

# Posselt's Textile Journal

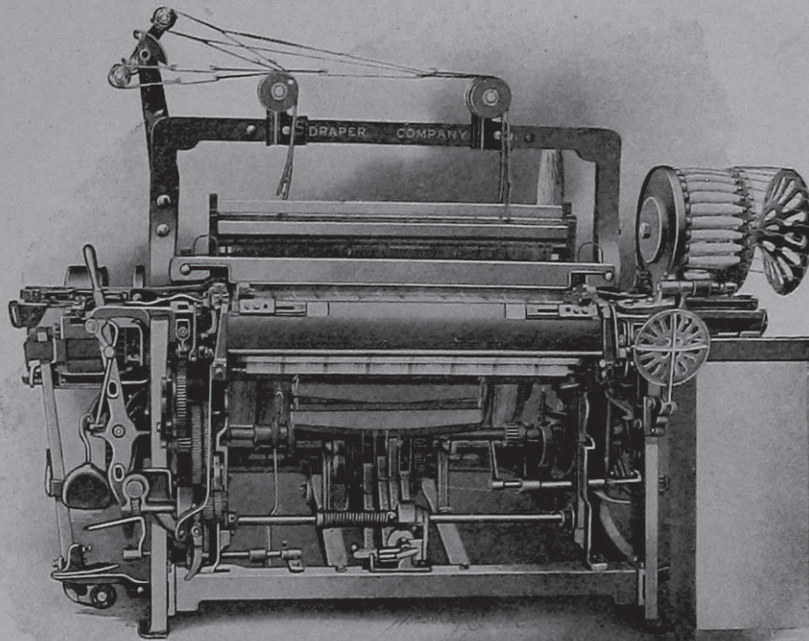
*A Monthly Journal of the Textile Industries*

