

the most suitable materials originally furnished can make good for any neglect at that stage.

How to mix, to get good sound yarn, is one of the first principles to study when learning the practical end of woolen manufacturing. While a technical education, with reference to being able to distinguish the various textile fibres from each other is desirable, at the same time practical experience, *i. e.*, a knowledge of the properties of fibres in all its sub-varieties, is required of the superintendent. For instance, cotton, as extensively used in the manufacture of these low grade woolens, refers to a fibre which is strong, fine and capable of being spun, if it was used by itself, in a comparatively fine count of a yarn. For this reason a cloth made from it is naturally strong and firm, but unkind in touch and unsuitable for heavy clothing purposes.

In opposition to such a structure, a cloth made from shoddy alone, besides the yarn running bad in carding, spinning, winding, warping and weaving, the resulting cloth would be tender, present a coarse appearance, since shoddy would permit only the spinning of very low counts of yarn; the fabric at the same time would be fairly warm and soft.

The characteristics of these two cloths are totally different, neither being of any value for the purpose desired. Again, either cloth presents valuable features, which if combined with each other will result in a firm, warm, salable fabric. For this reason, the cotton and the shoddy are mixed together at the mixing picker, previously to carding, the latter process being the back bone of successful woolen manufacturing, no matter what class of woolen goods this assertion refers to. The shoddy, mungo or extract used may be short or possibly short and tender, a deficiency which however, is counterbalanced by the strength of the cotton.

As will be readily understood, there are at the same time all the different sub-varieties of each fibre met with in the manufacture of low counts of yarns, for instance, if dealing with an extra hard, harsh feeling cotton, select a soft shoddy, mungo or extract, so as to destroy the harshness of the one material by the softness of that combined with it. The same also refers to the strength of the resulting yarn, and when a strong, fair staple cotton must be used if dealing with mungo as the wool fibre to use with it. A thorough knowledge of mixing can only be gained by practical experience, for the fact that these low grade materials vary to such extent in quality, etc., amongst themselves, that it is only by handling, testing and experimenting with them, that a knowledge of good mixes can be obtained.

In all cases do not expect too much from shoddy, mungo or extract, since you must remember that these fibres have previously done duty in better classes of woolen goods, and where they must have spent a large percentage of their good properties. For this reason do not spin your yarns a higher count than absolutely required, and wherever such a thing is possible, add a percentage of good wool, noils, wool card waste, etc. Although the cotton could be spun to

rather a high count, do not calculate on this, but fix the count of the yarn to be spun to suit the shoddy, mungo or extract used in the mix, relying on the cotton to assist in good work in the card room, the spinning room as well as the weave room, so as to impart to the fabric its required strength. Remember that if overdrawing an inferior mix, the cost of such work will be a most costly experiment to the mill, resulting in bad work in every department of the mill, and at the end prove more expensive than if a better stock had been used.

In connection with these mixes for low grade woolens, a most important item to be taken into consideration by the superintendent, is the amount of waste made in the card room, spinning room, winding and warping department as well as the weave room, for the fact that excessive waste made in these departments (and they work alike—excessive waste in one means excessive waste in all the others) may result in a more expensive fabric than if we would have used a better grade of stock.

For example, if an inferior stock used only produces 90% of what a better stock used will produce, it is rather questionable whether we gained anything by using the cheaper stock. Now if in turn we should see by the reports of the overseers that in connection with the production in the card room there is a difference of say 20%, in the spinning room a difference of say 30% and a similar difference in the weave room, between the two mixes, we are convinced that the ultimate result would be in favor of the better stock.

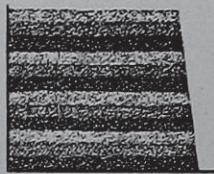
Do not combine two materials of great disparity in quality, since more satisfactory results are obtained by fibres of closer relation with each other. For example, it will be found a poor judgment on the part of the superintendent to mix a large percentage of inferior shoddy with a small percentage of good wool; he certainly will get more satisfactory results by improving the quality of the shoddy and lowering the quality of the wool, or to put in a larger percentage of a rather lower grade of wool, obtaining in this way a greater uniformity in the component parts of the mix, a more perfect amalgamation of the various fibres, with the result of less waste made.

It has been the writer's experience, while superintendent in a Massachusetts mill running on these low woolen goods, to get along with a very small percentage of wool, in fact, in many instances the same was often conspicuous by its absence, noils, wool waste and chiefly cotton being used in place of it. Cotton and shoddy had been the materials mainly at our disposal, and although the yarn was not as elastic and soft, than if good wool fibre had been used, in place of the cotton, quite as strong and serviceable yarn was produced by our carder, clearly showing that the selection of the proper overseers is a most important item in connection with these low grade woolen yarns.

Mixing the various materials to be used in the manufacture of these yarns requires care on the part of the operator, since an imperfect mixing will produce an endless amount of trouble to the mill. Different ways of mixing are practised by different mills,

however, they all aim at the same final result—to insure a perfect amalgamation of the fibres composing the mix.

A good plan is to weigh out the different proportions of wool, shoddy and cotton; run the wool through the mixing picker, *i. e.*, wool picker, oil it, and pick it again and place it in a pile in one part of the mixing room. Run the cotton in the same way through the mixing picker in order to loosen up its matted condition. Now spread a portion of the wool over as large an area as possible on the floor, in one section of the room, place on top of this a similar layer of shoddy, to be followed in turn by a layer of cotton; continue to place layers and layers of materials in rotation quoted until all the stock is used up. The smaller



Plan showing mixing of three different materials; shown respectively light, medium and dark

the percentage of one of these materials as used in the mix, the thinner its layers, again we may mix extra small percentages first separate with a portion of the larger percentage, using this preparatory mix afterwards as one of the materials to be used in the final mix. Try and work the individual lots composing the mix up as evenly as possible. When the pile is finished, and the stock is to be fed into the mixing picker, always break in the pile vertically downward, so as to put at the same time on the feed apron of the wool picker, or in its self-feed, part of each layer composing the pile. Some carders prefer to run the wool in a dry state through the picker, oiling it afterwards on the pile when building up the latter. If using cotton waste and mungo for a mix, as may be the case with extra low counts and grades of yarns, a similar process is adopted, the cotton forming the basis for the blend.

It is very important that the different layers of the various materials used in the mix are spread evenly and thinly in the pile, also that the cotton gets as little oil as possible. It will be advisable to run the mix at least twice through the mixing picker, three times will not hurt but only help the amalgamation of the various kinds of materials used in the mix.

Although our Mainland Cotton forms the bulk of the cotton used in the manufacture of these fabrics, it remains for what is known as *Rough Peruvian* cotton to be well adapted for the manufacture of these fabrics. This cotton has a strong, rough, woolly, crinkly staple, about $1\frac{1}{4}$ to $1\frac{1}{2}$ inches long. The by-name given to this cotton is vegetable wool, for the fact that its resemblance is so close and its characteristics so strikingly similar to wool, that it passes, to the naked eye, as wool and cannot be determined with any certainty except by using the microscope chemical tests.

TESTING OF CHEMICALS AND SUPPLIES IN TEXTILE MILLS AND DYE WORKS.

General Method of Testing Dyes, Dyestuffs and Colors.

(Continued from page 112.)

EPSOM'S SALT: The filtrate from the silver chloride solution can be tested for magnesium. If magnesium is found, Epsom's salt was present.

To test for magnesium in this solution, add hydrochloric acid to precipitate the excess of silver nitrate which was added to estimate the salt that was present. Filter and save the filtrate for testing for the magnesium and the precipitate may be thrown away. To the filtrate add a little ammonium chloride and ammonia to alkaline reaction. Then add a solution of sodium phosphate; if magnesium is present, a white crystalline precipitate is obtained. This precipitate is collected on the filter paper and is carefully washed. The precipitate is then dissolved off the paper with a few drops of nitric acid. The solution is caught in a clean, weighed porcelain crucible. Care must be taken that all the precipitate is dissolved from off the filter. The solution is then carefully evaporated so that there will be no splashing. After all the water is evaporated, the crucible is strongly ignited. Magnesium pyrophosphate remains in the crucible. The numerical value of magnesium pyrophosphate ($Mg_2 P_2O_7$) is 222. The numerical value of anhydrous magnesium sulphate ($Mg SO_4$) is 120. But it takes two parts of magnesium sulphate to furnish sufficient magnesium to form one part of magnesium pyrophosphate. So that for every 222 parts of magnesium pyrophosphate formed, there must be 240 parts of magnesium sulphate present. The quantity of magnesium sulphate present can then be estimated from the following equation:

$$\begin{aligned} 222 : 240 & : : x : y \\ y & = 240 \times x \div 222 \end{aligned}$$

In this equation x is the weight of the magnesium pyrophosphate found; y will then be the weight of the magnesium sulphate present in the sample taken. The above formula is always used when the amount of Epsom's salts is to be estimated from the amount of pyromagnesium phosphate obtained; from this the per cent can be readily calculated. Multiply the weight of the magnesium sulphate found by 100 and divide it by the total weight of the dye taken. This will give the per cent of magnesium sulphate present.

GLAUBER'S SALT may also be present as an adulterant. To test for and to estimate this, add a warm solution of barium chloride to a solution of the dye, which has been made acid with hydrochloric acid. Barium sulphate is precipitated and barium sulphonate if organic, sulpho compounds are present. The solution is filtrated. Barium sulphate and sulphonate remain on the filter. Wash the filtrate with a solution of ammonium carbonate. The barium sulphonate is converted to barium carbonate, while the barium sulphate is unchanged.

