, the strands thus passing spirally around and around the fabric, making it unnecessary to cut the elastic at the end of each row.

A New Method of Topping.

It is customary to knit the rib tops in strings or chains, the length of the rib top being determined by the widest distance between the welts. In order that they can be used for the purpose intended, they are cut apart between the selvage welts or the shortest distance between the welts.

After cutting, there is presented, on the end which is intended to be attached to the leg, the free course of loops. This free course of loops allows the topper to place the rib top on the points of the transfer cup for attaching to the leg of the stocking.

In putting the rib top on the needles or points of the transfer cup it is necessary for the topper to stretch or expand the web in order to follow the course exactly. At the same time, after it is on the points, it is necessary for the topper to unravel the stitches until the course is reached, resulting in the loss of considerable yarn being consigned to waste.

In topping by this method, another objection has been that the line of connection shows plainly in the finished article.

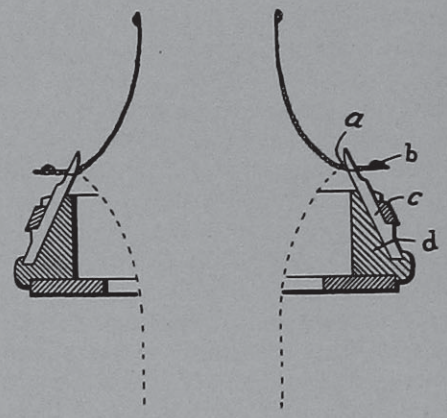
It is to overcome this that the new idea, the subject of this article, is brought to the attention of the trade.

In knitting the rib top, the usual selvage welt is provided at one end and a loose transfer course of stitches at the other end below which is formed a very small marginal portion, in which an extra or positioning welt is formed which facilitates the transfer, later on being raveled out in such a manner as to leave no trace of a joint.

When topping by hand, as shown in the illustration, the topper follows the course of the stitches as indicated at *a*, using the welt *b* as a means of securely holding the web without stretching the stitches in placing the same on the points *c* which are secured in the transfer cup *d*.

After transferring the rib top to the needles of the machine, the outer welt, together with the extending portion is unraveled until the course in question is reached, the machine is started and the rib top is joined to the leg in a very inconspicuous way.

In case it is desired to run the rib top on by means of a transferring machine, the guiding or positioning devices or registering bits are caused to engage the extra positioning welt and thus draw the top into such a position that the stitches of the transfer course will be taken by the transfer levers. When the transfer levers are opened out to expand the web and aline the stitches of the course with the points of the transfer

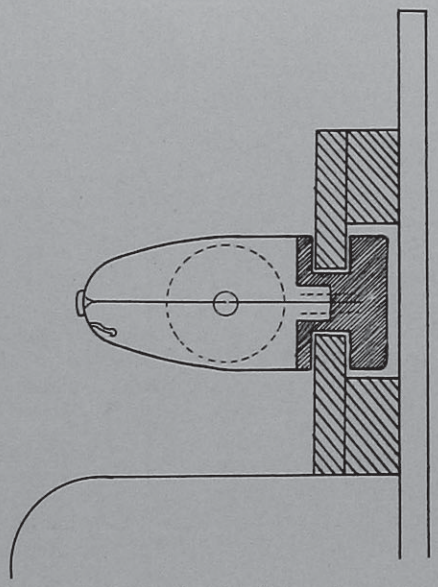


cup, the extra welt *b* will prevent the undue stretching of the transfer course, as the edge of the welt toward the transfer course is in the nature of a selvage and the fabric cannot be raveled from that direction.

Cotton yarns have for their standard measure 840 yards (equal to 1 hank) and are graded by the number of hanks 1 lb. contains. Consequently, if 2 hanks, or (2×840 yards=) 1680 yards are necessary to balance 1 lb., we classify the same as number 2 cotton yarn. If 3 hanks or 3×840 or 2520 yards are necessary to balance 1 lb., the thread is known as number 3 cotton yarn. Continuing in this manner, always adding 840 for each successive number, gives the yards the various counts or numbers of cotton yarn contain for 1 lb.

Improved Tape Shuttle.