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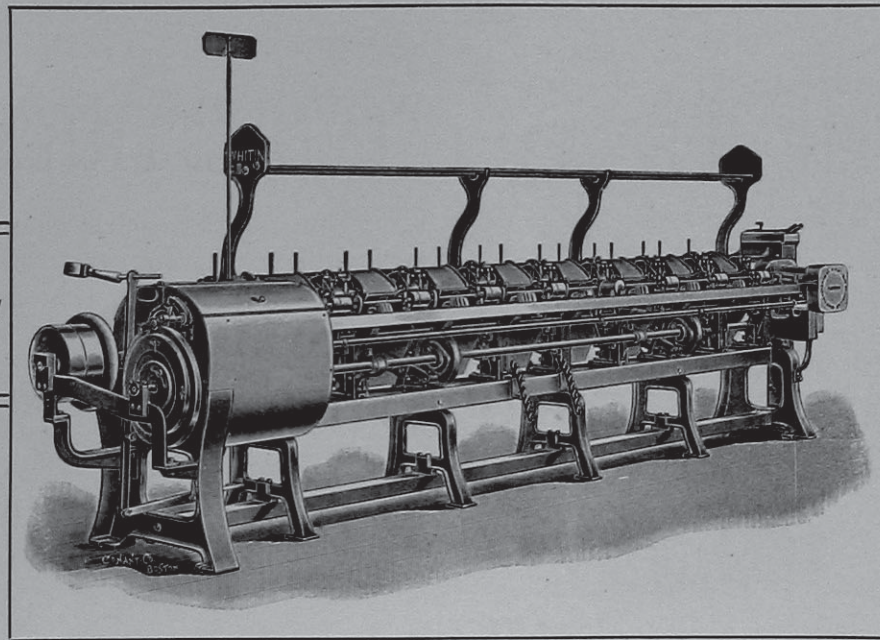
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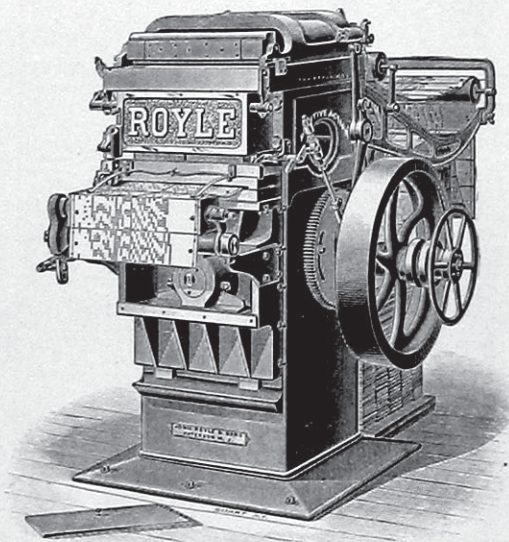
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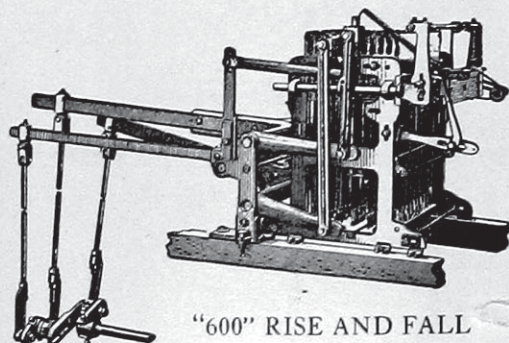
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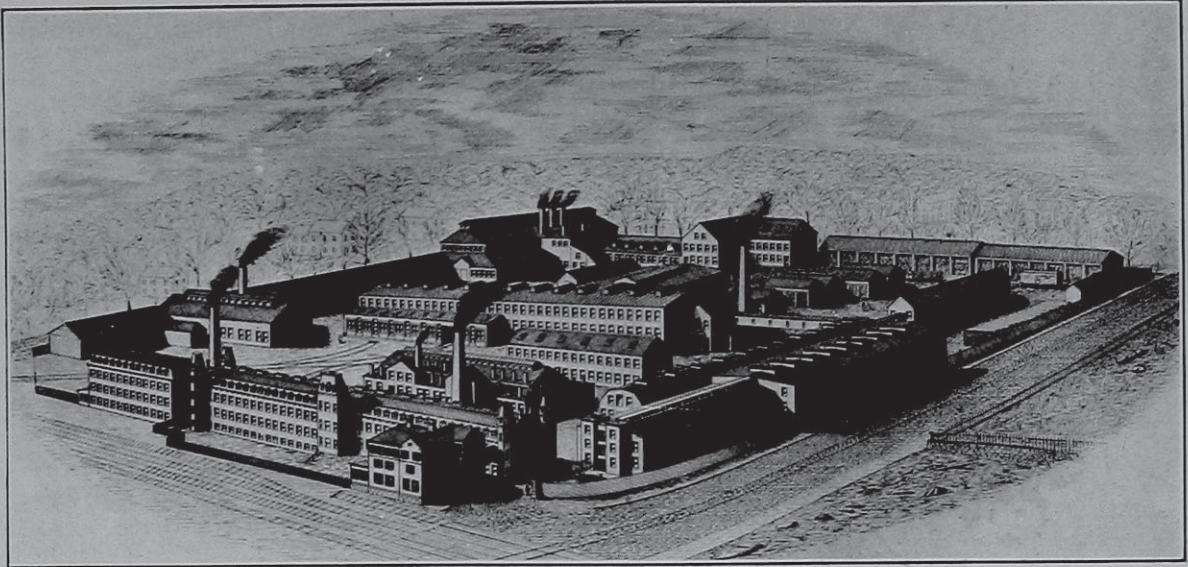
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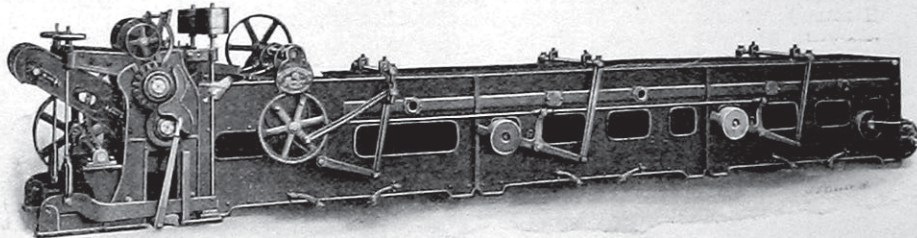
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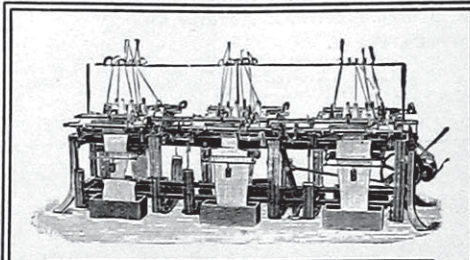
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# Posselt's Textile Journal

Vol. II.

