Posselt's Textile Journal

A Monthly Journal of the Textile Industries

E. A. POSSELT, Editor and Publisher

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to write the ambassadors, consuls and other representatives of all the silk producing countries to be present.

Such a great gathering of silk men can have only a good effect on the trade. It can be readily seen that the silk industry is in need of a trade organization besides the Silk Association, which has been instrumental in correcting many basic matters, affecting the production of silk in this country.

Paterson, on account of the bulk of the silk industry being located there and in its vicinity, naturally offers the best opportunity for a Silk Exposition. Paterson is known for the quality of production and at the same time is near the cutting-up market—New York City.

Paterson silk growth is best illustrated by figures: There are 21,000 looms that are in operation when the mills are running to full capacity and it can readily be seen what a tremendous amount of silk is turned off each day in the Paterson Mills, giving employment to about 50,000 persons.

The Centennial year finds Paterson also the leading city with regards to Silk Dyeing and Silk Printing. Upwards of 30,000 pounds of silk are dyed each day in the Silk City, while there is a monopoly of the silk printing business.

The firms that are in the Silk Industry and who will have exhibits are: The National Silk Dyeing Co.; the Weidmann Silk Dyeing Co.; Holzman & Co.; Charles Mueller & Co.; Pelgram & Meyer; Miesch Mfg. Co.; Hamilton Silk Co.; Sipp Machine Co.; Franz Ulrich & Co.; W. C. Keyworth; Prescott & Waywell; Tata Sons & Co.; Mitsui & Co.; I. A. Hall & Co.; Atherton Machine Co.; Benj. Eastwood Machine Co.; Universal Winding Co. and other manufacturers and machinery men.

A Review of the Silk Trade.

The demand for broad silks, which the trade has been looking forward to for some time, came in with a rush, and the call for desirable fall fabrics was incessant, the aggregate amount of business booked being far in excess of all sales for years.

The demand was not confined to fancies but extended to all lines, including plain satins, and should the demand for the various lines continue, it is ventured that the aggregate sales will be far in advance of anything ever expected, even by the most optimistic, which confirms our forecasts of the silk trade during the mid-summer, when the industry was dull.

The mills running on piece dyes are well employed, as are also those on warp prints, crepés, plaids and other fancies; a majority of the machinery, that is standing idle, is that which in former years had been used in plain skein dye productions.

WARP PRINTS at 50 cents a yard are in very extensive demand, and some factors consider it doubtful if mills will be able to fill the orders they have already received this season. The new designs in maple and oak leaf effects are finding favor.

SATINS.—The demand for the heavy faced satin goods, known to the trade by various names, is broadening, the draping qualities of this fabric being its greatest feature. The color array in these fabrics is bewildering, and almost every color is very highly regarded. Navy blue is most in demand, and probably the scarcest in stocks, while blacks are equally as strong. Kings-blue, browns, various shades of purple, brass, coral, lobster, and other reddish tints, are in favor. It is a general impression, throughout the trade, that this fall will witness the most wide-spread use of colors in different combinations noted in years. Prices are well maintained.

TAFFETAS seem to be entirely out of question; there is little or no demand, and its loss of approval is a considerable item to many manufacturers. Good black taffetas, 35 inches wide, were sold at 62½ cents during the past month.

FOULARDS seem to be commanding the attention of the trade, and it is calculated that the production of foulards will be far greater than usual, next season. Small mills, who never before offered these goods, have come into the field and it is thought that the inability of leading factors to make specified deliveries will assist these mills to do a large amount of business in filling in the demand of the market. A line of Shedwater Foulards is being offered at $2.50 per yard.

MESSALINES.—There is a general demand for messalines in evening shades. A good line, 36 inches wide, is selling for 62½ cents per yard.

PEAU DE CYGNE, in shades of light blue, gold, old rose, dark Copenhagen, navy blue, and black, is in good demand.

POPLINS are in demand, but nevertheless there is a tendency to ease up on the prices of certain lines. A certain line, which opened at 85 cents, has dropped to

80 cents. It is presumed, that this action was taken in view of a very attractive cotton filled material, 36 inches wide, selling at 72½ cents. Quality in this line seems to have given way to price.

FANCY SILKS are in good demand and prices are well maintained, because of their scarcity.

PERSIAN EFFECTS.—The greatest attention of the market seems to be centered on Persian designs and many mills are operating on these fabrics exclusively, the demand for them being extraordinary.

TIE SILK manufacturers are showing many nobby designs and it is expected that they will be a strong factor in the new spring lines.

Mills generally are looking forward to the Spring 1911 season with great anticipation.

A general opinion seems to be that sheer fabrics will have the call for spring. Everything in the better grade of goods, as well as *Pongees, Shantungs,* in black and natural colors, *Crepes, Satins, Messalines,* etc., will be of sheer construction.

STRIPED MESSALINES are considered the thing for spring by some stylers. Some venture the opinion that plaids and checks will find favor, but this latter view is not taken seriously by the trade in general.

PONGEE and RAJAH Silks in their natural shades, are expected to be a strong feature of the spring.

MOIRÉS, both of wool and cotton filled, in fine yarn effects, are said to be increasing in popularity, due to its extensive use abroad for suits and coats.

TIE SILKS.

The general inclination is that tan in two tone effects, mixed weaves, gros-grains, and all-silk all-over goods will be strong in the spring lines.

Stripe effects, both in warp and cross stripes, Romans, repp cloths with allover and figured effects in Jacquard, are in good demand.

There is inquiry for Barathea, in solid colors and fancy stripes also in small effects, and considerable business is being booked on these lines.

RIBBONS.

The demand for silk ribbons has had a great uplift the last month and the industry is well employed.

Fancy ribbons, particularly Persian designs, are in demand, but there is little or no supply on hand. An indication of the demand for these fabrics is shown by the fact that buyers willingly paid an advance above quotation on specified deliveries.

Some new ideas gathered from various parts of the market give an idea of the wide varicty of fabrics.

Two toned color effects with a typical serge twill weave; Warp printed taffetas with blossoms and trellis work, French bowknots and stripes; French moiré; Peau de Gants, another ribbon of French origin, with a gloveskin finish in marvelous colorings, were much in evidence.

Panne satin of extremely rich and soft colorings, Plaids in all their varieties, and any number of specialties such as metal-tone ribbons, ribbons shot with gold, double faced ribbons with plain dots on the Persian side and Persian dots on the plain side are also shown.

There appears to be a shortage on the medium priced blue, white and black ribbons, in widths suitable for the dry goods trade.

A REVIEW OF THE MEN'S WEAR TRADE.

The fall business, which was rather backward, has been stimulated by the cool weather of the last few weeks.

Heavy-weight men's wear is in good demand; a number of lines are not available for specified delivery.

Fine woolens have received the preference lately, while the low end worsteds have had the call, and as the supply of well styled goods is far from ample to meet the current requirements, prices have been maintained.

Desirable brown, in all its variations, is much in demand and buyers are willing to wait, if necessary, for the goods they want.

In worsteds, interest is also centered in tan and browns and the variations of yellow and orange.

Neatly styled fancy cheviots, hairline stripes, pencil stripes and self colored stripes are much in demand, and while the demand for browns has attained proportions unexpected by agents, it is not considered advisable to produce browns except on order, as there is a possibility of them becoming backward and it is almost impossible to re-dye them with satisfaction.

Plain Serges are being ordered in moderation, while the demand for fancy weave serges of the best grades is particularly strong and there is little or nothing on hand.

On deliveries, mills are very slow, the fault being laid to poor yarn and other conditions. With reference to the yarn situation, manufacturers claim the 2/40's half-blood yarns, purchased this year, are causing no end of trouble, due to poor spinning.

In connection with the fall weight business, several houses are putting out feelers on the heavyweight Fall 1911 season, but with a majority the Spring 1911 season is commanding their attention.

The general impression as regards the spring season is, that the same conditions will prevail as occurred this season, that there will be little or no production for stock, and that mills will run on orders only.

As to prices, a manufacturer of men's wear recently claimed that 2/40's half-blood yarn could be secured at figures which made it possible for mills to produce a very attractive worsted fabric at a low price.

Foreign made lines, which have opened, are priced approximately 15% higher than they were a year and a half ago.

Fancy worsteds, in hair lines, stripes, checks, mixtures and mannish effects, ranging from 55 cents to $1.30 per yard, also plain and fancy covert cloths, in invisible checks and stripes, ranging from 85 cents to $1.10 a yard, are being shown. A range of double and twist effects are shown by a house at $1.05 a yard, as is also a panama cloth in fancy stripes and checks at 70 cents to $1.00 per yard.

There seems to be a good demand for fabrics of fancy wide wales, and stylers are looking forward to the revival of wide wale diagonals.

LOOKING FORWARD TO FALL 1911 SEASON.

The lines of men's wear for the Fall 1911 season will not be shown to any extent for some time to come, but nevertheless mills are looking forward with a great deal of consideration.

It is generally agreed, that worsteds will be in demand, and mill agents are giving great consideration as to the manipulation of the raw material, so that attractive fabrics of proper weights can be produced at low prices. Competition is expected to be very keen.

and in order to obtain the best results the blending of various grades of stock will be resorted to.