The precipitate on the filter is now treated with a weak hydrochloric acid solution. The acid dissolves the barium sulphonate while the barium sulphate is

not acted upon. The barium sulphate is washed with warm distilled water, three or four times. The precipitate is then dried, the precipitate separated from the paper, and placed in the crucible. The filter paper is folded, held over the crucible with a platinum wire and ignited so that the ash will fall into the crucible. A few drops of dilute sulphuric acid are added, the excess of acid is then carefully evaporated to prevent any spitting or splashing, so that there is no loss of precipitate. After the precipitate is dry, it is ignited; the crucible is then placed in a desiccator to cool and then weighed. This gives the weight of the barium sulphate. The numerical value of barium sulphate (Ba SO_4) is 233; the numerical value for anhydrous glauber's salt ($\text{Na}_2 \text{SO}_4$) is 142. From this the following proportion is obtained:

$$233 : 142 :: x : y$$

$$y = 142 \times x \div 233$$

Here x is the weight of the barium sulphate which has been precipitated; y will therefore be the amount of sodium sulphate which was in the sample. The per cent is easily calculated. Multiply the weight of barium sulphate obtained by 100, then divide the product by the weight of the sample used in making the test.

In testing for *Glauber's salt* and *Epsom's salt*, it is best to test with barium chloride. If no precipitate is obtained, both *Epsom's salt* and *Glauber's salt* are absent, for each act on barium chloride to form barium sulphate; so that when the weight of barium sulphate is determined, it gives the amount of *Glauber's* and *Epsom's salt* present. To find how much of each is present, subtract the amount of magnesium sulphate present, as determined from the magnesium pyrophosphate, from the amount of *Glauber's salt* present, determined from the barium sulphate. The difference will give approximately the amount of *Glauber's salt* present. The presence of any *Glauber's* or *Epsom's salt* in a dye proves that it has been adulterated.

CARBONATES may be present in a dyestuff. These are tested for by adding a few drops of hydrochloric acid to the dye; if carbonates are present, an effervescence or bubbling takes place. The amount of carbonates present can be determined by collecting the gas and measuring its volume.

Dextrine and *sugar* are sometimes found as adulterants.

DEXTRINE is estimated by weighing out about two grams of the dye into a weighed beaker with a glass rod. This dye is dissolved in a small amount of water, a little absolute alcohol is added (absolute alcohol is alcohol which contains no water), when the dextrine is precipitated. The dextrine sticks to the glass. The solution is poured out and the beaker glass is washed with small quantities of alcohol until no color remains. The glass is then dried and weighed and the difference in weight is the weight of the dextrine.

SUGAR is determined in a similar manner, except that the alcohol used should have in solution as much sugar as it will dissolve, so that it will not dissolve any of the sugar in the dye.

STARCH is frequently found in dyes. It is not used as an adulterant, but is used to prevent the dye

from absorbing moisture from the air and cakings, because when starch is present, it absorbs the water, without caking. It may be detected by dissolving a small quantity of the dye in water. Allow the solution to stand for a while, then pour off the supernatant liquid. The residue is starch, this is washed with water, the solution allowed to settle and the water is poured off; this operation is continued until there is no color in the wash water. The residue is then tested with a drop of a solution of iodine in alcohol; if starch is present, a blue color is formed where the iodine touches the starch.

It is often desirable to make comparative tests of dyes. Frequently two or more dyes give a similar color and the dyer wishes to compare them, so that he may be guided as to what dye he should use. He will be led in his selection of a dye, by finding out the comparative amounts of dye used, the price of the dye, etc.

COMPARATIVE DYE TESTING in case of *silk* and *wool* (animal fibres) is carried out in the following manner: A weighed amount of the yarn or fabric is placed in the solution of dye. Two solutions of each of the dyes which are to be compared are made. The quantity of dye used in one solution is one per cent of the weight of the fabric or yarn to be dyed; in the other solution, the amount of dye used is five per cent of the weight of the fabric. The dye is dissolved in the same amount of water, about one quart, and about one ounce of the fabric or yarn is used. The material previously wetted is introduced in the dye bath, which is heated to its boiling point. The material is allowed to remain in the bath thirty minutes, the solution being allowed to boil. The bath at the end of that time is usually exhausted of color; the samples are then taken out, washed and dried, and the shades compared.

TO OBTAIN THE RELATIVE DYEING VALUE OF TWO DYES. The dye solutions are made up of equal strength and equal portions of the materials which are to be dyed and are introduced into the dye baths, the baths being brought to a boiling point. As fast as the dye solution in the dye bath is used up, fresh solution is added until no more dye is absorbed. The difference in the volumes of the dye solution used, shows the relative dyeing value of the dyes.

When the dye is to be tested with *cotton* goods or yarn, the sample as a rule must undergo some treatment which will cause the dye to penetrate and stick to the fibre. This previous treatment, known as mordanting, may be carried out in the laboratory in the following manner: The cotton, in the form of yarn or fabric, is boiled in water, and then placed in a five per cent solution of tannin, where it is allowed to remain for about twelve hours, after which it is transferred to a bath of tartar emetic. The strength of this solution of tartar emetic is two and a half per cent. It is allowed to boil in this tartar emetic solution for about one-half or three-quarters of an hour. It is then removed, washed with fresh water and dried and is now ready for dyeing.

These tests are for the artificial dyes which occur

in powder form. The natural dyes which occur on the market as extracts, dye woods, etc., must be tested differently. The way to test these is to make comparative test of the woods and extracts.

(To be continued.)

New Dyestuffs.

The following New Dyes have been lately brought into the market by the *Farbenfabriken of Elberfeld Co.*:

SULPHON ACID BROWN 2 R AND 4 R. They are wool dyes producing a dark brown, fairly fast to washing and falling when dyed simply acid (direct). They are moreover fast to steaming and stoving, properties which are the best recommendation for colors offered for dyeing fast shades on wool. Both leave white cotton effects in wool pieces perfectly clean. On silk, they yield fine brown shades, although not perfectly fast to water; when dyeing wool and silk mix, the latter is dyed a weaker shade than the wool. White silk effects in wool pieces are left almost untinged, especially by the 4 R brand, when working with an addition of acetic acid only. Both brands may also be used to advantage as shading colors in the dyeing of half wool, as they are well absorbed by the wool in a neutral Glauber's salt bath. They are also very useful for printing dark brown shades on wool and silk.

ALGOLE PINK R PASTE, on account of its superior fastness to light, is very useful for dyeing pink shades on all classes of cotton material intended for curtains, upholstery cloth, etc. It is also very suitable both for padding and direct printing on cotton (shirtings).

AZO FUCHSINE 4 G EXTRA is a wool dye, used chiefly in combination with Alizarine Sapphirole, Anthra Cyanine, Fast Light Yellow, etc., for fashion, olive, and brown shades on ladies' dress cloths. When dyeing acid, white cotton effects in wool pieces remain untinged, also white silk effects, if the material is dyed in a long liquor with an addition of acetic acid. The new color is also suitable for producing bright pink or red shades on silk, provided fastness to water is not stipulated.

ANTHRA CYANINE 3 G L is a wool dye recommended for dyeing ladies' dress cloths, upholstery cloth, etc., as also for carpets and zephyr yarns required fast to light. White cotton effects in wool pieces remain perfectly pure. On silk it produces clear blue shades very fast to light.

PLUTO BROWN V EXTRA is useful for dyeing brown shades on loose cotton material, yarn and piece goods, also half wool. It may also be used for artificial silk and half silk; in the latter case the cotton is dyed deeper than the silk.

BENZO NEW BLUE 5 B AND 2 B. The 5 B brand gives a fine medium blue, and the 2 B brand a bright navy blue on cotton. On account of their dyeing easily level and being very soluble, they are also very suitable for combination shades such as olive, brown, etc., as also for dyeing in machines. Both colors are also useful for dyeing silk and artificial silk, particularly fine full shades being obtained on Glanzstoff. When dyeing half silk with an addition of Glauber's salt and olive oil soap, the silk is dyed considerably weaker than the cotton. Both dyestuffs are also of considerable importance for calico printing.

KATIGEN BLACK 2 B EXTRA CONC. AND DEEP BLACK B G. Katigen Black 2 B extra conc. gives a greenish blue black, Katigen Black B G a deep black with a greenish tone down hand and over hand, which from practical trials has been found to give the nearest approach to the shade of Aniline Black. They may likewise be employed for dyeing any cotton material required to be exceedingly fast. They are not only well suited for self-shades, but also for dyeing in combination with other colors, for the production of fast gray, reseda, olive, brown and other shades.

BENZO FAST YELLOW 4 G L EXTRA is noted, in connection with cotton material, for its clear greenish yellow shades and excellent fastness to light. On account of dyeing very easily level, 4 G L is specially adapted for combining with other colors fast to light, for the production of mode shades on loose material, yarn and pieces. It yields a very fine fiery yellow on silk and artificial silk; in respect to fastness to water, the shades on silk will meet ordinary requirements. The color is also of importance for dyeing half silk, as both fibres turn out uniform in shade. It may further be remarked that the new color is not susceptible to copper or iron, and it also withstands a weak short bleaching with chemic. It is also adapted for dyeing light shades in the padding machine, as well as for direct printing on cotton. On account of its

fastness to caustic soda, the new color is suitable for crimp styles.