April, 1908.

No. 4.

## Dictionary of Technical Terms Relating to the Textile Industry.\*

(Continued from page 240.)

### C

- CABAYA**:—An outer coat, of cotton and of a light texture, worn in the Dutch East Indies, also in the Levant and the Barbary States.
- CABECA**:—India silk of the finest texture.
- CAFTAN**:—A loosely fitting garment or coat, having long sleeves and girded with a sash, worn by Arabs and Turks.
- CALCIUM CHLORIDE**:—This is a by-product of chemical manufacture, and a very cheap and valuable weighting agent used in the finishing of cotton cloth. Its hygroscopic qualities tend to preserve a good handle while the goods are in stock. It disappears from the goods when they are washed, due to its solubility in water. It comes in the market calcined or in the crystallized state, the first being preferred by manufacturers, since in this state it keeps much better; however, it must be preserved in well-closed vessels. A drawback to its use is that goods finished with it are liable to mould.
- CALENDER**:—A machine used in the process of finishing all kinds of woven fabrics, imparting to them a perfectly smooth and equal surface; in some instances, to produce a lustre on the same, such as would be required on certain cotton and linen fabrics, or a wavy sheen, as in watered silk. The machine is comprised of two or more revolving cylinders or rolls, with their surfaces almost contacting, and between which the fabric is made to pass. These rolls are of various compositions, some are made of compressed paper, others of husk, etc., with cast iron cylinders as a base, turned exactly true.
- CALENDERING**:—The process by which fabrics are subjected to pressure between rollers, so as to smoothen and finish them.
- CALFSKIN SILK**:—A soft silk fabric, of recent production, imitating in color the outer skin of a calf. This effect is produced by printing the warp. The blendings run from a brown, fawn, etc. to a pure white.
- CALICO**:—A term now generally applied to any printed cotton cloth that is coarser than muslin. Originally, the name given to a printed cotton fabric imported from Calcutta, India, hence the name, from the native name of the city—Calicut.
- CALICO PRINTING**:—The process of printing designs, in color, upon cotton cloth. The patterns required are engraved upon the surface of copper rollers, which in turn, after coming in contact with the color, print the design upon the cloth, the latter for this reason traveling through the machine in a continuous and rapid motion. One, two or more of these engraved rollers are used in the machine, depending on whether one or more colors are required by the pattern, each color requiring one roller, engraved to suit that portion of the design it has to produce. The colors used are either substantive or adjective; the former have an affinity for the cloth, and by themselves adhere and form permanent dyes, whereas the latter require to be fixed by mordants, since they will not of themselves adhere permanently to the cloth. Besides cotton cloth, other materials are printed in a similar manner.
- CAM**:—A plate revolving on a shaft, having its circumference other than circular, thus giving a reciprocating motion to any lever actuated by it. Used as the medium for shedding in connection with Cam Looms, etc.
- CAMAIL**:—The hood or short cloak worn by the Catholic clergy.
- CAMBRASINE**:—A linen or cambric fabric of a fine texture.
- CAMBRIC**:—The finest linen made, claimed to have originated in Cambrai, France. Also the name given now to cotton imitations, called also cotton cambric or cambric muslin.
- CAMEL'S HAIR**:—The hair of the camel, from which very fine fabrics, especially shawls, are made in the East, also carpets, tent-cloths, etc. The long hair of the camel, mixed with wool, or wool and cotton, is spun into yarn, used in the manufacture of dress goods, cloakings and similar fabrics.
- CAMISE**:—A light loose gown worn by Orientals.
- CAMLET**:—A stiff, closely woven, nearly waterproof fabric of camel's hair or some imitation or substitute; formerly used extensively for cloaks.
- CAM LOOM**:—A loom in which the harnesses are acted on by cams.
- CAMPEACHY WOOD**:—The original name of logwood, as obtained in the first instance from the Bay of Campeachy.
- CAMWOOD**:—A dyewood closely allied to barwood, obtained from the west coast of Africa, and has about the same properties as Brazil wood. It is steadily decreasing in application.
- CANARIN**:—A dyestuff produced by oxidizing potassium sulfo-cyanid in the presence of hydrochloric and sulfuric acids; producing a fast, bright yellow or orange on wool or cotton.
- CAN FINISHER**:—A style of gill box used in balling or top making in connection with the manufacture of worsted yarn.
- CANGAN**:—A coarse Chinese cotton cloth.
- CANNELÉ**:—Also known as *repp*, technically known as rib weaves-filling effects, used either in their plain state or in connection with other weaves.
- CANNEQUIN**:—A white cotton cloth of East Indian production.
- CANTON FINISH**:—This is a dull mangle finish, with a firm yet not hard feel. Different finishers vary a little in their manner of producing it.
- CANTON FLANNEL**:—A strong, cotton cloth with a long, soft nap, usually on one side, although in some instances the fabric may be napped on both sides; used for under garments, bath robes, etc.
- CANTOON**:—A cotton fabric showing a cord effect on one side.
- CANVAS**:—A heavy, strong closely textured cloth of hemp or flax, used for any purpose for which strength and durability are required, like tents, sails, seamen's clothing, etc. The fabric used as a surface for oil-painting; also fabrics woven in small, square meshes, used for embroidery purposes.