The improvement applies to *Knock-shuttle* or *Fly-shuttle* tape looms, in which the shuttles are knocked back and forth from one pair of blocks to another, as distinguished from the other common type of tape loom in which the shuttles are operated by rack and pinion.



Hitherto these fly-shuttles have always been made of wood, and constant friction soon wears them out so that it is necessary to replace them frequently, at considerable expense.

The object of the present improvement is to overcome the wear on the shuttle as far as possible and to prolong the life of the shuttle by substituting Vulcanized Fibre in place of wood.

To make a complete shuttle of Vulcanized Fibre is out of the question. In the first place it would be too heavy to be practical; in the second place the cost would be prohibitive. Finally a shuttle has been devised as shown in the sketch. The shaded part of the shuttle represents Fibre and the unshaded part represents wood. It will be seen that the run of the shuttle, where the wear comes, is composed of solid fibre, while the bow of the shuttle is made of wood as usual.

The fibre is attached to the wood by means of a dove-tail groove and screws. When the fibre run is worn out it may be removed and a new fibre run substituted at slight expense. In addition to the improved wearing quality of the fibre, it is evident that the added weight of the fibre on the back of the shuttle helps to balance the shuttle and counteracts the downward drag of the bow and the pressure of the warp on the nose of the shuttle.

By manufacturing these fibre-run tape shuttles in large quantities it has been found possible to place them on the market at a price only a few cents in advance of the regular price for wooden shuttles. It is claimed that one set of fibre-run fly-shuttles will outwear two sets of the ordinary wooden shuttles, and this combination of low price and double wear will no doubt appeal strongly to practical tape manufacturers.

Another feature in the new shuttle which will commend itself to loom-fixers is an inlaid brass spindle-pocket to prevent the quill-spindle from wearing loose and breaking out the warp.

A sample of the improved shuttle will be mailed on application to the manufacturer,—Robert G. Pratt, Worcester, Mass.

A New Dyeing Machine.

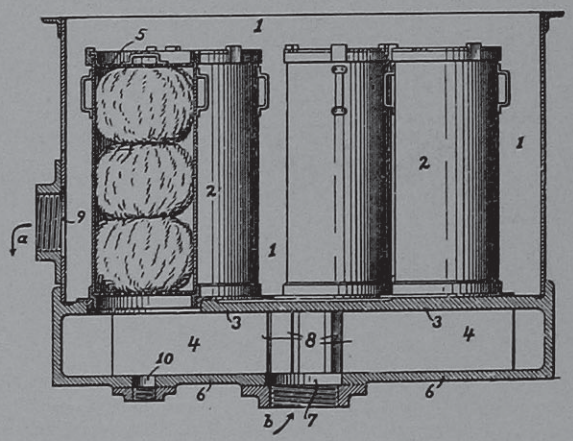
The most important feature for perfect, even dyeing is the use of a machine by which all portions of the material under operation are uniformly subjected to the action of the dye liquor. With this object in view, the machine, the object of this article, has been constructed, the same being designed for handling raw stock, such as Cotton, Wool, Ramie, Jute in Cones, Worsted Tops, etc.

The accompanying illustration is a vertical central section of the machine, *i. e.*, a sheet metal dyeing tank 1 having a series of material-containing cylinders (arranged in a circle) mounted therein. These material-containing cylinders 2 are (removably) secured to the upper horizontal wall 3, which is provided for this purpose with a number of openings corresponding to the number of cylinders used. Wall 3 forms the top of chamber 4.

Each material-containing cylinder 2 is provided with a removable perforated top cover 5. The lower horizontal wall 6, of chamber 4, is provided with a centrally disposed opening 7, radiating from which. in the bottom of the base casting, is a series of vertical walls 8, cast integral with the top and bottom horizontal walls 3 and 6 respectively.

9 indicates an opening in the side of tank 1.

From a circulating pump (not shown in illustration) suitable pipe connections are made to openings 7 and 9, to take the dye liquor at 9 out of tank 1 (see arrow *a*) and force it back through opening 7 (see arrow *b*) in turn through the material to be dyed, and out the top of the cylinders 2, back again into tank 1, to be in turn re-circulated until the dyeing process is finished. 10 indicates an outlet, for drawing off the dye liquor from tank 1, when so desired.



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(The Most Important Addition to Textile Literature Published.)