One of the propositions which confronts the manufacturer, is, what constitutes the standard weight of suitings, the general opinion being that goods, weighing 15 ounces, will be of sufficient weight.

In connection with woolens, it is considered that there will be some demand, but on the low end; the contention being that worsteds priced right and neatly styled, providing the construction is good, will have the preference.

Reducing the cost of production will demand producing piece dyes and cross dyes successfully, so that they will have the characteristic appearances of skein dyes, the difference between the cost of the latter and the former being sufficient to make it possible to name attractive prices, which should get the business for a mill able to do the work successfully.

A Review of the Dress Goods Trade.

The past month witnessed a great change in the dress goods situation.

Previous to this the trade was practically demoralized, due to uncertain conditions in the cutting-up trade.

When these existing conditions were finally settled, a general interest was manifested in the woolen and worsted materials and the trade took hold of the situation with such vigor, that it is said many cutters offered the mills orders larger than they were able to take care of.

The greater part of the business being placed today seems to be centered on a certain few fabrics and the mills, capable of producing these lines, are being favored with orders for yardages far in excess of the visible supply.

Fancy cheviot suitings are in great demand, especially the well styled varieties, and it is said that the business placed on this line of fabrics has been so great that many of the producers have withdrawn their lines, having every available piece which they had on hand and all that they can produce the remainder of the season, under order. Broadcloths are also in very good demand and cutters are buying liberally.

Voiles are having quite a call, some colored varieties are requested, but the majority of the business is being booked on blacks.

French serges, satin serges, and gray vigoreaux are highly regarded as are also hairline effects.

Velvets and corduroys are the centre of a rising demand and the outcome is watched with interest, as is also the demand for covert cloth.

It is generally thought that the impulse which has been given the trade will help to make the fall season come out nearly normal, and many mills are considering the Spring 1911 season with a view to making up any deficiency.

While there seems to be a general lack of opinion as to what will be most in demand for the Spring 1911 season, yet the majority of the factors in the market looks to a large trade in hard-twisted-yarn fabrics.

This situation is based on the fact that the latest reports from abroad indicate that rough face goods will be out of question for spring, and that the condition prevalent 7 or 8 years ago, when the hard-twisted plain faced goods were in demand, will prevail. This is further strengthened by the tendency for shorter skirts in ladies wear.

The Spring 1911 lines of the American Woolen Co., and that of the Arlington Mills, shown recently, consisted mostly of plain and fancy suitings. Their lines of wide goods are entirely new in construction; the values of the Arlington Mills' line is lower than last year, a readjustment having been made to meet the market conditions. Hairline effects which are so popular this fall are expected to be in big demand, while voiles, serges and possibly cheviots will be wanted.

The general impressions as regards shepherd checks is that they will be, one of the leading styles for the spring season and that they will be desired in all combinations and colors.

Brown, which has been a special feature of the heavyweight season of the men's wear trade, is expected to hold sway in the spring season on dress goods, and that brown, in many new and attractive shades, will be featured in some of the new dress goods lines.

Further suggestions as to the spring season are inclined towards serges, of black and white on a white back ground, the effects being black stripes and checks.

As to colors, several shades of violet seem to be given considerable favor and it is presumed that there will be a very wide request for such colors in the spring.

The Fine and Fancy Cotton Fabric Market.

The general tendency throughout the market is toward an improvement in business conditions.

Mills which have been doing little or nothing for some time are gradually getting under way, and it is expected that within a short time, after the new crop has been secured, the mills will all be well employed.

There is good demand for mercerized batistes, Persian lawns and the better grades of linen.

Sheer fabrics seem to be the life of the market. Buyers demand these fabrics in preference to madras weights, which were sought last season in patterns of staple cross-bars, nainsooks, checks, cords, etc. The same condition also prevails in the Jacquard patterns, the sheer fabrics being given the preference.

Fine dimities are being ordered more freely than usual, as are also fine check and serge effects.

Printed and colored effects in *Marquisettes* and *Voilés* are selling on a large scale.

Extreme novelties of these fabrics are selling at $1.—a yard and over, but it is modifications of these fabrics which are commanding attention for spring trade.

Grenadines are finding favor where they were disregarded a short time ago.

Printed dimities and other fine yarn corded fabrics, with small floral patterns, in fast colors, are much in demand and there is also a wide demand for neat figures, such as spots, diamonds, etc.

The rustling finished fabrics, which were extremely desirable last season, have given way to the soft finished lustrous fabrics which make excellent back grounds for Voilés and Marquisettes which are having quite a run.

In considering the possibilities of the spring season, the probability is advanced that linen batistes and lawns, in their natural and very delicate French shades, will be in favor, in fact, it is known that many large orders have already been placed on these fabrics for early spring delivery.

The American Silk Industry.

By Ramsay Peugnet.

The past six months have not been a period of activity in any general sense of the word with the silk industry, although some of our largest houses have transacted excellent business on lines of goods favored by fashion. This is especially true of *printed foulards*, for which the demand for summer wear was almost unprecedented during the spring season. Contrary to the expectations of many manufacturers the popularity of our domestic *pongee* weaves suffered considerably.

The demand for high grade *all-silk satins, messalines* and *satin-faced fabrics* in general for evening wear has remained excellent, and there is every reason to believe that these goods will remain in favor for another season. The styles, however, differ considerably from the severe plain lines of the classic and Directoire fashions, which were so popular a short time ago. Now everything is more ornate. Instead of plain satin dresses, fashion favors the daintiest creations of silk in combinations with net overskirts, laces, beautifully printed *chiffons, mousselines de soie* with elegant effects in passementerie and embroideries, and trimmed quite extensively with ribbons.

There is also ground for hope that *taffetas* are generally coming into greater favor. Of the models shown recently in Paris, some were of *chiffon taffeta* and it is anticipated by many of our leading manufacturers that this staple fabric will be used largely next winter.

Manufacturers and importers of velvets have been doing an excellent business and nearly all of them are sold up for the present season.

While this has been a period of comparative inactivity in the American silk industry taken as a whole, Europe has been and is enjoying an excellent silk season. This not unnaturally gives rise to a great deal of speculation as to the cause of the dullness prevailing on our side of the Atlantic. Many reasons have been advanced, but it is safe to say that the greatly increased cost of the necessities of life has brought about a closer husbanding of the average income. Enforced economies have resulted in some curtailment of luxuries, and where formerly a woman would buy two or three silk dresses she now gets along with less. As a result the American silk industry finds that it has more looms than it needs to supply the demand. This may be true for the moment but it can not remain true for long. In view of the great increase in population throughout the country as well as its natural wealth, the laws of supply and demand will eventually regulate these conditions.

THE RIBBON BUSINESS shows signs of an awakening demand. Fashions are more favorable at present to ribbons in the millinery trade than they were six months ago. Hair ribbons are now being worn most extensively and ribbons for dress trimmings are being used to a greater extent.

THROWSTERS AND DYERS have felt the depression in broad silks and ribbons, although the former have had some additional business from the knit goods and hosiery mills, and the latter from the cotton manufacturers.

RAW SILK IMPORTS.

While the fiscal year ending June 30th last did not come up to the phenomenal mark of the season 1908-1909, (during which year more than 23,000,000 pounds of raw silk were imported), yet in spite of the inactivity in certain lines of manufacture, nearly 21,000,000 pounds were imported—more than five million pounds in excess of the imports for 1907-1908, and only about nine per cent. less than the imports for the record year 1908-1909. Prices remained relatively low throughout the year.

THE WORLD'S RAW SILK SUPPLY for 1910-1911 is estimated at about 51,850,000 pounds. This preliminary estimate indicates there will be no increase in the amount of production over the banner year of 1909-1910 when the production was about 54,040,000. The estimated European crop shows a decrease over the preceding years, while the Levantine crop remains about the same. The Far East and Indian crops are estimated at somewhat less than last year.

The situation may be summed up as follows:

JAPANS: Weather conditions during the spring were favorable to the rearing of silkworms. The early reports of the raw silk crop were excellent and it was expected that the silk available for export would show an increase over last year. Later advices indicate that the damage by rains to the summer and autumn crops will no doubt reduce the amount of the expected yield. Under these circumstances it is doubtful whether the crop for export will exceed last year's which amounted to about 138,000 bales.

The Japanese are doing everything in their power to improve the quality of their production, and each season of recent years has shown an increase in quantity. It is to be noted that the Japanese Government is assisting in every way it can in the collection of information which will be of use to Japanese reelers. Several special agents have visited this country and called on silk manufacturers to ascertain just what their requirements were and what the reelers could do to improve their production of raw silk.

ITALIANS: Reports from Italy indicate a somewhat smaller crop, probably about five or eight per cent. less than the previous year. The latest and most trustworthy reports from the Piedmont district are to the effect that the cocoon crop there is 20% to 25% below that of 1908, which was a normal crop. Last year the crop in this district showed a heavy deficit so that comparison with it is of little value. Some of the other districts show an increase. It is estimated that the available supply of Italian silk will be about normal on account of stocks carried over. The constantly improving industrial conditions in Italy during recent years have resulted in many workers being attracted from the silk industry to more lucrative employments. As a result of this the production of Italian raw silk has not increased proportionately to that of other countries, notably Japan. The French crop will be only about half of normal.