\* The first complete Dictionary of the Textile Industry ever published.

**CAP:**—A steel cup (just large enough to cover the spinning bobbin) placed mouth downwards, over the spindle of the cap frame.

**CAPE:**—A circular sleeveless garment worn over the shoulders, a short kind of cloak, separated or attached to a coat or gown.

**CAPE WOOL:**—Wool from the Cape of Good Hope.

**CAP FRAME:**—The machine used for cap-spinning.

**CAPOTE:**—A long hooded coat or cloak.

**CAPPADINE:**—The waste silk of cocoons from which the true silk has been reeled.

**CAP SPINNING:**—Spinning the finer counts of worsted yarn (English system) by means of a steel cup or cap placed mouth downwards over the spindle, instead of a flyer.

**CARBAZOL or CARBAZOLE:**—A white crystallized substance produced by passing the vapor of aniline, through a red hot tube.

**CARBAZOTIC or PICRIC ACID:**—A peculiar acid formed by the action of nitric acid on indigo, phenol, etc.; thus named by Liebig from carbon and azote. Its salts are called carbazotates. When silk, treated with a mordant of alum, or cream of tartar, is immersed in a solution of this acid, it is dyed a beautiful and permanent yellow; by the use of indigo and picric acid combined, different shades of green can be produced.

**CARBOLIC ACID:**—This is obtained from the creosote oils obtained in the distillation of coal tar by treatment with alkalis and acids and distilling. It is used as an antiseptic in cotton cloth finishing, the only objection being its peculiar penetrating odor, which to many people is objectionable, and this therefore prevents it from being used more extensively. It is a most powerful antiseptic, a very small quantity of the weight of the mixing being sufficient to prevent mildew. Carbolie acid is sold either in colorless crystals (in which form it is fairly pure) or as a dark colored liquid (very impure) mixed with cresylic acid, and neutral tar oils. The first mentioned is the state in which it is used in the finishing of cotton cloths.

**CARBONIC ACID:**—Called also fixed air, carbonaceous acid, calcareous acid, aerial acid or carbondioxide. It is a compound of carbon and oxygen and is formed during the combustion of charcoal. It is gaseous, colorless and cannot support respiration or combustion.

**CARBONIZING:**—To change the vegetable impurities in wool fibres or woollen cloth into carbon, and thus remove them.

Its purpose is the chemical removal of vegetable impurities, like burrs, with which the wool in question is heavily contaminated, and which cannot be removed successfully or economically in a mechanical way. It is also used for rags, in order to remove cotton threads, etc., from them, so as to make them *all wool*.

The process of carbonizing is based on the different behavior of animal and vegetable fibres in the presence of certain chemicals, such as dilute sulphuric acid, gaseous hydrochloric acid, and certain metallic salts, such as the chlorides of aluminium and magnesium.

The Sulphuric acid process consists in steeping the burry wool in a bath of the acid with the strength of 2° to 4° Tw. until saturated, then squeezing and drying. During the drying, the acid on the fibres becomes more concentrated, and the vegetable matter present is disintegrated or practically burned up, and is afterwards removed in the form of dust by shaking or beating. This process is known as liquid or wet carbonizing.

Dry or Gas Carbonizing consists in treating the burry wool with hydrochloric acid gas in a heated chamber,

the action of the acid being the same on the vegetable matter as with sulphuric acid.