PARA BROWN V EXTRA. Cotton cloth is dyed with it in the jig or in the dye beck with Glauber's salt and soda, rinsed, dried, then developed with diazotised Paranitraniline in the padding machine or in the Paranitraniline dyeing machine. Very full shades are thus obtained which discharge a very pure white with hydro-sulphite preparations. With tin crystals the shades give but poor discharges, whilst with chlorate discharge, fine chocolate effects are obtained. On account of its productiveness and good dischargeability, it will be found important for the manufacture of raised material, cotton cloth and sateens.

PARA GREEN 2 B L. Cotton cloth is dyed with it in the jig or in the dye beck, with the addition of 20% Glauber's salt crystal, and 2% soda ash, and after rinsing and drying it is developed in the padding machine or in the Paranitraniline dyeing machine with diazotised Paranitraniline. It discharges a pure white, with hydro-sulphite preparations.

GALLO FAST BLACK PASTE is used for calico printing with an addition of acetate of chrome. To the print colors it is advisable to add a little Rongalite C and formic acid. The prints obtained are remarkable for their very bloomy shade, good fastness to soap and light, and for their satisfactory fastness to chlorine. In light shades, the color yields a very fine gray.

NAPHTHYLAMINE BLACK 5 G L AND 4 B L. Both colors are used chiefly for dyeing ladies' woolen dress material, but are also employed for zephyr yarn. They leave white cotton effects in wool pieces fairly clean, also giving good black shades on silk, which however, are not fast to water. These colors are also well adapted for direct wool printing. 4 B L gives bluish and 5 G L very greenish shades of black of good fastness to washing.

DIAMOND RED 3 G AND 5 B. On account of their splendid properties, they are suitable for dyeing all kinds of woolen goods required to be fast to wear. They are specially recommendable for blanket yarns, blends and effect threads for gentlemen's and ladies' fancy colored cloths, as well as for selvages of white goods which are stoved in the piece. On account of its very good solubility, Diamond Red 3 G especially, is adapted for machine dyeing. Both brands leave white cotton effects in wool pieces perfectly clean; white silk effects are not tinged by the 3 G brand. Both dyes also important for slubbing, printing; with acetate of chrome and fluoride of chrome, well defined print effects are obtained, excellently fast to fulling and hot water.

BRILLIANT CHROME SCARLET B D PDR., is a homogeneous, easily soluble color, which, when printed on cotton with acetate of chrome, yields very bright red and pink tones. The prints are of a rather good fastness to light and chlorine, and withstand also a slight soaping. The new color can be combined in various proportions with other chrome mordant colors. It is a dye of importance in all cases where simple and cheap methods of production have to be taken into account, for instance, cheap blouses and dress material, raised cloths, etc.

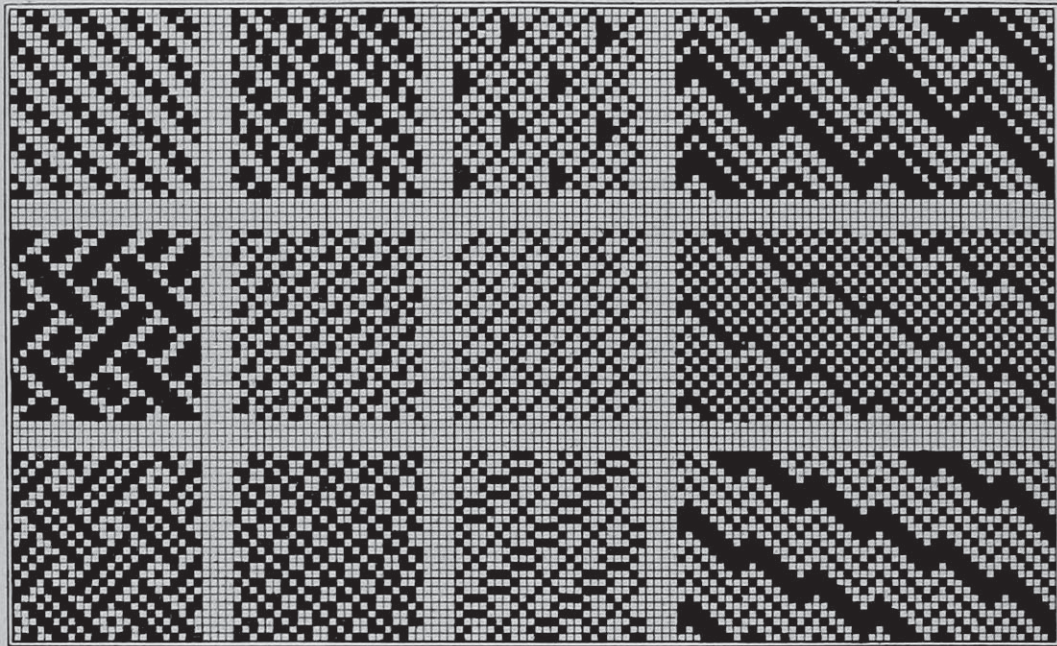
Important Patent Litigation.

Suits have been begun in the United States Circuit Court for Massachusetts by the Draper Company against The Stafford Company of Readville, Massachusetts, on patents to G. O. Draper, No. 527,014, and 596,487, alleging infringement by the feeler mechanism in the Stafford looms. Counsel for the Draper Co., we are informed, have been instructed to prosecute these suits vigorously, in order to obtain injunctions against further infringement.

The Trotter Mill, of South Manchester, Conn., which has been acquired by Cheney Brothers, will be used for the enlargement of their weaving department. Ninety-eight additional looms are being installed, the company being so rushed with orders that its various mills have begun to operate on an overtime schedule, the plant running until 11 o'clock at night.

DICTIONARY OF WEAVES*

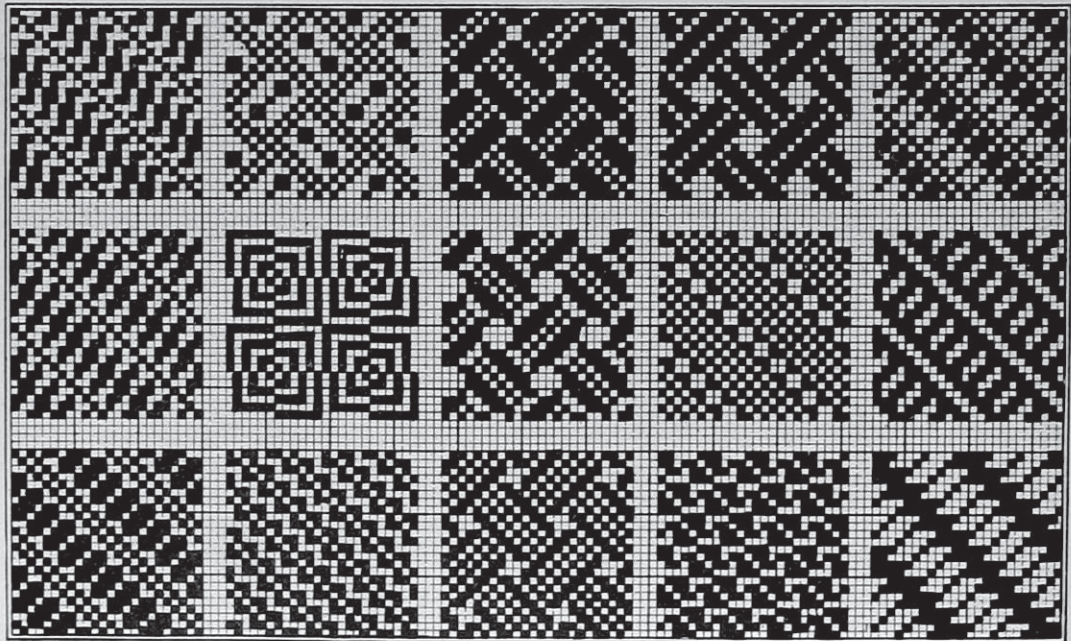
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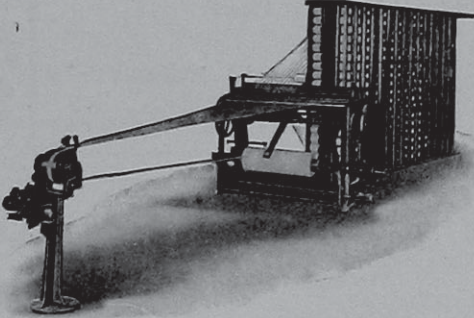
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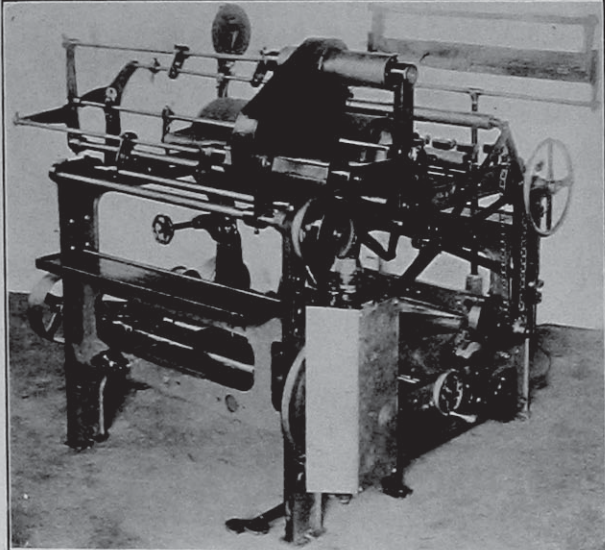
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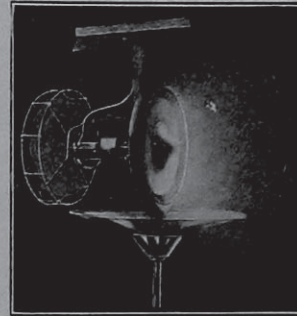
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Represents Real and Valuable Improvements
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No pressure pumps, compressors, wet cloths, strainers
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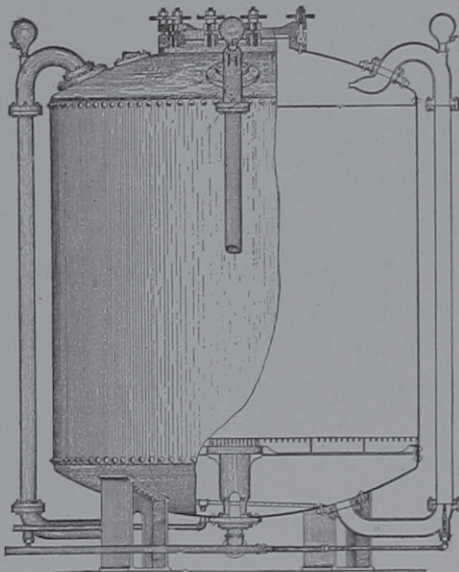
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Patent Bleaching Kiers
Dye and Bleaching Tanks, Steam Boxes, Boilers, Etc.
Plate Iron Work of Every Description