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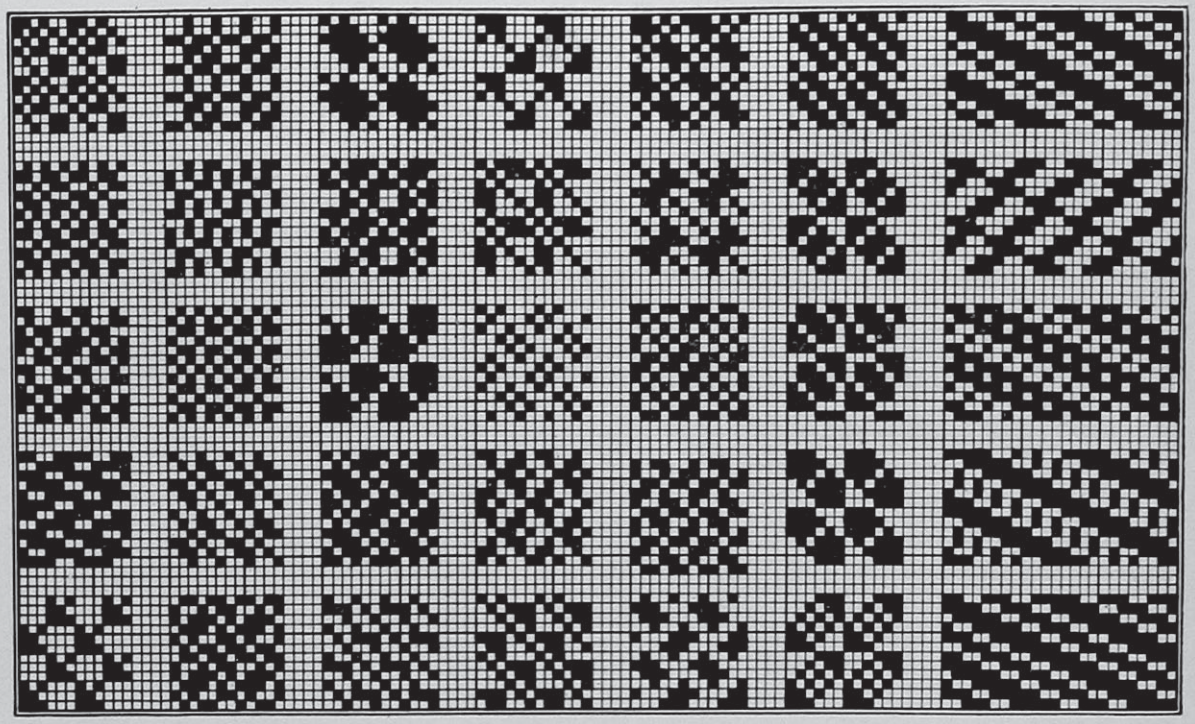

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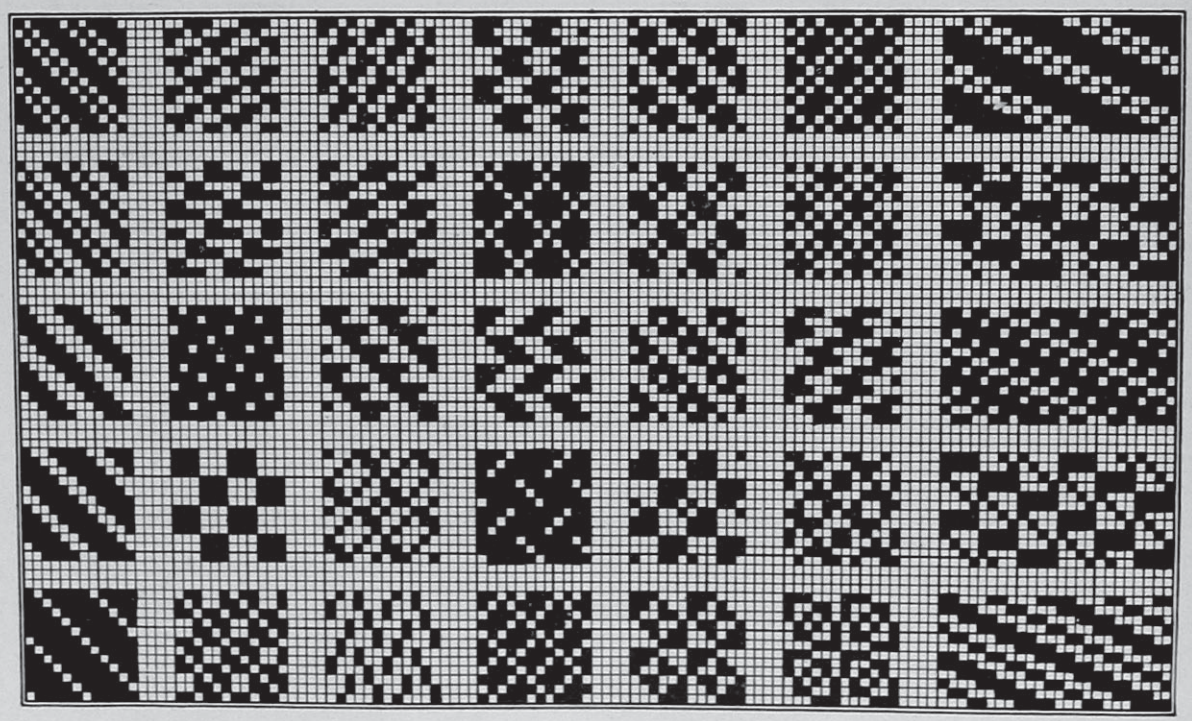