Another method of carbonizing is by the use of certain metallic salts, such as magnesium of aluminium chlorides, etc., instead of acid. When using Chloride of Aluminium, the wool to be carbonized is entered in a chloride of aluminium bath from 6° to 7° B., and carefully handled, and the carbonizing fluid permitted to operate for a few hours. The wool is then taken out, hydro-extracted, and dried at a medium temperature, and entered into the carbonizing chamber, which is heated to 194° F., and in which the wool is left for one hour, during which time the vegetable matter is disintegrated. The remains of the vegetable fibres, *i. e.*, dust, is then removed from the wool by beating, after which the wool is washed in soft water with fuller's earth, and when the soluble chloride of aluminium is readily removed. This process is not as liable to be injurious to the fibre as the acid process.

For the Carbonizing of Waste or Rags, the sulphuric acid process is used almost exclusively on account of its comparative cheapness. The mass of rags or waste is steeped in a solution of sulphuric acid, and then heated in an enclosed chamber. This drying process evaporates the water, and leaves the sulphuric acid in a very concentrated form, the effect of which is to destroy the vegetable fibre, and leave only cinders or dust, which disappears when the material is afterwards subjected to a thorough washing, any acid on the stock being removed by this process at the same time.

**CARD CLOTHING:**—The wire faced card material the cylinders, rollers and flats of a carding engine are covered with.

**CARDIGAN:**—A knitted woollen jacket.

**CARDING:**—The process of drawing the wool, cotton, etc., through fine wire teeth fixed on flats, or upon rollers revolving at different speeds, having for its object the disentangling of the fibres from the mass, with the view of their being arranged artificially into threads.

To comb out, dress or cleanse by the carding engine, cotton or wool fibres, or silk, flax or jute waste, etc., previously to drawing, combing or spinning.

**CARDING ENGINE, or CARDING MACHINE or CARD:**—The machine which does the carding of cotton or wool; or wool, silk, flax or jute waste. In connection with cotton spinning a single machine is used, known as the Revolving flat card. In connection with woollen spinning three separate machines are used, *viz.*: First Breaker, Second Breaker and Finisher Card. With worsted yarn only one card is used, a large double card with two main cylinders, known as a worsted card. In connection with wool, silk, flax and jute waste, special built carding engines are used, to suit the respective processes. The inventor of the carding engine is not positively known. Louis Paul, and to whom the same is generally attributed, patented in 1748, in England, two different machines for carding, in one of which the card teeth were arranged on a flat surface and in the other on a drum.

**CARMINE:**—A beautiful red precipitate of the coloring matter of the cochineal. A rich red crimson color with a shade of purple.

**CARPET:**—A heavy, figured fabric of wool or other fibre, used for the covering of floors. Several varieties of carpet are named from their material, as Paper carpet, Rag carpet, etc., others are Ingrain carpet, Brussels carpet, Tapestry carpet, Wilton or Velvet carpet, Axminsters, etc.