CANTONS: Indications point to a slight increase in the Canton crop. The first four crops already harvested which on an average for the past ten years amount to about 8%, 15%, 19% and 18% respectively of the whole, will total about 27,000 bales (of 80 catties each) as against 25,000 bales for the same crops last season. This year only 600 bales were carried over from the previous season. The last two crops yet to be heard from are gathered in September and October and are usually regarded as the best. From 1901-1902 to 1909-1910 they each averaged about 20% of the whole.

CHINAS: The Shanghai crop is estimated to be about equal to that of the last year. The spring weather was not favorable in the province of Shaonhing and Hanin, which are in advance of the other districts. The damage was estimated at about 20%. Although there was general complaint about the scarcity of mulberry leaves, the other silk centres seem to have shown better results, the loss in the two districts mentioned being compensated by the increased production in other parts, particularly in the district around Nanzing. The total exports of silk of all descriptions from Shanghai was about 90,000 bales, against about 101,000 bales for 1908-1909 and an annual average of about 80,000 bales for the last ten years.

TUSSAHS: Much less business has been done in tussah silks on account of the falling off in the demand for rough silks and pongees in which tussahs have been largely used. Owing to the abnormal demand last fall and also on account of the news in November last of the poor crop being confirmed, prices advanced. As the spring business developed the demand fell off and prices reacted to a more normal basis. The raws of the last crop were of better quality and it may be further stated that some improvement has been noted in the reeling of tussah silks. The importation amounted to about 20,000 bales against about 30,000 bales for the previous season. "Semi Annual Review, American Silk Trade."

Average, Low and High Raw Silk Prices.

In the New York Market, from July 6, 1909, to June 27, 1910:

Classical Italian:	$4.03	to	$4.06
Japan, No. 1 Shinshiu Filature:	3.50	"	3.53
China Steam Filature Best No. 1:	4.31	"	4.36
Canton Ex. Ex. A., Filature.	3.00	"	3.03

The annual average price for the above four kinds of silks for the year 1908 to 1909, respectively taken, was: $4.21, $3.75, $4.61 and $3.19.

The Annual General Average for 1909 to 1910 was $3.72, against $3.94 for 1908 to 1909.

For the month of July 5 to August 1, 1910, the following low and high raw silk prices prevailed:

Classical Italian:	$3.93	to	$3.95
Japan No. 1 Shinshiu Filature:	3.48	"	3.50
China Steam Filature, Best No 1:	4.10	"	4.15
Canton Ex. Ex. A., Filature:	3.05	"	3.07

The low and high prices of the above four kinds of silk for the same week, a year ago, respectively taken, were: $4.25 to $4.40; $3.62 to $3.72; $4.55 to $4.65; $3.00 to $3.17

Raw Silk Production from 1908 to 1911.

(Expressed in Kilograms.)

	1908-1909	1909-1910	1910-1911
Italy	4,490,000	4,251,000	3,938,000
France	653,000	674,000	338,000
Austria	340,000	380,000	326,000
Spain	75,000	80,000	80,000
Levant	2,700,000	3,095,000	2,875,000
China*, Shanghai†	3,750,000	3,924,000	4,000,000
China*, Canton	2,367,000	2,378,000	2,352,000
Japan, Yokohama	7,490,000	8,280,000	8,100,000
India, Bengals	300,000	250,000	250,000
Tussah, Raw	1,800,000	1,200,000	1,260,000
Total in Kilograms:	23,965,000	24,512,000	23,519,000
Expressed in Pounds	52,833,239	54,040,000	51,850,000

*The production of raw silk in China is an absolutely unknown quantity.

†Excludes Tussah silk.

The figures for Asiatic silks are the actual shipments from the various countries of production, viz.: China, Canton, Japan, etc.

The estimated supplies for 1910-1911 are the probable crops for the season, plus the stock on hand carried over from the previous season.

The domestic consumption of Japan is estimated to be approximately 30 per cent. of her production. The remaining 70 per cent. which is exported, being say 8,280,000 kilograms in 1909-1910 season, the total production equals the export divided by 70 and multiplied by 100, which therefore amounts to 11,828,571 kilograms.

The domestic consumption of China is estimated to be 55 per cent. of her production in average years. The remaining 45 per cent. which is exported, being 7,502,000 kilograms from Shanghai, Canton and Tussah in 1909-1910 season, the total production equals the export divided by 45 and multiplied by 100, which therefore amounts to 16,671,111 kilograms.

SILK AND WASTE entered at the Port of New York for the five weeks ending August 31, 1910, were:

Raw Silk	$909,989
Cocoons	183
Waste Silk	22,003
Noils	—

The corresponding amounts for last year were:

Raw Silk	$1,343,592
Cocoons	—
Waste Silk	10,416
Noils	542

SPAIN'S SILK INDUSTRY.

Catalonia, especially Barcelona and surrounding district, is the centre of the silk industry of Spain, but the industry is not confined to this region, as silk goods are manufactured in other parts of Spain. It is estimated that the silk factories of Barcelona and Reus, Province of Tarragona, Catalonia, produce about $7,200,000 worth of silk goods annually. With the exception of a few localities in the Province of Lerida, the silkworm is not raised in Catalonia, and, as a rule, factories there confine their operations to weaving. Silk thread is spun in few factories. The thread is generally imported or purchased in other parts of Spain where the silkworm is raised. The number of looms engaged in silk weaving in Catalonia is placed at from 1,000 to 1,200. There is little diversity in the product, which is, as a rule, rather coarse. The leading articles are plain silk goods, black or colored, for clothing, surahs, scarfs, satin, and light stuffs of cheap grade. Coverings, hangings, velvets, and silk tissues threaded with gold and silver, for religious purposes, are turned out in small quantities. Silk printed goods, ribbons, and trimmings are practically unknown.

Dictionary of Technical Terms Relating to the Textile Industry.

(*Continued from page 59*)

LOOMING:—Mounting a loom, the English term for our loom-fixing.

LOOM PICKERS:—An attachment to the picker stick of looms, which is brought by the latter into contact with the point, *i. e.*, nose of the shuttle, throwing the latter through the shed.

LOOM RACE:—The raceway in a loom, on which the shuttle travels through the shed.

LOONGHEES:—Rich, narrow cloths of silk and cotton, sometimes intermixed with golden thread and embroidered, made chiefly in Tatta, in Sindh or Seinde, India.

LOOPER:—A machine used in connection with the manufacture of hosiery and knit goods. It is operated on the fundamental principle of the sewing machine, but devoid of the modern improvements on the latter. It consists of a large circular dial, having steel points around its outer edge, upon which the loops of the two fabrics to be united are placed, and an oscillating needle carrying the sewing thread, by which they are joined, in the centre of the dial.

LOOP STITCH:—A stitch composed of a series of loops, the last one of a series being knotted.

LOUISIANA:—A name sometimes applied to a large number of upland short stapled varieties of cotton

LOUISINE:—A fine grained, light weight, soft finished silk in basket weave (invisible to the eye); adapted especially for travelling gowns.

LOUIS XIV., LOUIS XV., Regence, Directoire, Empire, etc.:—Terms employed to designate the styles that prevailed in certain periods of the political history of France, by attaching the name of the ruler or form of government then existing.

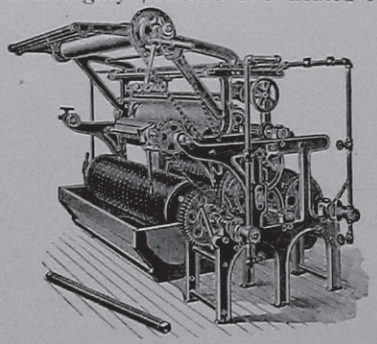
LUMINOSITY:—The strength of the light sent to the eye by any color; a luminous color sends more than a non-luminous one.

LUMINOUS COLORS:—Those, which reflect light in large quantities; the colors of the long wave lengths are more luminous than those of the short ones.

LUNAR CAUSTIC:—Nitrate of silver.

LUSTER OR LUSTRE:—The quality of glossiness or brilliancy in a textile fibre or fabric. The glossy or shiny appearance which alpaca, mohair and some wools possess, more or less, and which causes fabrics made of them to look bright.

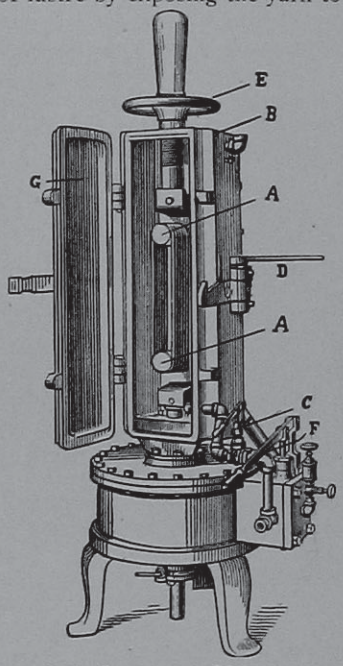
LUSTERING OR LUSTRING:—A process for giving to woolen cloth a permanent gloss and smooth surface, which will not roughen with wear. The gist of the process consists in winding the cloth to be treated, under proper tension, tightly on a perforated copper cylinder, covered previously with several layers of canvas, cotton duck or burlap, a similar apron being wound around the roll of cloth and securely fastened to it. Several of these rolls of cloth are then placed in a cistern and the cloth boiled for several hours; or in connection with the steam lustering machine steam is passed through the centre of the roller and which has to find its way through the roll of cloth; again, in connection with the decatizing machine, the roll of cloth is placed in a steam chest and steam passed through the roll of cloth either way. Running the finished cloth over highly polished and heated rollers on



LUSTERING: Steam Lustering Machine.

what is known as a lustering machine, will heighten the lustre of a fabric.