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Complete, this Dictionary will contain over TWENTY THOUSAND PRACTICAL WEAVES.

About four thousand of them, every one a different weave, taken from fabrics met with in the market, have thus far appeared, and can only be obtained by new subscribers, by ordering back numbers of the Journal.

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DYEING COTTON CORDUROYS.

These are, of course, pure cotton fabrics, and, as such, may be dyed with any dye available for cotton. Their make, however causes a peculiar color effect not seen in regular material. As the fabrics in question are made up of a plain or ribbed pile, the substantive dyes give dull shades which appear much darker when looked at straight down; if, however, the fabric is viewed across, the color becomes greyish, which is particularly noticeable in blacks. The sulphur colors also give no better results, and the only method of obtaining full shades overhand is by using the basic dyes upon a tannin and antimony mordant; or the basic colors may be used to top the substantive or the sulphur colors. The reason for this difference in shade in pile cloths may be accounted for by the structure, the upright pile absorbing light instead of reflecting it, thus causing the shade to appear darker, while when seen across, the reflection is greater, and the fibres are not translucent like silk or wool.

Before dyeing these goods, they require to be cut, raised, gassed and scoured, and in some cases bleached. This, however, is only necessary for very delicate shades which would be interfered with by the natural color of the cotton. When necessary to bleach, this is readily done by means of a dilute solution of bleaching powder, particular care being taken in thoroughly rinsing the cloths; otherwise there is a risk of them becoming tender.

From the nature of these goods, they must stand heavy, hard wear together with exposure to light and moisture, the shades dyed being mostly confined to slates, greys, browns and olives. Dyeing this class of material is by no means easy, as the fabrics are of heavy weight and the weaving tight and solid. While this is the case, it is essential that the dye penetrates thoroughly, and the shades must be even and level.

Two methods of dyeing are available, either the ordinary vessel with a winch overhead, or a jigger which keeps them to full width. The latter appears to be the best process, as, besides running at open width, stronger solutions of dyes may be used, and the color is squeezed well into the cloth. The sulphur colors are well adapted for this class of material, giving good fast shades, while the application is fairly easy; although from the use to which the cloth is put, there is little reason to fear complaints of color fading. Wetting-out before dyeing causes less affinity of the cotton for the dye, but it conduces to more solid results. If entered straight away into the dye in a dry state, the cotton sucks up the color much quicker, but with an increased risk of unlevelness.

If the sulphur dyes are used, these should be carefully dissolved along with sodium sulphide and the requisite amount of soda ash and common salt, starting the bath at a low temperature, and increasing the steam as the dye is taken up. After the desired shade is obtained, the pieces are well washed in clean cold water, followed by a bath of bichromate of potash combined with copper sulphate and acetic acid to fasten the color, the heat of this fixing bath being about 100 deg. F., and the time about fifteen minutes. A fine range of greys may be got