China-Clay for Cotton Finishing.*

With the exception of adhesive substances, the material used most extensively in the finishing of cotton goods is china-clay, a hydrated silicate of alumina. It derived its name from the fact that it was at one time brought from China as ballast. It occurs in several parts of the world, the chief localities being Cornwall and Devon, England.

Pure china-clay is quite white, of low specific gravity, very porous and has a greasy feel when rubbed between the fingers. It is used in finishing almost exclusively as a weighting agent, and is largely employed in light fabrics.

It is also used in warp sizing, and together with blue, to enhance the whiteness of the better class of bleached goods, as it is cheap and has a good body. This property, however, prevents its use for colored goods under all circumstances.

China-clay must be used in combination with a powerful adhesive, such as one of the various kinds of starch, to bind it to the fabric and to prevent it from dusting or being too easily washed out. The methods of applying china-clay are very simple, and yet there is a constant complaint that fats separate out on cooling, the china-clay sinking to the bottom. Even experienced finishers are of the opinion that this separation is sure to happen, and that it is unsafe to use the material again once it has cooled. Nothing is, however, more certain than that this separation never occurs provided the size has been properly boiled and made in the proper proportions.

China-clay is a very porous body, and readily absorbs fat and holds it if it is not hindered from doing so by the

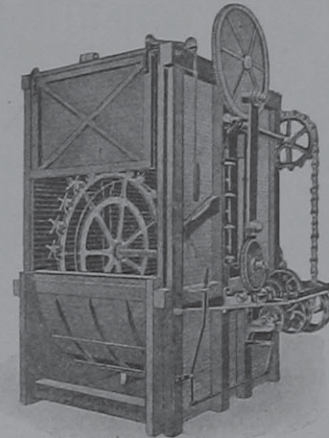
*E. Uhler, in Leipziger Färber Zeitung.

20 PER CENT. SAVED

Silk manufacturers should realize the economies in dyeing obtained by the use of the Klauder-Weldon Silk Skein Dyeing Machines.

Fully twenty per cent. in the waste produced in winding, besides seconds in weaving, is saved by their use.

These are facts. Once perceived by the silk manufacturers, they will require their dyers to use these machines.



Simple to operate and are made of the best materials and by the best skilled labor.

Will handle fine tram or skein singles without any damage to the fibers.

SILK SKEIN DYEING MACHINE

These machines will do perfect work on all qualities and colors of silk, both reel and spun.
Made in sizes to dye from 25 to 200 pounds per batch.

The Klauder-Weldon Dyeing Machine Company
Huddersfield, England AMSTERDAM, N. Y.

presence of starch. The china-clay and the fats should first be boiled together by themselves, and the starch and its water added afterwards. The china-clay must, of course, be mixed with water first of all. If as much fat is used as the clay can take up, and if the latter is pure, the heaviest dressing can be applied without any fear of giving a hard feel to the goods.

The degree of loading must be regulated by the amount of adhesive, for no more clay can be used than can be fixed to the fabric by the starch. Inattention to this rule involves waste of the clay, and makes the goods dusty.

In bluing the finishing mass, regard must be had not only to the covering power of the clay, but to the degree of transparency of the starch paste, and it is a mistake to use merely ordinary coal-tar dyes, as is so often the case.

To bring up the white of the china-clay and to make the starch opaque, nothing is so suitable as a body color, and ultramarine should be used if the mass is alkaline or neutral, and Prussian blue if it is acid.

For coloring the size, dyewoods are best—logwood for grey and black, quercitron alone or in combination with logwood for bright blacks, and combinations of quercitron and cutch for mode shades.

To waterproof cloth, the latter is often impregnated with solutions of metallic salts. These are apt to corrode the fibres. For this reason, when inspecting rain cloths, umbrella cloths and rubber coated cloths, examine the same carefully with reference to any corroding.

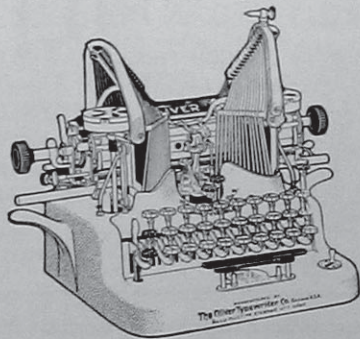
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Manufacturers of Sizing and Finishing Compounds for all Kinds of
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The OLIVER TYPEWRITER CO.
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For the purpose of ascertaining if a parity cannot be established between the price of cotton and the selling price of yarns a committee representing the North Carolina cotton manufacturers left for New York city November 11th to hold a conference with the yarn commission men. The mill men believe that the commission men, who hold a strategic position between the manufacturer and the buyer, can aid the Southern mills in putting yarns on a more profitable basis, the selling price at this time being ruinous to the manufacturers.

VICTORIA SIZES

A Pamphlet containing Descriptive Matter and Receipts

for the SIZING of Cotton, Woolen and Worsted Warps, and the FINISHING of Cotton, Silk and Mercerized GOODS

Will be forwarded, complimentary, postage paid, to persons interested. Address

H. A. METZ & CO., 122 Hudson Street, New York City

THE "L" MODEL NORTHROP LOOM

for Broad Sheetings.

Orders and shipments of this loom for the last year aggregate 6,000 and when all are delivered, a large proportion of the wide sheetings of this country will be woven on Northrop looms; the mills thus equipped reduce the cost of weaving, and the weavers at the same time can make the same or increased pay under improved conditions.

The object of sizing warp yarns is to smoothen its surface, *i. e.*, lay protruding fibres to the body of the thread, at the same time strengthening the thread so that it will weave well in the loom.

The elasticity of a yarn depends on the length of its staple, the evenness of the thread, the twist per inch, whether the yarn is sized or not, and if so, quality and quantity of size added, and finally the per cent of moisture the yarn contains, while being tested.

In last month's issue, we illustrated and explained on pages 101 and 102 a novel "Sweep Stick Adjusting Attachment." The same is the invention of Mr. J. H. Malley of Harrisville, R. I. We had a chance this week to inspect the attachment more in detail and the same certainly has several points of merit over former similar devices, one of them being that it is the first device of this kind ever invented whereby the power on the stick can be conveniently regulated while the loom is running.

Mercerizing, if properly carried on, increases the tensile strength of the cotton, *i. e.*, if care is taken to keep the temperature of the liquor below 70 deg. F.

A. W. BUHLMANN, TEXTILE ENGINEER, New York

487 BROADWAY, (Silk Exchange Building)

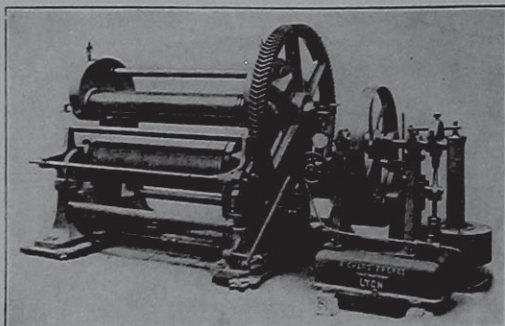
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Specialty:

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for Cotton, Woolen, Worsted, Plush, Velvet, Corduroy and Silk Fabrics : : :

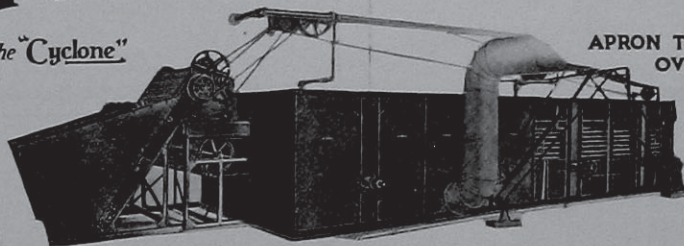
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OVERCOME BY

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PLUSHES, VELVETS, CORDUROYS, CARPETS,
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Chemical Management

Many manufacturers do not get the best results from their factories, because they do not make use of the chemist. They have not enough work to keep a chemist constantly employed, and so do not employ one at all.