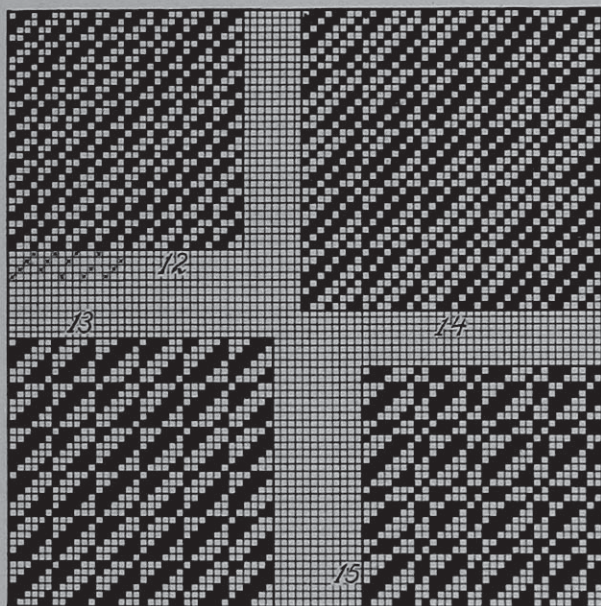
- CARREAU**:—Same as check (the French word for it).
- CARRYING COMB**:—The device of the nip comb, in the process of wool combing by this system, which carries the wool from the nip to the circle.
- CARTHAMINE**:—The coloring principles of the safflower. Its two principles are yellow, very soluble in water, and of little value, the other red, soluble only in alkalies from which it is precipitated by acids and exceeding in delicacy and beauty as it does in costliness any color which can be obtained, even from the costly cochineal. It is not very fixed and can be used for dyeing silk and cotton.
- CARUTO**:—A bluish black dye obtained from the genip-fruit, a shrub of the West Indies and Guiana.
- CASEINE**:—The base of cheese, the purified curd of milk, sold as powder under the name of lactarine. It is prepared by precipitating skimmed milk with dilute acids, is insoluble in pure water, and must be dissolved by solutions of ammonia and borax. It is used in calico printing for fixing colors as a substitute for albumen, is not coagulated by steaming, and can only be used for colors requiring a moderate degree of fastness.
- CASHMERE**:—A fine, soft woolen dress good, usually made in plain colors. Also a cotton warp and wool filling imitation of the all wool fabric. When applied to hosiery or underwear, it means goods made of fine worsted yarn spun from soft wools.
- CASHMERE GOAT**:—This animal is found in the district of that name in India. It is related to the native Thibet goat, and somewhat smaller. The fur of the cashmere goat is of two sorts; viz., a soft woolly undercoat of grayish hair, and a covering of long silken hairs that defends the interior coat from the effects of winter. The woolly undercoat is the substance from which the cashmere shawls are woven.
- CASHMERE SHAWL**:—A fine costly shawl, figured or embroidered, made in Cashmere from yarn hand spun from the soft wool fibre of the cashmere goat.
- CASHMERETTE**:—A soft, lustrous dress goods, resembling cashmere, but sometimes made entirely of cotton.
- CASSIMERE**:—A name applied to suitings or trouserings made from woolen yarn; the fabric being more or less fulled during its finishing process. Given to almost any woolen cloth, that, for one reason or another, may be conveniently classed as cassimeres by the trade. Called *Fancy Cassimere* if the fabric in question has a claim to *fancy* either by coloring, design or mix.
- CASSIMERE TWILL**:—The most frequently used weave in the construction of textiles; and considered all around, is the most serviceable weave. This weave is technically known as the 4-harness, even-sided twill.
- CASSOCK**:—A plain close-fitting garment, reaching to the feet, worn by the clergy.
- CASTORS**:—A heavy, fulled, face finished, all wool fabric, used for overcoats, etc. A heavy weight Kersey, not quite as heavy as a Beaver.
- CATALYTIC**:—The chemical action which one substance produces upon another without undergoing change itself.
- CATECHU**:—Is the dried up juice of certain trees, obtained either by natural exudation or through cuts made for the purpose. It is an astringent or tannic substance. Its texture is resinous, and if good, sufficiently brittle to break under the hammer. The color, however dark outwardly, should be a brownish cream color within. If it is deep brown throughout, and soft and pitchy in consistence, so as to cling to a knife, it has become impaired in quality either by long keeping or by exposure to moisture. It should dissolve readily in hot water, but not so readily in cold water. It was first used in 1830 in combination with madder for calico printing. In dyeing, it is used with iron, and aluminum mordants. Dye colors which are fixed with the acid of catechu are very permanent and are very difficult to discharge. It should contain about half its weight of tannin, varying in this point from 37 to 56 per cent.