The process which imparts to silk yarn a high degree of lustre by exposing the yarn to the action



SILK LUSTERING MACHINE.

A hooks for holding silk skeins, *B* steam chamber, *C* inlet, *D* locking device, *E* hand wheel to adjust distance of upper hook, *F* lever controlling stroke of piston, *G* door.

of steam in an oven at the same time that they are stretched between two highly polished revolving steel rollers.

LUSTER WOOLS:—Characteristic features of the Lincoln and Leicester types of wool. Luster wools are more or less straight, smooth and stiff. Some wools possess so smooth a surface (lustrous) that they are rather difficult to dye.

LUTEOLIN:—A yellow crystalline compound ($C_{20}H_{14}O_8$) obtained from weld, producing brilliant yellow shades on cotton when mordanted with alumina.

WATER FILTRATION AS APPLIED TO TEXTILE INDUSTRIES.

By Churchill Hungerford, Filtration Engineer, Pennsylvania Building, Philadelphia, Pa.

Twenty years ago few textile mills in the United States made any attempt to filter their water supply. Today there is hardly a bleachery or dye-house in the country that has not installed some kind of an apparatus for the filtration of its water, or at least is not seriously considering such an installation. The plans for new factories include a filter.

There are two good reasons for this change in attitude toward filtration. The first is that every manufacturer has to get the best results from the material employed, the second, that the pollution of the streams by sewage and industrial waste, is growing constantly worse.

Various means of purifying our water supplies have been attempted and are still being exploited. One inventor describes the merits of discharging electric currents through the water; another generates ozone in atmospheric air by means of high tension electrical discharges and then drives the ozonized air through the water; still another, by means of an electrolytic process, forms hydrate of alumina or hydrate of iron, which substances are supposed to be beneficial in the purification of the water. The last call in electrical treatment is the subjection of water to the violet and ultra-violet ray. However, by far the most satisfactory and most effective treatment has, up to the present time, been filtration, supplemented by whatever preliminary chemical treatment the conditions may require.

The first water filter of any consequence was constructed by an English engineer about 1847, for a small water works system in England. The quality of the filtered water was fair, but the capacity of the filter was only about three gallons per day for each square foot. This method of filtration has been developed and is now known as the slow sand method of filtration. The straining action of this filter is produced mainly by a layer of impurities, derived from the water itself, resting upon the sand bed and through which the water is compelled to pass. When the layer of impurities becomes too nearly impervious it is necessary to withdraw the water and scrape the surface with shovels and hoes.

About 1883 a Mr. Hyatt, of Newark, N. J., perfected a filter which gave good water, and could be operated at a rate of over one gallon per square foot per minute as against the three gallons per twenty-four hours of the slow sand filter, and which, when it became dirty, could be washed within its case by simply reversing the current of the water so that in an hour the filter was perfectly clean. This same inventor subsequently discovered that the use of alum in the filtration process greatly improved the appearance of the water so that the effluent was bright, clear, and sparkling. This filter was the prototype of the mechanical filter as it is known today, and by the evolution of the principles involved in this filter we are enabled at the present time to construct a filter which gives perfect results when operating at the rate of five gallons per square foot per minute, makes the water crystal clear, absolutely colorless, entirely free from the coagulant used in the preliminary treatment, and one which will wash in from three to five minutes by reversing the current.

Thus, since the beginning of filtration in 1847, or sixty-three years ago, we have progressed from the slow sand filter which gave a rather dubious effluent when operating at the rate of three gallons per square foot per day, to the present mechanical filter which gives a perfect effluent when operating at the rate of 7,200 gallons per square foot per day. The original filter was merely a strainer, while the present apparatus is a device which removes not only the visible suspended matter but also the coloring matter, various industrial wastes, many dissolved substances, and in fact almost anything that could make trouble or annoyance to the manufacturer.

Originally, filters were constructed for the purpose of purifying drinking water. In recent years, however, it has been found in many instances that the standards which are adequate for drinking water are insufficient for many textile purposes, with the result that not only bacterial efficiency became a factor in the construction of filters but also the ability to handle waters contaminated with industrial wastes, color, etc., and to effect this without leaving any trace of the chemicals used in the treatment given the water before filtration.

An Ideal Modern Filter Plant and Its Method of Operation.

Generally outlined this plant would consist of a sedimentation basin, a coagulant feed for supplying sulphate of alumina or other suitable coagulant to the raw water, the filters proper, the clear water chamber, and the washing apparatus.

The sedimentation basin is capable of holding from two to four hours' supply; it has one or more baffles placed across it to break up convection currents and to cause the water to follow an indirect course across this basin. It may be made of concrete or puddled earth, or even large wooden tanks may be employed. A blow-off line is provided to carry away the sludge which settles at the bottom.

The chemical feed is a device for applying alum, sulphate of alumina, or other readily soluble chemicals in solution. It is so constructed that it can be set to apply any amount desired of the chemical solution to the incoming raw water and it must be so devised that fluctuation in the rate of flow of the raw water causes a corresponding fluctuation in the rate of flow of the chemical solution. The chemical solution is made up of a definite strength and is contained in a small tank, and when applied by the chemical feed to the raw water should always show a definite number of grains per gallon of chemical applied to the water. These devices have in recent years been very accurately worked out so that it is possible to apply alum with a variation in quantity of less than one-tenth of a grain per gallon. This is a very important feature to be known by textile manufacturer, since an excess of alum might make serious trouble, while a deficiency lowers the quality of the filtered water.

The filters are of two types: pressure and gravity.

The Gravity Filter. In the same, the settled water flows from the sedimentation basin to the filter and passes by gravity down through it, discharging at the bottom into the clear water basin, where the process of filtration is ended. The gravity filter consists of a tank with the necessary exterior operating valves to send the water down through the filter bed in filtering, or upward through it in washing. The filter bed consists of sand which has been screened and re-screened until every grain is of the same size, to prevent the microscopic channels between the sand grains from becoming choked with finer particles of sand, thereby causing the filter to require very frequent washing. The sand bed rests upon a gravel layer and in this gravel layer are a number of devices variously called sand valves, strainers, strainer valves, screen valves, etc., which are in turn connected by piping to a main pipe leading across the filter and discharging at its outer end into the clear water chamber. The piping is embedded in concrete to support it, the sand valves projecting above and into the gravel. These sand valves have a very important office in the filter. All of the water which passes through the sand must pass eventually through these valves. As it is necessary to retain the sand in the filter the orifices in these valves must be small enough to prevent any sand from escaping and must be numerous enough to permit the water to pass through without too much friction. Another and equally important office of these valves is to distribute the wash water uniformly under the filter bed when the current is reversed for washing. Any failure in this direction results in one part of the filter bed being washed and the other part being left dirty, so that when filtration takes place the capacity of the filter is either seriously reduced or else the portion of the filter bed that does permit the water to pass through is so greatly overworked that the quality of the effluent is impaired. Moreover, these sand valves are best constructed with orifices possessing some elasticity, so that they can discharge any substances that would tend to clog them, as a clogged sand valve means, of course, an unwashed portion of the filter bed.

Some makes of filters are so constructed that only filtered water can be used for washing, while others possess the advantage of washing with either filtered or unfiltered water as desired. From the writer's standpoint, the latter is a distinct benefit as it occasionally happens that the supply of filtered water is so depleted that there is not enough on hand to wash the filter and run the plant, while if raw water can be used for washing there need be no interruption in the continuity of the flow to the mill. These filters, of course, become choked at comparatively frequent intervals by reason of the retained impurities, and a rapid and efficient method of cleaning is necessary. Substantially, the washing consists in reversing the current so that the water passes up through the filter. This tends to agitate the sand grains and to carry away the impurities, but to accelerate the process it is advantageous to employ mechanical agitation in addition. This is effected either by a powerful revolving wash rake with fingers which pass deep into the sand bed, or by forcing compressed air under the bed. The additional agitation given by either of these methods will loosen the impurities so rapidly that in from three to five minutes the upward flow of water has carried away all of the retained matter. The machinery required for this process consists of a low-lift centrifugal pump for supplying wash water under low pressure, and a positive blower capable of generating three or four pounds air pressure.

The pressure filter. This filter is identical in principle with the gravity filter, but is enclosed in a steel case to withstand the same pressure as that carried upon the main. The water passes downward through the filter in the same manner, there being only a slight loss of pressure in the main after filtration. A finer sand is used than in the gravity filter and the agitation of the upward flow of water alone is usually sufficient for washing the filter so that a simple reversal of the flow washes it in from three to ten minutes.