I serve as *Chemical Manager* in such cases. For a fixed monthly sum I take entire charge of the chemical work of a manufacture. This includes testing and analysis of supplies and raw materials, improvement of processes and products, with consequent reduction of manufacturing costs; recovery of wastes; investigation of complaints from customers; overcoming of difficulties in manufacture; working out new products, perfecting inventions, etc. This gives the manufacturer the benefit of my own supervision and experience, the services of a trained and competent corps of chemists, and the advantage of a well equipped laboratory.

Write For Full Particulars.

Fred'k J. Maywald, F.C.S.

CONSULTING CHEMIST

91 Pine Street --- New York City

MILL NEWS

Philadelphia. The Globe Machine and Foundry Company, of Frankford, is experimenting with perfecting their warper for the regular Worsted Trade. The affair promises to become a big success and in this way will somewhat revolutionize the making of worsted warps.

Thomas E. Brown, of the Brown Knitting Co., has sold his interest in the company to D. F. Harrington, of Harrington & Waring, 72 Leonard street, New York, the concern's selling agents. Mr. Gustav Rumpf, president of the Brown-Aberle Co., succeeds Mr. Brown as president of the Brown Knitting Co. W. Park Moore, treasurer of the Brown Knitting Co., has also assumed the duties of general manager, and has removed his office to the mill.

Mr. Brown will hereafter attend to selling direct the product of the Glen Knitting Co. and that of Thomas E. Brown & Son, both of which concerns have been sold heretofore through Harrington & Waring, who hereafter will sell the Brown-Aberle Co.'s product, as well as that of several other large full-fashioned hosiery mills.

H. Brinton Co., Philadelphia's most prominent builders of Knitting Machinery, are the only concern in its line

which has run complete and on full time during the past two (2) years, a feature which speaks volumes for their machinery.

The Glasgow Mills, of which A. H. Burham is the General Manager, is adding new Warping Machinery to its plant.

Jacob K. Altemus, Fourth & Somerset Sts., is rushed with orders. He is perfecting an Improved Winder, which when in the market will fill a long felt want in the Textile Industry.

The Roxford Knitting Co., Randolph and Jefferson streets, manufacturing men's flat balbriggan underwear, have purchased additional properties located on North Randolph street and joining their plant, and upon which they will erect a large addition to the present plant. The new structure will consist of a seven-story building, 135 by 90 feet, with basement, of concrete construction and brick facing. Philadelphia's well-known construction firm, *The William Steele & Sons Co.*, have the contract for the erection of the new plant.

Operation has been started by the Boulevard Knitting Mills with fifty knitting machines on 188 to 200 needle cotton goods.

The C. H. Masland & Sons Carpet Mills will erect a 70 by 134 brick addition to their present plant.

Marshall Bros., Manufacturers of Spools and Bobbins, Adams & Frankford Aves., are overrun with orders. They are known all over the country for their superior products.

The Schadewald Mills are adding 50 looms to their plant of 520 looms. They are manufacturing a new line of serge and twill linings, made in 54-inch goods, instead of 32 inches wide, as is usually done.

Firth & Foster, America's most prominent Dyers and Finishers of Piece Goods, have all the work they can possibly handle. Besides their regular line of Woolen, Worsted, Silk and Unions, this firm is known all over the country for the dyeing and finishing of Novelties, and in which line the concern has a world wide reputation.

Allentown, Pa. The charter of the Standard Knitting Company, of this city, has been received. The incorporators are De Forrest F. Bast, Elmer S Hinkel, William S. Schlegel and Amos C. Krasley.

Chester, Pa. The Chessaquaque Silk Co. is installing additional looms, and it has been but a short time since other additional machinery was installed. There is still plenty of space in the mill to double the present capacity, and as the demand increases and it becomes possible to get the help, the force will be increased until the entire plant is occupied.

(Continued on page xvi.)

JOHN C. EDWARDS NATHAN HEARD LOUIS C. SMITH

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 Textile Work a Specialty

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 Different from the usual junk.
Natural Round Water-Grown Cedar and Special Hardwoods
 We have cultivated and manufactured millions during 25 years and can save you money. Satisfied customers everywhere. We have "sumthin'" for you, Mr. Dyer—write us:
E. M. HAEDRICH, Mariner & Merchant Bldg., Philadelphia, Pa.

KILBURN, LINCOLN & COMPANY
 LOOMS FOR
 COTTON AND SILK WEAVING
 FALL RIVER, MASS.

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The number is ever increasing.
 There is a good reason why.

THE SCHAELLIBAUM GRID

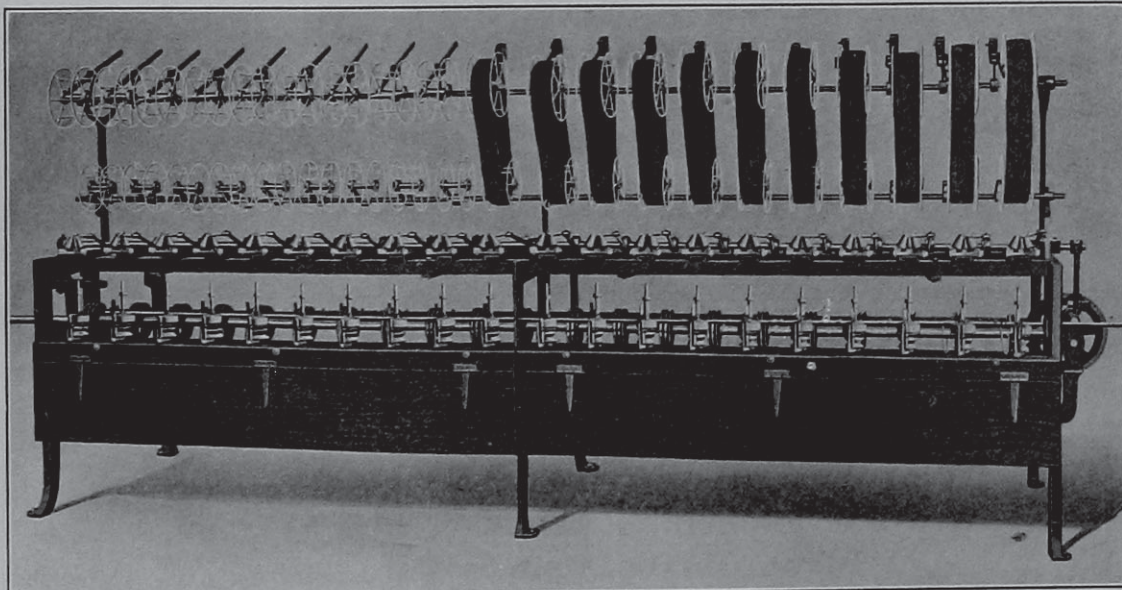
The grid with a comb is getting in general use all over the country. It does the work. You get better cleaning and lose less cotton in the process than by any other grid. : : : : :

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 Manufacturers of
BOBBINS and SPOOLS
 For Cotton, Woolen and Silk Factories
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**CHEMICALS AND APPARATUS
 FOR THE DYE TRADE**
J. & H. BERGE
 Best Bohemian Chemical Glassware and German Porcelain.
 C. P. Chemicals and Reagents, Chemists' Supplies of all kinds.
 95 JOHN STREET, NEW YORK

OSWALD LEVER CO., Inc., BUILDERS OF TEXTILE MACHINERY
 Lehigh & Mascher Sts. PHILADELPHIA, PA.



**This is the Most Suitable Machine for Winding Fine Cotton, Worsted, Dupion and Silk
 On Paper Tubes or Quills Equally Successfully**

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CIBA VIOLET CIBA SCARLET
CIBA RED CIBA HELIOTROPE

Vat Dyes for Cotton Dyeing and Printing—also for Wool and Silk.

CIBANON YELLOW, BROWN, ORANGE

Vat Dyes for Cotton Dyeing—Fast to Light, Chlorine and Washing.

Made by SOCIETY of CHEMICAL INDUSTRY, BASLE

A. Klipstein & Co., : New York, : American Agents

Fleetwood, Pa. Fleetwood is to have another hosiery mill, of which Frank R. Ritter will be the proprietor.

New Cumberland, Pa. The working force of the Susquehanna Woolen Company has been doubled, bringing the total number of employes up to 127. Day and night relays will soon be arranged.

Norristown, Pa. The Phoenix Knitting Co., has increased its capitalization from \$5,000 to \$30,000.

Northampton, Pa. The Allen Silk Company has been incorporated with a capital of \$50,000.

Camden, N. J. Howland Croft Sons & Co., manufacturers of worsted yarns, have installed another new electric engine. The company now has a battery of three big electric engines.

Jersey City, N. J. The Republic Cotton Mills has been incorporated with a capital stock of \$600,000, for the purpose of manufacturing cotton fabrics.

Newark, N. J. The Newark Textile Co. has been incorporated with a capital stock of \$100,000; they will manufacture Silk and other Textile Fabrics.

Canisteo, N. Y. The Silk Mill of this place has received a consignment of new silk throwing machinery from abroad. The Canisteo silk factory has been run almost continuously since its establishment four years ago.

Jamestown, N. Y. The two-story addition to the Empire Worsted Mills will be completed by December 1. Sixty-two new looms, 20 spinning frames, 6 twisting frames and a set of drawing machines will be added to the present plant.

Ogdensburg, N. Y. The Silk Company of this place is to add new looms

to its plant, giving employment for about one hundred additional operatives.