- CELLULOSE**:—The chemical substance of which the cotton fibre (principally) consists.
- CENTRIFUGAL DRIER**:—A machine for extracting water from yarn or cloth by a rapid whirling motion; a hydro-extractor.
- CERECLOTH**:—A waterproofed cloth oftentimes used as a covering, as a bandage for wounds, or as a shroud for the dead. It is produced by saturating or coating the cloth with wax, cerate, or some gummy or glutinous substance.
- CERULEIN, or ANTHRACENE GREEN**:—A dyestuff derived from coal tar and produced by the evaporation of gallein; used to produce brownish green colors on cotton, wool and silk.
- CHAIN**:—The name given sometimes to the warp.
- CHAINLOOM**:—The name occasionally given to the dobbyloom, where the movement of the harness is controlled by risers and sinkers on the bars of the chain.
- CHAINWORK**:—The name sometimes given to the principle of the manufacture of hosiery.
- CHAKI**:—A silk and cotton fabric made in Egypt.
- CHALLIS**:—A fabric of silk and worsted, with designs either produced in the loom or printed, first introduced in 1832 at Norwich, England. In construction the fabric is somewhat similar to crape, only thinner and softer, composed of much finer materials, without gloss, and pliable and clothly.
- CHAMBRAY**:—The name applied to a light weight cotton dress fabric or gingham, having a linen finish; either of solid color or printed in stripes and checks upon a solid ground.
- CHANGEABLE SILK or SHOT SILK or CHANGEANT**:—An effect produced by weaving two colors together in a plain fabric, and when the latter is seen under different rays of light a change in color is noticed.
- CHASE**:—The extent of the traverse of the winding faller wire on a mule.
- CHECKS**:—Patterns which are usually formed by colored threads in warp and filling, crossing each other at right angles. Also produced by imitating the same effect by printing.
- CHEESE CLOTH**:—A coarse cotton fabric of an open texture, used in creameries for wrapping the cheese. Made in finer textures, it is also used for other purposes, for women's gowns, shirtings, curtains, etc.; also called bunting.
- CHEMIC**:—A name commonly given to bleaching powder; a dilute solution of chloride of lime.
- CHEMILOON**:—An undergarment (union suit) for women, consisting of chemise and drawers in one.
- CHEMISE**:—A women's undergarment or shirt.
- CHEMISSETTE**:—A women's light undergarment for neck and shoulders.
- CHENILLE**:—A woven cord having all around its surface loose fibres projecting from it; produced by either weaving four warp threads or crossing three warp threads, placed some distance apart in the reed, about soft twisted filling threads; the floating filling threads being afterwards cut on a chenille cutting machine, the raw edges, when afterwards twisted producing the characteristic projecting fibres all around the cord. Used either for filling in the manufacture of rugs, curtains, carpets and coverlets, or in its first woven state in trimmings, fringes, etc. The name is derived from the fabric resembling the caterpillar in softness, from the chenille or cotton caterpillar.