The washing process is an extremely important one. So long as the sand-bed is kept clean without concretions of mud around the grains a high efficiency can be maintained, but as soon as the filter bed becomes an agglomeration of sand and mud, it loses its efficiency and soon becomes a nuisance. A properly constructed and properly operated filter plant should run at least ten years without requiring any renewal whatever of the filter bed or its removal from the container for any additional washing.

(To be continued.)

Economy in the Weave Room.

The high cost of raw material, included with that of labor, necessitates a manufacturer reducing the cost of production.

It is impossible to reduce the cost of the material which enters into the fabrics, as this would naturally lower the standard of quality, and the only way open is that of reducing the expenses on supplies by purchasing the best quality.

It was, with this fact in mind, that a large silk mill found that the cost of shuttles could be materially decreased by using a certain shuttle which would outlast those which they had been using.

The Pavia Shuttle Co., of Allentown, Pa., who make a specialty of shuttles and other supplies for looms, furnished these shuttles, which were made from a special wood, and which under the same usage as the ordinary shuttles received, lasted several times as long, did not splinter or break and never twisted or warped.

This shuttle serves to offer a solution for partially reducing the cost of supplies in the weave room.

British India. On October 1, 1909, the stock of cotton in Bombay was estimated at 200,000 bales of 400 pounds each. The receipts of cotton in Bombay from October 1, 1909, to July 21, 1910, aggregated 3,120,111 bales, as compared with 2,060,388 bales for the corresponding period of the previous year.

HOSIERY AND KNIT GOODS.

An Improved Stocking Turner.

Stockings are knitted in the cylinder of the knitting machine wrong side out, in order that the outside of the stocking, when it is turned, may present a clean even surface free of all imperfections.

Previous to dyeing, it is customary to turn the stocking right side out, and to do this a number of boys are usually employed, using for the work, an upright stick having a rounded knot on the end.

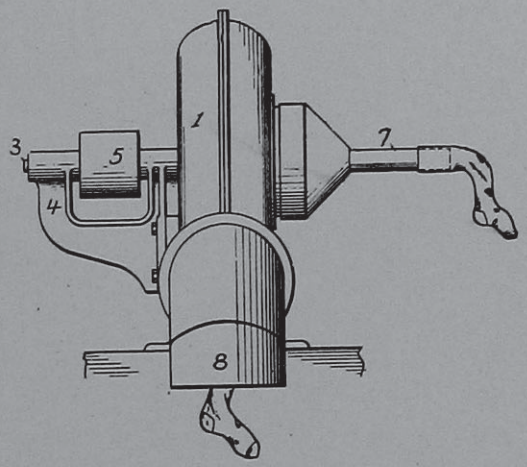


Fig 1

The production is necessarily slow and restricted, being entirely at the discretion of the boy and his inclination to work, his earnings, in turn, being regulated by the amount of work done on piece work basis.

These conditions have been one of the greatest troubles of the hosiery manufacturer, and consequently, of recent years, a number of machines have been devised for turning stockings.

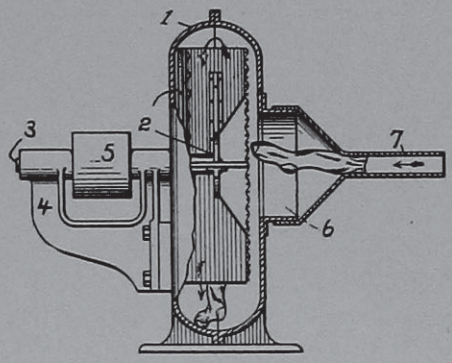


Fig 2

The greatest feature of these machines is that they are automatic, and that instead of the work being tiresome, as with the old system, it is far easier and the production, with a good operator, is far ahead of that obtained by working a large number of boys.

A machine designed for this purpose is shown in the accompanying views.

Fig. 1 shows an exterior view of the general construction, while Fig. 2 shows a sectional view of the mechanical construction.

In order to more clearly explain the principle involved, attention is called to the construction of the apparatus. As seen by the illustrations, the general casing is shown at 1, while the fan (in its working position) is shown at 2. The fan is provided with, preferably, four blades, and is attached to the one end of the shaft 3, which operates in the bearings of the bracket 4, the motion being conveyed to the fan by the fixed pulley 5.

In order to protect the stocking from becoming entangled with the blades of the fan, a screen of comparatively coarse mesh is used. This round screen is of the same diameter as the distance across the fan and thus covers the blades entirely.

As a means of turning the stocking a conical casing 6 is attached to the fan casing 1, the free end of the former being connected with a round tube 7, which forms the intake. The exhaust or discharge opening is shown at 8, it being in the form of an elbow, this being most suitable in order that the stocking, when it is discharged, will drop readily into a basket or bag, which may be put there for that purpose.

In practical operation, the stocking, as it comes from the knitting machine, wrong side out, is put onto the tube 7, the top of the stocking is slipped over the opening of the tube just far enough that it will not fall off. It is held in this position until the suction of the air, formed by the fan, draws the stocking, toe first, into the casing, in this way turning the same as it passes through the tube 7.

The casing 6 is so constructed that the current of air assumes a whirling motion and carries the stocking forward and in turn into the casing 1. The latter is constructed larger internally than the diameter of the fan, and the stocking by means of the centrifugal force, is thrown against the screen and the inner wall of the casing, is carried around and passes out the exhaust 8 as shown in Fig. 1.

In this manner the stocking is very quickly turned, and at the same time, is deposited in the basket or bag to be conveyed to the dye house.

A Review of the Knit Goods Trade.

HOSIERY.

An increased demand has manifested itself in the low end hosiery and requests for immediate shipments on September and October consignments are numerous.

There had been a prevailing feeling during the past several months that the demand for 12½ and 15 cent goods was falling off, and that the tendency was towards goods made of finer yarns, but the turn of the market has shown that the finer goods had to give way to the somewhat heavier grades, which are more desirable in cool weather.

Goods for spring delivery prices now range from 2½c to 5c per dozen above the opening prices; the trend is still toward sheer-combed yarn goods in preference to staples.

Mercerized half hose of the latest styles are in good demand and prices are steady.

There is a steady demand in silk hosiery, selling at 50c and 75c; considerable attention is devoted to holiday trade. Considerable quantities of this class of goods are in the market, but buyers seem to be confining their operations to known lines. A line of silk hosiery is being offered, with lisle toe and heel, and is getting considerable business.

Plain shades in silk hosiery are most in demand, in fact there does not seem to be any demand for colors in any of the lines, and as to whether the tendency for flashy colors will return within the near future is a question.

UNDERWEAR.

The knit goods market is in a state of uncertainty; there have been so many surprises the past month that most everyone concerned is more or less anxious as to the final outcome.

The condition of the mills varies greatly, some mills have all the business they can handle, while others, and there are many, are not running full and are willing to take business at a very low figure.

Mills, generally are holding their production to orders, and what goods are being sold are being priced a little better than at the opening of the season.

SWEATERS AND NOVELTIES.

There is a decided increase in the inquiry for sweaters for immediate deliveries.

The long novelty sweaters, of recent production, are selling extremely well; the demand for staple whites continues steady.

Exceedingly attractive knitted hoods, for automobile wear, are being offered and are finding great demand. They are made from the better qualities of woolen and worsted yarns.

The Characteristics of Knitted Textures

Compared to that of Woven.

By William Davis.

Let us note the points of distinction between woven and knitted cloth, and make other comparisons between the two.

The product of the loom is constructed with a longitudinal and transverse set of threads, the one set being intersected with the other in the process of weaving, to a large extent independently of each other. The density of either series can be increased or diminished within certain limits without disturbing the balance of parts. The omission of a thread makes the fabric imperfect, but it still remains a fabric.

The knitted texture is entirely different in build to the woven fabric. Constructed in its simplest form from a single thread folded into rows of loops, each loop or row of loops depending upon that which precedes it, the new loops being drawn through the old. The parent thread thus constitutes both the longitudinal and horizontal element in the cloth. Sever the thread at any point, and the loops give way in all directions in proportion to the amount of strain put upon them. If a loose end be caught up, the whole structure may be completely disintegrated. For this reason the fabric in its elementary form does not adapt itself to garments from which a large amount of wear and tear is exacted.

Side by side with this disadvantage, however, we have a corresponding advantage, which accounts for the place occupied by the knitted structure in human clothing. The dependable nature of the texture, and the manner in which one loop is connected to its neighbor above, below, and on either side of it, lies at the root of its well-known elasticity and yield. Garments of underwear being in close contact with the body of the wearer, require a texture which shall be elastic and yield to the varied movements of the body and positions of the limbs. This primary qualification is admirably fulfilled in the knitted fabric. Loop hanging on loop, and one row upon another, establishes a delicate principle of equilibrium by which a loop, when disturbed, at once seeks to right itself. In this way the person is not made uncomfortably conscious of wearing the garment, a matter of prime importance in any article of clothing.

ELEMENTS OF FABRIC STRUCTURE.

To consider how this principle of equilibrium may be successfully established, it will be necessary to examine the factors involved in elementary fabric structure.

Let us consider the form of the loop in an ideal knitted fabric. There exists the horizontal and vertical factors in the loop, and what should be generally aimed at is a loop symmetrical in form; that is, it should cover approximately the same space in both vertical and horizontal directions. When these conditions are fulfilled, the elastic and yielding property will be more evenly balanced.