East Dedham, Mass. The Merchants' Woolen Mill property has been sold by Edwin D. Thayer, Jr., of Worcester, to the Hodges Finishing Company, Hon. Charles O. Brightman, of New Bedford, president, with a capitalization of \$100,000. The assessed valuation of the entire plant is \$200,000. The mills have been idle for several years, but the new owners will thoroughly equip them with the latest and most improved machinery, and will on January 1, 1910, inaugurate the new enterprise of bleaching, dyeing, mercerizing and general finishing of cotton piece goods. One hundred and fifty hands will be employed at the start.

Fall River, Mass. The Bourne mills have started on the addition to their No. 1 mill, 105 feet long and 40 feet wide, three stories in height. Preparatory cotton spinning machinery will be installed.

Huntington, Mass. Don V. Messer, lately of Winooski, Vt., Stafford Springs, Conn., and Madison, Me., has taken charge of the Designing Department of the Huntington Mfg. Co.

Lawrence, Mass. The new million-dollar worsted spinning mill of the Arlington Mills has been roofed in, and the work of installing the machinery commenced.

Work was started October 15th on the foundation of an addition to the cotton department of the Arlington Mills, which will be used for winding, quilling, warping and finishing of cotton yarns. It will extend north from No. 4 cotton mill and will be 140 feet long by 100 feet wide and four stories high, costing about \$150,000.

Lowell, Mass. The Bigelow Carpet Company will build three new mills along the edge of the Pawtucket Canal to replace a long stretch of old buildings. The mills are to be numbered 17, 18 and 19. Mill number 17 is to be a dye-house, two stories high, 277 feet by 46 feet. Mill number 18 will join mill 17, but will be five stories, 124 feet by 46 feet. It will be a laboratory, dye, paint and belt shop and storage house. Mill number 19 is to be another dye-house, three stories, 285 feet by 46 feet.

Methuen, Mass. The Atlas Manufacturing Company of this place and North Salem, N. H., has been incorporated in this State to manufacture and sell all kinds of yarns, cotton and woolen goods. The capital stock is to be \$50,000.

New Bedford, Mass. Plans have been drawn and work started on the construction of the plant for the Apponegansett Company, to be located on Clark Point. The charter granted to this \$500,000 corporation suggests a wide departure in the variety of goods to be manufactured.

Salem, Mass. The Naumkeag Steam Cotton Company will not curtail its production; it has a large supply of stock on hand and its product is sold ahead.

Wilkinsonville, Mass. The Army & Navy Cotton Duck Company is to erect a new dye house 100 by 40 feet.

Williamstown, Mass. The mill of the John S. Boyd Company, formerly the Boston Finishing Works, has started and by the middle of next month it is hoped to have the plant in full operation. The concern will manufacture corduroys and velvets of all kinds and when running at its full capacity will employ

(Continued on page xviii)

WM. ALLEN SONS CO.

65 Green Street, WORCESTER, MASS.

Patent Bleaching Kiers

Dye and Bleaching Tanks

Steam Boxes, Boilers, Etc.

Plate Iron Work of Every Description

BOOKS ON TEXTILE SUBJECTS.

Wool Dyeing (Part 1), by W. M. Gardner. Price \$2.00.
TABLE OF CONTENTS: Fibre, Scouring, Bleaching, Water, Mordants, Assistants and other Chemicals.

Wool Dyeing (Part 2), by Gardner and Knaggs. \$3.00.
TABLE OF CONTENTS: Classification of Coloring Matters; Natural Dyestuffs: Logwood, Redwoods, Madder, Cochineal, Kermes and Lac-dye, Orchil; Cudbear and Allied Coloring Matters, Yellow-Dyes, Indigo; Artificial Dyestuffs; Classification of Coal-tar Dyes, Artificial Mordant Dyes, Acid Mordant Dyes, Acid Dyes, Direct Cotton Dyes Suitable for Wool, Basic Dyes, Dyes Applied by Oxidation, Reduction and other Special Processes, Metallic Dyes, Methods of Dyeing Wool in Various Forms, Suitability of Dyes for Different Classes of Work, The Theory of Wool Dyeing.

The Dyeing of Cotton Fabrics, by F. Beech. Price \$3.00.
TABLE OF CONTENTS: Fibre; Action of Alkalies, Acids and Oxidising Agents; Bleaching; Dyeing Machinery and Manipulations; Principles and Practice of Cotton Dyeing; Dyeing Unions, Cotton-Wool, Cotton-Silk; Washing, Soaping, Drying; Testing Color; Experimental Dyeing and Comparative Dye Testing.

Silk Dyeing Printing and Finishing, by G. H. Hurst. Price \$2.00.

TABLE OF CONTENTS: Fibres; Boiling Off; Bleaching; Dyeing Blacks and Fancy Colors; Weighting; Dyeing Mixed Fabrics; Printing; Dyeing and Finishing Machinery and Processes.

Dyeing of Textile Fabrics, by Hummel and Hasluck. Price \$2.00.

Three Volumes Bound in One.
Vol. 1: Textile Fabrics and Their Preparation for Dyeing.
Vol. 2: Coloring Matters for Dyeing Textile Fabrics.
Vol. 3: Mordants, Methods and Machines used in Dyeing.

Wool, Cotton, Silk; Fibre to Finished Fabric, by Posselt. Price \$7.50.

TABLE OF CONTENTS: Raw Materials; Preparatory Processes; Carding, Drawing, Spinning and Twisting; Winding, Warping; Weaving Machinery and Supplies; Knitting, Processes and Machinery; Dyeing, Bleaching, Mercerizing, Processes and Machinery; Finishing, Processes and Machinery; Heat, Power and Transmission.

Color in Woven Design, by R. Beaumont. Price \$7.50.
This work contains on 32 plates 126 colored illustrations of Diagrams illustrating the Mixing of Colors; Fancy Yarns, Fancy Cassimeres, Worsteds, Trouserines, Coatings, Suitings, Ladies Dress Goods, Cloakings, Fancy Cotton and Silk Fabrics. Besides said 126 colored illustrations, the work contains 203 illustrations, in black and white, of Weaves and Color-Effects in Fabrics, etc., accompanied by 440 pages of reading matter.

Chemistry of Dye-Stuffs, by G. von Georgievics. Price \$4.50.

A textbook presenting to the student in as condensed a form as possible the extremely wide domain of the modern chemistry of dye-stuffs; bringing into prominence all the relations known to subsist between the various dyes and groups of dyes, as well as the connection between color and constitution, since the proper appreciation of these relations forms the main object of color chemistry.

The Jacquard Machine, by E. A. Posselt. Price \$3.00.
TABLE OF CONTENTS: Different parts of the Jacquard Machine and its Method of Operation; The Jacquard Harness; The Comberboard; Tying up of Jacquard Harnesses for all kinds of Fabrics, Modifications of the Single Lift Machine; Stamping, Lacing and Repeating of Jacquard Cards; Practical Hints on Jacquard Designing.

Testing of Yarns and Textile Fabrics, by J. Herzfeld. Price \$3.50.

A Guide for the Manufacturer and Large Purchaser, who observe definite specifications to insure standard material and workmanship; also giving a collection of tests, both of physical and of chemical nature.

Woolen Spinning, by C. Vickerman. Price \$1.75.
TABLE OF CONTENTS: Fibre, Supply, Sorting, Scouring and Drying, Bleaching and Extracting, Dyeing, Burring, Mixing and Oiling, Carding, Spinning, The Mule, Miscellaneous.

Wool Combing, by H. Priestman. Price \$1.50.
TABLE OF CONTENTS: Fibre, Washing, Water, Carding, Preparing, Intermediate Processes, Combing, Finishing, Tops and Top Testing.

Silk Throwing and Waste Silk Spinning, by H. Rayner. Price \$2.50.

A Treatise on the Principles of Silk Throwing and Waste Silk Spinning, with Illustrations and Descriptions of the Machinery used.

Textile Calculations, by E. A. Posselt. Price \$2.00.
A Complete Guide to Calculations Relating to the Construction of All Kinds of Yarns, Fabrics, and the Analysis of Cloth.

Cotton Spinning, by T. Thornley. 3 Volumes. Price \$6.50.
A Complete Self-Instructor (with Questions and Answers) on this subject, treating machinery and processes as used abroad.

The above books, as well as any other books on Textile Subjects, no matter where published, sent charges prepaid. Remittances should be made by Check or Money Order, or in Registered Letters. Not responsible for money lost, when otherwise sent.

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MANUFACTURERS OF

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Silk Ribbon Looms

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SUBSTANTIAL EQUIPMENTS NOW IN PROCESS.

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K-A Dept.

Mossberg Wrench Company

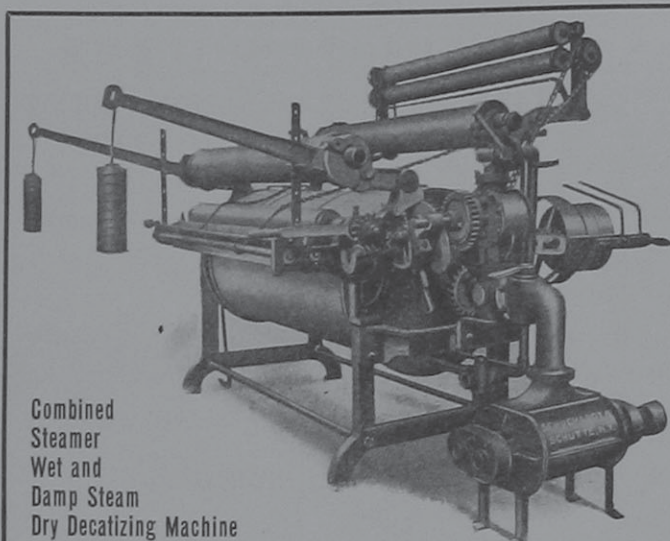
Central Falls, R. I.

STERLING SOFTNER

has no equal for Cotton Goods—Knit or Woven

NATIONAL SOAP MFG. CO.

Sedgley Avenue West of 17th Street, PHILADELPHIA



Combined
Steamer
Wet and
Damp Steam
Dry Decatizing Machine

Carbonizing, Dyeing and
Mercerizing Machinery

Examination Tables
(3 Styles)

Schuchardt & Schütte

90 West St., NEW YORK

Woolen and Worsted
Finishing Machinery

New Spinning
Frame

MANUFACTURERS
OF
ANTHRACINE



COAL TAR
PRODUCTS
ANILINES

upward of fifty hands. The entire plant has been equipped with new machinery. The looms are the Draper Co.'s latest pattern.

Woonsocket, R. I. The capacity of the French Worsted Spinning Mill will be more than doubled when the plans for which the firm has arranged are completed. The firm, which has been located in Woonsocket only a little more than a year, plans to build an addition in the rear of the present factory on Fairmount street, which will be larger than the present buildings. When completed it is estimated that 25,000 spindles will be operated and between 500 and 600 hands employed.

The two-story brick factory formerly owned by the Perforated Pad Company has been purchased by Jarret & Spencer, two practical mill men of this city. They are to operate the plant in the manufacture of worsted yarn by the Bradford process.

Derby, Conn. The Paugasset Mills, operated by the executors of Charles B. Alling, have resumed work after having been closed for two and a half months.

Mystic, Conn. Work on the new bleachery of the Royal Linen Mills is being rushed along, and it is hoped to have the plant ready for running by December 1. As soon as the bleachery is completed, work will be commenced on the main factory on the Royal Linen Mills, which will be a four-story brick building, 400 feet by 50 feet.

Staffordville, Conn. The Garland Woolen Company has acquired the property of the Amidon Machine Shop, which it will use in connection with its present plant.

Winsted, Conn. The Winsted Hosiery Company Inc., is having plans drawn for an addition to its plant. A four-story brick structure, 32 by 90 feet, will be erected.

Manchester, N. H. During the last eleven months, the Amoskeag Manufacturing reports that goods to the value of \$16,156,710 were manufactured by them, at a profit of \$782,417.

Winooski, Vt. By a vote of the town of Winooski the projected worsted spinning mill of the American Woolen Company, to cost \$300,000, will be exempt from taxation for five years from April, 1911. The construction of the mill will commence at once, and building materials are on the way. The mill will spin worsted yarns, and when constructed will make the Burlington Mills one of the most complete manufacturing plants in the country.

Auburn, Me. Emil Dick, formerly assistant superintendent of the Bates, of Lewiston, is acting as agent of the Barker Mill here.

Norfolk, Va. A Knitting Mill Corporation has been chartered with a capital stock of \$25,000, by G. P. Peed, W. L. Lamerdin and H. R. Furr.

Suffolk, Va. The Bell Hosiery Mills

has been incorporated with a capital stock of \$10,000 by R. H. Rawles, J. H. Mitchell and A. Woolford.

Virgilina, Va. The Virgilina Hosiery Mills has been organized. They are to manufacture men's half hose and employ 30 operatives.

Burlington, N. C. The Murbola Hosiery Mill Co. has been incorporated with a capital stock of \$50,000, to establish a hosiery mill.

Canton, N. C. D. J. Carpenter and associates are reported as organizing a company with a capital stock of \$50,000 to build a knitting mill here. Mr. Carpenter is the owner of the Newton Hosiery Mills, operating 350 knitting machines, dyeing and finishing equipment, etc., at Newton, N. C.

Concord, N. C. The Magnolia Mills Company will build a 50 by 70-foot addition and install additional machinery.


Creedmoor, N. C. The Standard Hosiery Mills Company will increase its capacity.

Durham, N. C. The Pearl Cotton Mills will build an additional structure and install looms for weaving wide sheetings. This building will be one story high, 50 by 110 feet.

Graham, N. C. The River Falls Cotton Mills Company has been incorporated with a capital stock of \$20,000 by J. W. Menefee and associates. It will build a plant to be operated by water power from the Haw River.

We are prepared to prove that Sodium Peroxide for Bleaching animal & vegetable fibres or their mixtures is the best.

Roesler & Haslach Chemical Co. New York



The Graham Hosiery Mills Co., has been incorporated by Messrs. Blackmon, Hadley and Thompson.

Jamestown, N. C. The Oakdale Cotton Mills is reported to erect an addition and install machinery to double capacity.

Warrenton, N. C. The Peck Manufacturing Company has begun the erection of its warehouse and will soon begin its mill building, 132 by 195 feet, with monitor roof and tar concrete floor.

Wilson, N. C. The Runnymede Mills No. 3 has purchased a building and is installing 100 knitting machines, 20 loopers, ribbers to suit and other necessary machinery.

Anderson, S. C. The Anderson Cotton Mills will expend \$50,000 for new additional machinery, this to include 2,000 spindles, revolving flat cards, drawing machinery, fly frames, etc.

Blacksburg, S. C. The Whitaker Cotton Mills has resumed work, new machinery having been installed during the shut-down.

Edgefield, S. C. The addition to the Beaver Dam Mills is near completion; 5,000 spindles are being installed.

Greenville, S. C. The Union Bleaching & Finishing Company is to increase its capacity to about 50 per cent; contracts for machinery having been awarded.

Greer, S. C. Work on the building of the Greers Mfg. Co. is steadily progressing. 10,240 spindles and 280 looms are being installed.

Orangeburg, S. C. The number of spindles now in operation at the Orange

Cotton Mills is 15,000, and, although the mill has been hampered before the addition of the 1,500 spindles, it is now enabled to supply the looms of the mill. Sixty-two yards of woven cloth per day is the average production of each loom in operation at this mill.

Rock Hill, S. C. The Flint Mill is installing 2,000 spindles, 6 cards, and 2 cone winders.

Union, S. C. The Monarch Cotton Mills will hold its annual meeting November 22, and when then the increase of its capital stock from \$650,000 to \$1,150,000, in order to be able to enlarge the plant, will be considered.

Loudon, Tenn. Work has been started by the Loudon Hosiery Mill for a \$10,000 addition to its plant. The mill has been running day and part of the night, in order to fill orders.

Nashville, Tenn. The Warioto Cotton Mills will add machinery to increase equipment to about 25,000 spindles and 675 looms.

Newport, Tenn. C. M. Cooke, Jr., of Brevard, N. C., and W. C. Cooke, Spartansburg, S. C., have leased the Bellevue Cotton Mills here. This plant contains 3,800 spindles for yarn production, and the lessees will install machinery for knitting hosiery.

Winchester, Tenn. The Davis Hosiery Mills have begun the erection of their mill, which is to be a two-story structure, 40 by 120 feet.

Canton, Ga. The Canton Cotton Mills is contemplating the erection of an addition and will then install 10,000 spindles and 300 looms.

Chattahoochee, Ga. The Whittier Mills Co. are erecting a building which will accommodate 5,000 spindles and its complimentary machinery.

Columbus, Ga. The Columbus Manufacturing Company is building a new mill, somewhat larger than its original building in which 30,000 spindles are now turning.

The Hamburger Cotton Mills are practically doubling their capacity.

The Bibb Manufacturing Company has installed new machinery and has placed new orders for about \$25,000 more of equipment.

The Georgia Manufacturing Company is expending for machinery \$50,000 or more.

The Perkins Hosiery Mill has built an addition.

Covington, Ga. D. A. Thompson, C. G. Smith, T. G. Callaway, J. E. Phillip, and others of this city intend to form a company with a capital stock of \$100,000 to build a cotton mill.

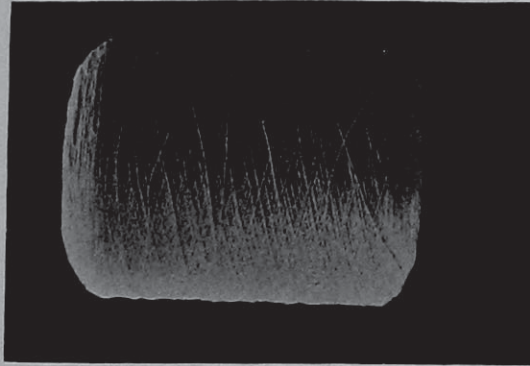
Fort Valley, Ga. The Fort Valley Yarn & Hosiery Mill, it is rumored, intends to increase its equipment of machinery.

Greensboro, Ga. The Mary Leila Cotton Mill contemplates enlarging its plant at an approximate cost of \$100,000.

Gonzales, Texas. The Gonzales Cotton Mills contemplate adding 2,200 spindles and 50 looms to their present equipment.

Marinette, Wis. The Marinette Knitting Mill Co. will build a new two-story factory, the same to be located on the corner of Pierce Ave. and Daggett Street.

WOONSOCKET YARN GASSING MACHINES



THE WIND

Woonsocket Machine & Press Company, WOONSOCKET,
R. I.
Builders of Cotton and Woolen Machinery

GRAN-CARB-SODA

THE HIGHEST GRADE OF
SODA CRYSTALS MADE

"The Best is Good Enough."