Instead of the symmetrical form, however, the loop may

(1) assume an elongated shape, where it covers more space vertically than horizontally;

(2) the horizontal measurement may exceed the vertical.

The factor which largely determines the particular form the loop may assume is the relation of the size of the yarn to the set of the loops, otherwise termed the gauge. The number of loops covering a given space must bear a certain ratio to the size of yarn.

Should the thread employed be too fine in diameter for the set of the loops, the resulting fabric will be loose and unstable. It will tend to be elongated in appearance, and will yield readily in any direction without any attempt to readjust the equilibrium of its parts.

On the other hand, should the thread employed prove too thick for the set of the loops, the latter will tend to be dumpy, and the cloth will appear congested, only yielding with difficulty.

It is evident, then, that *the ideal hosiery loop* lies between those two extremes, and that the best results are to be expected when it approaches the symmetrical.

The determination of the relation of the diameter of yarn to the set of the loops is beset with many practical difficulties. The gauge is inseparably connected with the type of machine under consideration.

A loom may be made to weave various fabrics, fine and coarse, but the knitting machine has its parts arranged for a certain gauge, so that a fine gauge frame must be employed for fine fabrics, and a coarse gauge frame for coarse fabrics. The set or gauge of the loops is thus determined by the machine selected. In the knitting process the loops are made on needles, the upper portions being over the needles, and the lower portions between them. As the thread is fed over the needles, parts called sinkers emerge and push the yarn between the needles. The question of set then resolves itself into the actual space available between needle and sinker for the passage of the thread, after allowance has been made for the space occupied by the breadth of the sinkers and diameter of the needles.

There are, however, various other points peculiar to the knitted fabric to be considered. In the loop formation the thread is subjected to a great amount of strain, which imposes a tax on the elasticity and staying power of the yarn. Unless it has a certain amount of yield it cannot be worked satisfactorily. The threads being strained in this manner at every point causes its diameter to be reduced considerably, so that an allowance has to be made on the ordinary calculated size. This allowance varies with the degree of elasticity possessed by the thread, and also by the nature of its surface and material. This matter is somewhat compensated for by the fact that the passage of the thread between needle and sinker is oblique and not straight like that of the thread through the loom reed. Then again the set depends on whether the yarn is worked in a dry or a lubricated condition. Hard and brittle materials cannot produce a satisfactory fabric unless previously treated with some lubricant. This frequently introduces irregularity into the shape and measurement of the fabric. Finally, the take-up motion of the machine is negative, and can be increased or decreased by adding or removing weight, whilst the fabric contracts in length and breadth when removed from the machine.

Fibre and Yarn.

One of the first requirements in a hosiery material is that it shall possess the absorbent quality in a high degree. The reason for this is obvious when we regard the fabric from the point of view of its hygienic function. Resting as it does next the body, it receives the perspiration and leaves the pores free for their other functions. Similarly a soft material with a full and spongy handle is sought after in order that the body may not be irritated. To effect this, cotton is often blended with wool, the wools selected generally being merino. To attain this end, and also to produce a soft, full yarn, the process of manufacture is somewhat modified. The woollen yarn produced in the ordinary way proves usually too fine in diameter or too hard in twist, whilst the ordinary worsted yarn is too bald in appearance. The yarn is often produced by an intermediate combing process, with some of the stages omitted and a soft twist imparted.

Another feature of the knitted fabric consists in its extreme capacity for felting. This arises from the character of the structure, the arrangement of the loops lending themselves to sliding into each other, and thus contracting in length and breadth with a corresponding increase in thickness. What further accentuates this tendency is the frequency with which underwear must be cleansed, so that an ordinary garment diminishes in the ratio of the number of washes it receives, these being more frequently than not administered with more vigor than prudence. This has given rise to the now almost universal practice of treating the woollen garment so as to maintain a uniform size and thickness during its period of wear.

Making Them Unshrinkable.

The articles are first immersed in a three per cent solution of hydrochloric acid, and then placed for some time in a solution of bleaching powder, after which they are again placed in the acid bath, and thus rendered incapable of further shrinkage. The process certainly does not improve the clothing qualities of the material, and if the greatest care be not exercised in details, the fibre will certainly be deteriorated.

(To be continued.)

BRUSSEL AND WILTON CARPETS.

(Continued from page 66.)

Mottled Effects.

The same are produced by using two or three color twist yarns in place of solid colors. The result is an improvement in effect but is accompanied at the same time with a corresponding increase in cost of manufacture. To gain the first point, and at the same time overcome the latter, the designer will plan two or three frames with solid colors of a count one-half of that of the regular 3 ply yarn as he uses for the remaining regular frames. This will give us for example in connection with a 3 fold 2/18's worsted for regular frames a 2/12's worsted to be used for producing the mottled effect.

The *gamut* for the combination to be:

1st	Frame	3/2/18's,	color	*A*
2nd	"	"	"	*B*
3rd	"	2/12's	"	*C*
4th	"	"	"	*D*
5th	"	"	"	*E*
6th	"	3/2/18's	"	*F*

The mottled effect is obtained by lifting two different colored 2/12's ends side by side as one thread over the wire.

This combination will show that besides a mottled effect in the fabric, produced by single colored yarns, we at the same time produced a six frame effect, using actually only 4½ frames for its construction. (C, D and E = only 1½ frame in its count of yarn as compared to the remaining 3 regular frames used.) Compared to the regular 6-frame carpet there certainly is a shortage of 1½ frames and which has to be made up in its weight by means of additional stuffer warp. In planning designs of this nature be careful to make the width of the plant in each and all the frames agree.

In connection with Brussel carpets you may use either the regularly even ruled paper, say 10 x 10,

provided only small quantities of mottled effects are required, painting in this case one half of the square, lengthways each with the respective color of said frame (each small square is then painted in two colors) or we may use a paper ruled double in the direction of the warp, 20 x 10 in our example, and when then for solid colors two of the rectangles are painted in unison for producing its respective loop in the carpet.

THE KIND OF COLORS TO USE.

Brussel carpet designs must be painted in solid body colors or distemper. Dry powder colors, ground up with gum are best, but they should be prepared so as to dry flat, not glossy. Be sure that before starting your design, to mix sufficient of each color needed to finish it, in order to have the same shade of color throughout the entire design. If, on account, of changes or errors in the design, you have to lay one color over another, paint the last solid so that it will dry to its exact tint. Do not paint your colors thin, *i. e.*, go over it twice with your brush since otherwise the result would be an irregular effect which cannot be reproduced in the fabric. Use solid body colors which will cover the lines of your paper as well as pencil out lines of sketching. While sketching, and more particularly at painting, keep in mind its size in the finished fabric; do not make the outlines finer than they will appear in the carpet, since if made finer it is misleading, giving the design a delicacy superior to what it will possess in the fabric.

Coloring and doing it right is a point where the designer's art plays a most important part. Here he can do much to disguise the unavoidable angularity and harshness of the sketch. In connection with soft quiet effects this is rather easy, but the difficulty increases with the strength and purity of the color.

The colors in Brussel carpets must be so disposed that the greatest possible number of good effects can be obtained by transposition, and by the employment of entirely different sets of shades from the originals.

THE GAMUT.

Below the design for a Brussel carpet is painted the color scheme or gamut. The same indicates the placing of the various colors throughout the width of the carpet. The bobbins carrying the different colored pile warp yarns are then placed according to this gamut on the creels of the loom. In connection with full frame Brussel carpets, this gamut is only made out to show at a glance that the design in question is strictly a full frame carpet, whereas, in connection with broken frames, or when frames are used containing two or more colors, this gamut then becomes an absolute necessity.

Egyptian cotton exported to the United States during the first six months of 1909 amounted to $7,208,733. The same exported to the United States during the same months in 1910 amounted to $3,945,012, showing a decrease of $3,263,721. This falling off in exports was due principally to the smaller sales of Egyptian raw cotton and cotton seed, owing to the reduced crop of 1909 and the correspondingly high prices that prevailed early this year.

The Behavior of Wool in Dyeing.

Keratine the essential ingredient of the wool fibre may be considered as an albuminoid distinguished from the rest by a relatively high content of sulphur. Determinations of its composition, in connection with wool varies, since there are some forty different varieties of wool classified, and that such factors as the climatic conditions under which the animals have lived, their age, food, etc., affect its composition.

To cleanse the impure wool fibre for experimental work only, such agents may be employed which, whilst effecting the solution and removal of the impurities, do not alter the keratine; this is best attained by using neutral fat solvents and luke-warm pure water.

From an industrial point of view, the physical behavior of dyed wool is of prime importance, since felting must be avoided; from a purely scientific standpoint the physical side of the question is of less importance than the fastness of the color, or the behavior of the dye liquor.

It is well known that weak alkaline solutions and even treatment with hot distilled water cause felting of the wool fibre, whilst acids and acid salts, if sufficiently dilute, do not cause this phenomenon.

Consequently for industrial purposes, wool is dyed whenever possible in weak acid baths, and seldom in neutral baths.

For the scientific investigation of the absorption of pure coloring matters by the wool it is permissible to use neutral batns, and baths containing pure color acids and color bases, alone or mixed with other agents, such as acids or salts, without any great regard to the ultimate condition of the fibre.