THE HOLBROOK MFG. CO.

470 Washington Street
NEW YORK

MILL SOAPS

Fast Colors for Cotton and Wool
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Indigo M L B

H. A. METZ & CO.

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San Francisco, 580-582 Howard St. Montreal, 170 McGill St.
Laboratories: Newark, N. J.

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FARBENFABRIKEN OF ELBERFELD CO.,

IMPORTERS OF ANILINE & ALIZARINE COLORS

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NEW YORK

117 Hudson Street

New England Butt Co.

Providence, R. I.

Braiding Machinery, both American and German types, for making Dress Braids, Shoe and Corset Laces, Underwear, Trimmings, and all kinds of Round and Flat Braids.

TRADE MARKS RELATING TO THE TEXTILE INDUSTRY.

REGISTERED OCTOBER, 1909. (Complete)

1. Piece Fabrics of Silk, Linen, Cotton, Wool or Admixtures of these Fibres.—Augustus H. Sands, New York.

2. Negligée and Stiff Shirts, Undershirts, Drawers, Night Shirts and Pajamas.—Hamburger, Wolf & Weiller, Baltimore, Md.

3. Suitings, Shirts and Sheetings.—L. S. Baumgardner & Co., Toledo, Ohio.

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

5. Silk Piece Goods.—The Valentine & Bentley Silk Co., Newton, N. J.

6. Corsets, Corset Waists, Brassières and Underwaists.—The H & W Company, Newark, N. J.

7. Silk Piece Goods and Silk Mixed Piece Goods.—Susquehanna Silk Mills, New York.

8. White, Printed and Dyed Textile Fabrics of Cotton, Wool and Silk.—Arnold Print Works, North Adams, Mass.

9. Cotton Blankets.—German-American Co., Draper, N. C.

10. Bunting.—United States Bunting Co., Lowell, Mass.

11. Cotton Sheetings, Shirts, Drills, Osnaburgs, Ducks and Various Colored Cotton Cloth.—Stonewall Cotton Mills, Stonewall, Miss.

12. Knitted Jackets, Coats, Vests, Toques, Sweaters and Skirts.—The Standard Knitting Co., Cleveland.

13. Hosiery and Knitted Vests, Undershirts, Drawers and Union Suits.—Standard Knitting Mills Co., Brooklyn, N. Y.

14 and 21. Hosiery.—Richmond Hosiery Mills, Chattanooga, Tenn., and Rossville, Ga.

15, 16 and 17. Unbleached Sheetings, Shirts, Drills and Flannels woven of Cotton Yarn.—China & Japan Trading Co., Ltd., New York.

18. Overalls.—Ely & Walker Dry Goods Co., St. Louis.

19. Canvas used for Interlining Garments, said Canvas being made of Flax, Linen, or Jute.—Wm. Alsberg & Co., New York.

20. Broad Silk in the Piece, Cotton Piece Goods and Silk and Cotton Piece Goods.—Rogers & Thompson, West New York, N. J.

22. Sash Cord, Twine, Rope, Bell Ropes and Clothes Line.—Puritan Cordage Mills, Louisville, Ky.

23. Rugs, Art Squares, Mattings, Wall Coverings, Box Covers and Furniture Covers made wholly or in part of woven Goods in which Fibre, Wool, Cotton and Jute may be employed.—American Fibre Matting Co., Lawrence, Mass.

24. Coats, Jackets, Capes, Muffs, Scarfs, Caps, Gloves and Collarettes, all made of Fur.—Kohn & Baer, New York.

25. Fish Lines.—Chaffee Manufacturing Company, Willimantic, Conn.

26. Overshirts, Overalls, Pants and Coats.—L. S. Baumgardner & Co., Toledo, Ohio.

27. Men's Overalls, Coats and Jumpers, Pants and Dress, Work and Negligée Shirts—Rice-Stix Dry Goods Co., St. Louis.

28. Woolen Cloth.—American Woolen Company, Boston.

29. Women's Drawers, Night Gowns, Chemises, Combination Suits, Outerwaists and Underwaists, Outerskirts and Underskirts, Corset Covers, Dressing Sacks, Bloomers, Shirt Waists, Princess Slips and Petticoats.—William Danenbaum, New York.

30. Diaper Cloth.—Albert D. Smith, Orange, N. J.

31. Ladies' Outer Skirts, Petticoats, Shirt Waists, Cloaks and Outer Suits.—Gilbert Mfg. Co., New York.

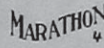
32. Dyestuffs.—Badische Anilin & Soda Fabrik, Ludwigshafen-on-the-Rhine, Germany.

33. Coal Tar Coloring Matters.—Badische Anilin & Soda Fabrik, Ludwigshafen-on-the-Rhine, Germany.

34. Chemicals used in Reducing, Discharging and Bleaching.—Badische Anilin & Soda Fabrik, Ludwigshafen-on-the-Rhine, Germany.



Tri-State 3



Directoire 5

Argus 6

Bengala 7

IDEALEAN 8

INDO-CHI-AM 9

STONEWALL 11



STANDARD 10



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NEVISLE 24

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Parfait 29

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ROYAL SOCIETY 35

35. Floss, Yarns, or Threads spun from Silk, Cotton Wool, Linen or other Fibres; also Textile or other Fabrics stamped with Embroidery Patterns, and Embroidered Articles made therefrom, and for Textile Braids.—Charles E. Bentley Co., New York.

By request of Manufacturers and Commission Merchants, all "New Trade Marks Relating to the Textile Industry" will appear monthly in this Journal; compiled in concise form for handy reference.

"Textile Designing Simplified."

The object of this chart is to show how easy weaves for all classes of Textile Fabrics can be constructed; it will be a search light in the misty matters in the field of designing Textile Fabrics. Keep this chart of weaves for reference. Millions of new weaves can be obtained by it. All weaves for Textile Fabrics have their foundation in Plain Twills and Satins.

PLAIN.—This weave and its sub divisions are explained on the chart in the top row by 16 weaves, the sub divisions covering common, fancy and figured Rib and Basket weaves.

TWILLS.—The foundation of constructing regular (45°) twills is shown by rows 2 and 3 with twenty six weaves, covering twill weaves all the way from 3 harness up to 13 harness. The sub divisions of twills are quoted next on the chart, being Broken twills, Skip twills, Corkscrews, Double twills, Drafting twills, Curved twills, Combination twills warp drafting Combination twills filling drafting, 63° twills, 70° twills, Wide wale twills, Entwining twills, Checker-board twills, Pointed twills, Fancy twills, thus covering every sub division of twill weaves possible to be made.

SATINS. are next shown, giving also their sub divisions, viz: Double satins and Granites. **HOW TO PUT A BACK FILLING ON SINGLE CLOTH** is shown below the satins by two examples, and at its right hand is quoted the principle of **HOW TO PUT A BACK WARP ON SINGLE CLOTH.**

On the bottom line are given the four steps for:—

THE CONSTRUCTION OF DOUBLE CLOTH, 2 @ 1; and above the same one example, with the arrangement 1 @ 1.

THREE PLY CLOTH is shown by one example.

HOW TO BACK SINGLE CLOTH WITH ITS OWN WARP is shown by two examples.

WEAVES FOR SPECIAL FABRICS are quoted: Tricots (warp, filling and Jersey effects), Rib fabrics, Honeycombs, Imitation Gauze, Velveteen, Corduroy, Chinchillas Quilts Plush, Double plush, Tapestry, Crape, Terry, Worsted coating stitching, Huckes, and Bedford cords

HOW TO WORK THIS CHART OF WEAVES.

CAPITAL LETTERS of references refer to the plain weave and its sub divisions.

SMALL LETTERS of references refer to twills and their sub-divisions.

NUMERALS of references refer to satins and their sub divisions.

Example.—How to ascertain the construction of the weave at the right hand top corner of the chart; being the figured rib weave marked C C? These two letters of reference mean that said figured rib weave is nothing else but the combination of the 2-harness 6 picks common rib weave warp effect C, and the 6 harness 2 picks common rib weave filling effect C'

Example.—The letter of reference *c*, underneath the first broken twill indicates; that the same is obtained from the $\frac{1}{2}$ 4 harness twill *c*, (third weave on the second row; in other words, letter of references below each weave of any of the various sub divisions refer always to the corresponding foundation weave.

Example.—Twill *q*, and *o*, are the foundation for the eight combination twills filling drafting, said common twills are drafted 1 @ 1, the different designs being obtained by means of different starting.

Example.—The wide wale twill *l' w'*, has for its foundation the 63° twills, marked *als* respectively *l'* and *w'*, the latter two weaves have again for their foundation respectively the common twills marked *l* and *w*.

Example.—Granites marked 8 have for their foundation the 8-leaf satin, such as marked 12 the 12-leaf satin.

Example.—Backed by filling *e* 8, means the common $\frac{2}{3}$ 4-harness twill *e*, (fifth weave on second row) and the 8-leaf satin is used in the construction of this weave.

Example.—The complete design of double cloth, marked *e* 8 A, means that the common $\frac{2}{3}$ 4-harness twill (*e*), the common plain (A) and the 8 leaf satin (8) are used in the construction.

Example.—Rib fabric A, indicates that the plain weave forms the foundation

It will be easy to substitute different foundations in constructing weaves for heavy weights. In reference to single cloth weaves we only want to indicate that by following rules shown in the chart, millions of new weaves can be made up from it.

Keep this chart on hand for reference. Only 144 weaves are given, yet they will guide you to make millions of new weaves.