Felting is essentially a physical alteration of the fibre, induced or retarded by chemical means, and cannot therefore seriously affect the study of the theory of dyeing from a chemical point of view.

Wool is a very indifferent substance at the ordinary temperature towards most reagents as well as dyestuffs in aqueous solution, yet interaction commences upon raising the temperature or upon prolonging the duration of contact. In either way hydrolytic decomposition of the albuminoid commences, proceeding progressively with increasing power of the acid components, at the same time increasing the basic character of the wool. It may be concluded that hydrolysis takes place in the mordanting and in the dyeing. The basic character of wool makes the acid dyes the most suitable class for the purpose of dyeing this fibre.

As basic substances are able to combine with the different acids, in proportion to their strength, in the presence of even hot water, and still remain stable, the salts of the basic dyestuffs do not color the wool, whereas the salts of color acids, through double decomposition, give up the color acid to the wool. By progressive hydrolysis of the wool the capacity of the fibre for combining with color acids is retained.

Upon hydrolysing wool with acids in the ordinary way, and neutralizing the aqueous solution with ammonia, and treating with color acids or basic dyestuffs, it may be observed that the appearance of a

precipitate with the color acids takes a longer time than with the basic dyes.

Experiments show

(1) that wool treated in neutral baths with the sodium salts of color acids is colored but slightly;

(2) that from such neutral baths the free color acids are absorbed and the wool dyed deeply;

(3) that from an acid bath of the salts of color acids, or of the free color acids, the fibre is also colored deeply;

(4) that from a neutral bath the basic dyestuffs (which are mostly hydrochlorides of color bases) readily color the wool;

(5) that from an acid bath the basic dyestuffs do not color the wool at all, or only slightly.

As the acid character is increased, the power of the basic dyestuffs to color wool is diminished, and that of salts of color acids is increased. In the case of acid dyestuffs and the saturation of the basic groups of the wool by color acids the question arises as to why wool treated with mineral acids still has the capacity of becoming colored by color acids?

An explanation is afforded when it happens that the basic groups of the wool are combined with those acids which give insoluble salts with complex organic bases.

From personal experiments and from those of other investigators I am convinced that in mordanting and dyeing wool with acid mordants and the so-called substantive dyestuffs, the hydrolysis of the wool is commenced first by the necessary operations, and that the dyeing depends upon the formation of sparingly soluble chemical compounds formed by the active groups of the wool with corresponding portions of the mordant or dyestuffs.—W. Suida, in Zeitschrift für angewandte Chemie.

Dyeing Half-Silks.

Different methods are employed in the dyeing of fabrics composed of a mixture of silk and cotton. When sufficient brightness and purity of shade cannot be otherwise obtained, the several-bath method is chiefly employed. It consists in previously dyeing the silk with acid or basic dyestuffs, and then mordanting the cotton and dyeing in the cold with basic coloring matters. Substantive dyestuffs are sometimes used for topping the cotton, when they are capable of yielding sufficiently bright shades.

It is to be observed that when parti-colored, white, or shot effects are to be produced by this method, the goods should be lightly treated with chlorine after dyeing the silk, to keep the cotton clear enough for the after-dyeing.

When dyeing to shade, it is well always to keep the cotton rather fuller in shade than the silk. Since the silk portion is always slightly darkened when topping the cotton with basic dyestuffs, it may be lightened, if necessary, by rinsing with lukewarm water, containing a little turkey-red oil or bran, or even by soaping slightly.

The single-bath method is, however, the one most generally preferred, wherever practicable, on account of its comparative simplicity. By this process the goods are dyed with substantive coloring matters in an alkaline soap bath, and the silk then topped in an acid brightening bath with basic or acid dyestuffs, or with both together. In some cases the cotton and silk are dyed together in an alkaline soap bath with substantive dyestuffs only, or, to cover the silk better, suitable basic and acid dyestuffs, or both together, are used in the same bath. In working by this method it is noteworthy that the addition of Glauber's salt to the soap bath, which should, however, be avoided if possible, increases the depth of color on the cotton. Unevenness of shade may be prevented by boiling up the bath once or twice.

If hydrochloric or sulphuric acid be used in the brightening bath, the goods must of course always be rinsed afterwards with water; this is not necessary if acetic acid be employed. Single-bath shot effects are produced by using either such substantive dyestuffs as leave the silk sufficiently white, or, on the other hand, dyestuffs which color chiefly the silk.

With regard to the treatment of half-silks as a preliminary to the dyeing, silk and cotton unions are generally dyed in the form of piece-goods or ribbons, and after singeing, are treated in the same way as silk. It consists in a first and a second boiling-off bath. The first bath is prepared with about 20 lbs. Marseilles soap for 60 lbs. of material, in which the goods are boiled for one and a half to two hours.

The material is next treated once more in a similar manner for a quarter to half an hour in a second boiling-off bath containing about 10 lbs. of Marseilles soap, and is then passed through a warm soda bath to effect the removal of the soap. Afterwards wash out, pass through a bath made sufficiently acid with hydrochloric or sulphuric acid, to taste slightly acid, and finally rinse thoroughly.

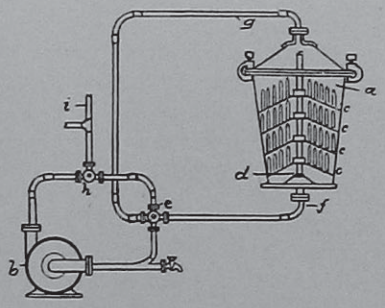
New Design for a Rug.

The above illustration shows a quarter of a Rug,

the design of which has just been patented by E. G. Sauer, Richmond Hill, N. Y.

Cop Dyeing.

There are many ingenious machines on the market for this work, all of them designed for the purpose of ensuring perfect circulation of the dye through the cop, a matter which is by no means easy, owing to the fact that all forces take the lines of least resistance. As an illustration of this difficulty



we may take any ordinary cop wound on a perforated tube. If the circulation is easier round the outside of the cop the dye will never penetrate to the interior, while larger perforations or looser winding of the yarn in parts will always bring about increased circulation at these points. To get over this difficulty the principles experimented with have been two:

First to screw the perforated bottom on to a nozzle through which dye liquor is either forced or drawn, thus compelling a passage through the wound yarn. The accompanying illustration is a sectional diagram of one of these cop dyeing machines, and the details of working are as follows:

a is a conical vat through which the liquor is forced by the pump *b*. Perforated plates *c*, in the shape of truncated cones carry the perforated yarn spindles. *d* is a screw-threaded rod, screwed to the base of *a* which passes through the centre of each plate, the plates being held in position by nuts working on the central rod. With the vat *a* tapering in diameter and each plate increasing in diameter upwards, each plate presses against the sloping sides of the vat and makes a sealed chamber through which the dye can only circulate by passing through the yarn on the bobbins. *e* is a four-way cock by which the liquor can be forced upwards through the pipe *f* or downwards through the pipe *g*, and *h* is another three-way cock which can be opened to discharge the dye into another vat when required, or it can admit water for washing off by the pipe *i*. In filling the machine, the plates are taken out and filled with bobbins, then replaced in order according to their respective diameters, fastening each by screwing down a nut on the central rod. The dye is then pumped alternately up and down through the vessel *a*, and when the dyeing and washing is complete the central rod *d* is unscrewed from the bottom of the vat by a key applied at its upper end and the plates, cops, and central rod are lifted out all together.

The second system of forcing circulation through the bobbins is to place them in a sealed chamber, with the interstices between each bobbin packed with some substance offering resistance to the passage of the dye. Many substances have been experimented with including, sand, powdered cork, sawdust, wood-chips and wood-wool, but they all have disadvantages of one kind or another. Moreover, the plan is clumsy and slow, and it is almost impossible to prevent the dye fouling the packing material. Sand is the cleanest material to use but it is apt to get into the pump and cut the moving parts to pieces, while wood-chips do not offer sufficient resistance to the liquor and allow it to pass through. Sawdust offers a good resistance but, unfortunately, it clings to, and gets entangled with the yarn, and, naturally, such a substance absorbs nearly as much coloring matter as the yarn itself. Dyer and Calico Printer.

Egyptian Cotton Outlook.

So favorable have been the reports since planting and so propitious the weather conditions that cotton people generally are very optimistic concerning the size and quality of the coming Egyptian crop. It is confidently expected that the largest crop ever yielded by Egyptian fields will be marketed during the next winter. In round figures the cotton shippers are now talking of a 7,500,000 cantar crop (750,000,000 pounds). The crop of 1909 was the smallest for a decade, just short of 5,000,000 cantars.

The amount of textile exports to the United States during April, May and June from France, via Lille, are: Woolen, linen and cotton yarns, $35,360; flax and thread waste, $30,299; linen goods, $27,573; flax, $10,049; linen thread, $9,390.

The Suter Reed Picking Machine.

The Suter Reed Picking Machine is a labor-saving device obviating the tedious process of drawing in the threads by hand, which always remains a strain on the eyes of the operator. The machine is easy to handle and works just as well on the drawing-in frame as on the loom.

The accompanying three diagrams illustrate the apparatus and its method of operation.

After the warp threads are drawn through the heddle, the harness is placed upon the bearers and the carriage moved along the spindle to the starting point, which varies with the amount of reed space to be threaded. A small lug attached to the rachet wheel works in the thread of the spindle. By lifting up a tongue in the boss of the rachet wheel, the carriage may be moved backwards or forwards, provided that the hooks are out of contact with the reed *E* and at the same time the treadle and quadrant are also moved. The drawing-in mechanism consists of a draw-hook *B*, and counter-hook *A* which are hung in parallel levers and from which they obtain their movement through the intermittent turning of the spindle by means of the foot treadle and quadrant. The parallel levers hold hooks *B* and *A*, and a parallel motion is obtained, allowing a side movement to the hooks, whilst retaining their parallel and vertical positions. The hook-holder is hung upon the levers of the parallel motion,

and these levers, by means of a spiral spring, are pressed on to the centres of the hook-holder, and give it the required support. At the same time, the spring causes a slight side pressure on the parallel motion, and also upon the hook *A*, with the result that the latter is always bearing against the next dent in the reed. The pressure of the treadle, raises the draw-hook *B* and the threads are drawn through the reed, as shown. The threads which are placed on the hook when the treadle is in its highest position, after being drawn through the reed, are laid on one side by the chain shown in Fig. 1, which consists of an open spiral spring passing around the three pulleys shown. This spring is moved at every downward movement of the

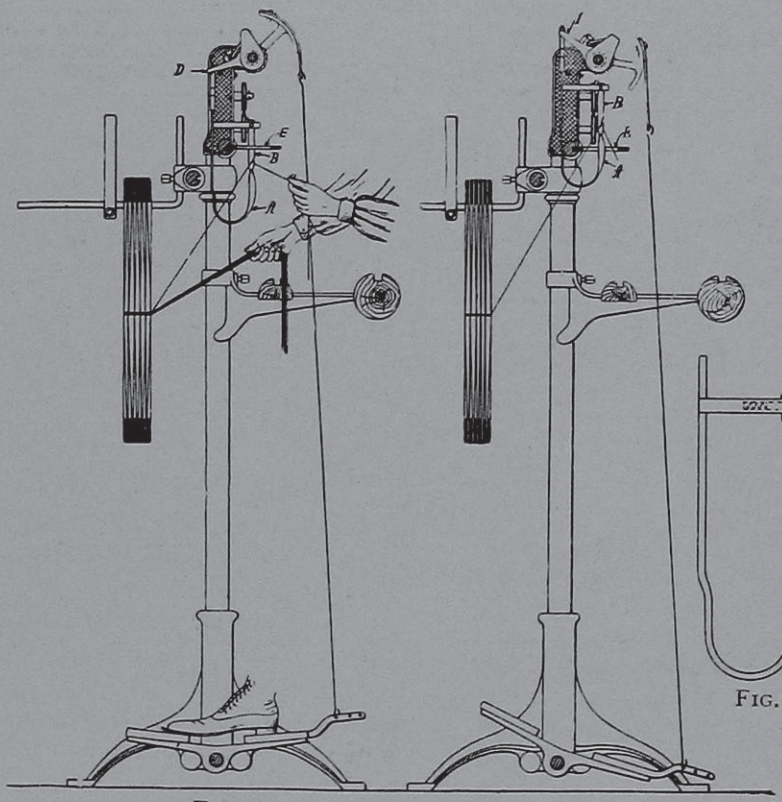


Fig. 1

Fig. 2

Fig. 3

treadle, a lever and crank being connected to the larger wheel, which imparts to it the necessary movement. The two smaller guide pulleys may be regulated so as to cause the chain to pass nearer to or farther away from the draw-hook, according to the counts of yarn under treatment. It will thus be seen that the operation is very simple; the threads are taken by the left hand from the harness and the number of threads that have to be drawn through one dent of the reed, selected with the right hand. These threads are then placed on the hook and the treadle pressed down; the threads are then drawn through the reed and laid on one side, out of the path of the hook, by means of the chain as mentioned before.

The suspending of the hook-holder by the parallel levers is so arranged, that at the moment of penetration, the point of the hook moves downward, also assuming a seeking horizontal movement in order to avoid the possibility of the point being forced against a reed wire. Should this occur, the hook-holder slides through the centre piece, which is held between the parallel levers, so that no damage can be done either to the hook or to the reed wire. By means of a side pressure, and the intermitting penetration of the dents, the carriage of the drawing-in apparatus moves dent by dent, causing the pawl fastened on one of the parallel levers to press gradually against the rachet lever. This latter in turn moves the rachet wheel and the carriage is moved automatically.

In Fig. 3 is shown the relation between the two hooks *B* and *A*, the former being placed in the position shown in dotted lines when ready for operation. The hook *B* has a small hole near its end, and is, moreover, slightly bent at this point, and, bears lightly on the guide *A*, while when in contact, the slightly bent point of *A* is covered by the rounded-out eye of the draw-hook *B*. The distance between the extreme point of the draw-hook *B* from the hook *A* must correspond to the thickness of a reed wire, thus causing, by each downward movement of the parallel levers, the draw-hook *B* to penetrate the next dent. For varying counts of reed, a few thick and thin brass draw-hooks are provided, and these may be readily placed in the hook-holder when required; for small changes, however it is only necessary slightly to bend the point of the hook *B*.

As a rule, three knives are sufficient for reeding-in counts of 17 to 160 dents per inch. The maximum speed, so far obtained in this country, in a mill where five of these machines are operated, has been 5,000 dents, at 2 ends per dent, in one hour which is about four times as fast as the speed of the average hand operator.

Further details, regarding this machine, can be obtained from Alfred Suter, Textile Engineer, 487 Broadway, New York City.

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MILL NEWS

Philadelphia. Boylston Bleachery, Ward Meehan Co., Lehigh Ave. & Howard St., have recently renovated their Bleachery, and have equipped it with the most up to date machinery for the bleaching of hosiery, underwear and towelings.

Philadelphia. John Scanlin & Son, manufacturers of cotton and woolen dress goods, who have been rather quiet for some time, report that they are receiving number of orders and are starting up several additional sections to take care of the business.

Philadelphia. E. & H. A. Dawson, trading as J. & E. Dawson, established 1890, in order to be able to accommodate the increase in business, have moved their plant, August 1st, from 3rd and Somerset Streets to larger quarters at Palethorpe and Somerset Streets, where now they have a floor space of 7,500 square feet. They do Public Beaming and Commission Weaving, having for this purpose 8 Beaming Frames, and 12 Knowles Looms of 25 harness capacity, capable of handling 85 inch wide fabrics.

Philadelphia. It is reported that the Shelbourne Mills, who have been operating on a short time basis for a number of months, are starting up several sections of looms on new orders.

Philadelphia. The Shackamaxon Worsted Mills, which have been operating part of their equipment on a full time basis, are gradually getting all the looms employed on a like schedule, in order to take care of the increased business.

Philadelphia. The Jos. M. Adams Co., spinners of woolen and worsted yarns, report that they are running to full capacity on woolen yarns, with a fair business in the worsted line.

Philadelphia. John G. Carruth & Co., Endurance Mills, manufacturers of dress goods, report that they are very busy increasing their operating forces in all departments.

Philadelphia. A. J. Cameron & Co., spinners of worsted yarns, who have been operating their plant on a short time basis, has resumed full weekly schedules in all departments.

Philadelphia. Improvements as referred to in the September issue, with reference to the branch plant of the Aberfoyle Mfg. Co., at Manayunk, consists in an additional floor, to be used as a winding department, accommodating ten frames for a start. Heretofore this work has been done at their main plant in Chester.

Philadelbhia. The Wabash Mills Co., Inc., Manayunk, manufacturers of carpet, blanket and wood spun cotton yarns, has awarded the contract for the erection of a five-story addition to its plant; the same to cost $12,000.

Philadelphia. Jonathan Ring & Son, Inc., manufacturers of yarn, have started with the erection of the two story, 299 by 60 foot addition to their plant, referred to in the April issue.

Philadelphia. In order to increase its present output, the Allegheny Hosiery Mill has leased the Lomax Mill; they will add about twenty new machines.

Philadelphia. The Notaseme Hosiery Co., who now occupy two floors in the building at Mascher and Oxford streets, have leased two additional floors in the same building, adding new machinery, in order to increase the present output of the plant.

Philadelphia. Samuel Titelman and Nathan Neuman have formed a company to operate as the Puritan Knitting Mills, manufacturing high-grade sweater coats, shakers and athletic goods, both ladies' and men's. They have leased the entire second floor of the building at the northwest corner of Fifth and Chestnut sts., and have installed 10 knitting machines, 3 loopers and 5 sewing machines.

Philadelphia. The Hughes Manufacturing Co., manufacturers of soft and polished thread, also dyers, bleachers and coners of cotton yarns, have moved from their old mill at Trenton avenue and Clearfield street, to the mill at Orthodox and Horrocks streets, formerly occupied by the Glasgow Mills, which firm moved to Hillsdale, Md.

Philadelphia. Harry C. Aberle & Co., hosiery manufacturers, have recently begun operations in a four story addition, 50 by 70 feet, where 32 new, full fashioned machines have been installed.

Philadelphia. The Peerless Silk Hosiery Co., who are operating on a day and night schedule, are installing additional machinery.