- CHEVIOT**:—A loosely woven cloth made originally only from the wool of the cheviot sheep; imitations are now extensively made from inferior wools from other countries.
- CHEVIOT FINISH**:—A rough finish for woollen cloth, commonly known as cheviots.
- CHEVIOT SHEEP**:—This sheep is found upon the Cheviot Hills which traverse the boundary between England and Scotland. They have white faces and legs, open countenances, lively eyes, are hornless and have large ears and eyes. The weight of the fleece is from 4 to 5 lbs., and the fibre furnishes the material for the well known Scotch tweeds and Scotch cheviots.
- CHEVIOT SHIRTING**:—A coarse, cheap cotton shirting, with a soft finish, made either in the gray, colored or fancy.
- CHIFFON**:—A very thin gauze used for evening dress, trimmings and other decorative purposes by women; considered to be the most flimsy and softest of silk material woven.  
The prefix given to other silk fabrics when dealing with an extra light weight texture, like chiffon taffetas, chiffon velours, etc
- CHILLO**:—A colored cotton fabric made in England for the African trade.
- CHIMERE**:—The upper robe of a bishop.
- CHINA CLAY OR KAOLIN**:—A natural product, chiefly found in Cornwall, Eng. One, if not the most important substance used for weighting cotton cloth. It is the result of the decomposition of the felspathic constituent of granitic rocks brought about by the action of the carbonic acid and moisture of the atmosphere. The crude clay is separated from its grit and mica by levigation with water, the quality of the product depending more or less on the care with which this process is carried out. After levigation the clay is dried in kilns, and when the product is ready for use. China clay is an amorphous white glistening powder insoluble in water, dilute acids and alkalis and most other solvents. It is only decomposed by fusion with alkalis or prolonged digestion with strong sulphuric acid. When pure and of good quality, it is quite white, if a faint yellow or reddish tint, the same is due to the presence of impurities, such as oxide of iron, organic matter, mica, etc.
- CHINA FINISHES**:—These are hard very bright finishes applied chiefly to cottons intended for the China market, but also sent to Egypt and other markets. They vary a little in feel and brightness, some being very hard and feeling papery, others softer. They are weighted to a great extent. When the cloths are of poor quality, it becomes difficult to get all this weighting without showing it, and making the cloth powdery.
- CHINA GRASS**:—This plant belongs to the same family as ramie, and grows extensively in China, Japan and East India. The separated and bleached fibre in some respects resembles silk, and is pure white. China grass is mostly extensively cultivated in China. After undergoing various chemical processes, the long fibres are subjected to spreading, drawing, roving and spinning (similar to the process of preparing linen yarns,) whereas the short fibres are treated similar to tow yarns.
- CHINA SILK**:—An extremely light weight fabric made either entirely or only partly of silk, mostly in white.
- CHINCHILLA**:—A thick, heavy woollen cloth having a short wavy-rubbed nap, used for overcoatings, cloaks, etc. Also the soft costly pearly gray fur of the chinchilla, much used in women's dress.
- CHINÉ**:—A name given to silk which has a warp-printed effect, produced by printing the warp threads in blocks and then grouping them in the loom so as to form blurred, indistinct, mottled or clouded patterns.
- CHINESE GREEN**:—A green coloring matter first introduced from China. Upon silk it produces an agreeable green color when lime is used as a mordant with it. Later a green similar to Chinese green was extracted from the plant known as the dyers' buckthorn.
- CHINTZ OR CHINTS**:—A cotton cloth printed on one side with flowers or other patterns in different gay colors; also called furniture print on account of its use for covering furniture, curtains, etc.
- CHLORATE OF POTASH**:—A white crystalline solid, used in calico printing as an oxidizing agent. It was formerly used for hastening the ageing of madder and garance mordants.
- CHLORID OR CHLORIDE**:—A binary compound of chlorin with another element or radical; as, hydrogen chloride (muriatic acid), sodium chlorid (common salt).
- CHLORIDE OF BARIUM**:—This is a very heavy substance used sometimes for weighting cotton cloths. It comes in the market in pearly crystals containing 56 per cent of barium, 29 per cent. of chlorin, and 15 per cent. of water. It is poisonous and has slight antiseptic properties.
- CHLORIDE OF CALCIUM**:—It is a by-product in alkali manufacture, and sold either in liquid or solid form. It is used sometimes as a softening agent in the finishing of cotton cloths, more particularly for calender finishes.
- CHLORIDE OF LIME**:—See bleaching powder.
- CHLORIDE OF MAGNESIUM**:—When pure it is a white solid, amorphous or uncrystalline, contains 25 per cent. magnesium and 75 per cent. chlorin. It is used extensively in the finishing of cotton cloth, being bought either in solid or liquid, the latter being the purer. Its extensive use in finishing is due to its deliquescent properties and when, although given little weight, it makes the cloths feel fuller and softer. Care must be taken, however, not to use it in excess, since otherwise the cloths will be too damp, and therefore likely to become mildewed. It should not be used in cloths that get a calender finish, since heat will decompose it into oxide of magnesia and hydrochloric acid, the latter tendering the cloth. Adding a little chloride of zinc will be found beneficial.
- CHLORIDE OF ZINC**:—This is considered the best antiseptic at the disposal of the cotton cloth finisher. As a rule it is prepared by dissolving metallic zinc in hydrochloric acid, and boiling down the solution until it will solidify on cooling, or to a heavy syrupy liquid.
- CHLORIN OR CHLORINE**:—A greenish-yellow, very poisonous, liquefiable, gaseous element discovered by Scheele in 1770. It is one of the most suffocating gases, possesses powerful bleaching qualities and is highly valued as a disinfecting agent. It is soluble in water, forming chlorin-water, and is still more condensed by lime, forming chloride of lime or bleaching powder.
- CHLOROPHYLL**:—The green coloring matter found in leaves, grass, etc. In the attempt made to use it as a dye, grass has been first boiled out in water, and in the color extracted from the residue by a very weak lye of carbonate of soda, from which the chlorophyll is thrown down as a paste by the cautious addition of an acid. Mixed with salt of tin it has been experimentally used in dyeing and printing, but not with satisfactory results, as it is dull, fugitive, and very low in tinctorial power, and consequently expensive.

(To be continued.)



twill from left to right and skip, and repeat this four times over, after which duplicate the affair, but reversing in this instance the drafting of the twill, *i. e.*, run the twill in the reverse direction; the repeat of the complete weave being 16 warp threads and 4 picks.



From these three examples, *i. e.*, more particularly examining our drafts as given below the weaves, we will notice that one harness has been always skipped, in order to produce the break, and which in connection with the next four weaves will mean that then we have to skip two harnesses in the drawing in draft, or two warp threads of the foundation weave, in order to produce a clear break with the 6-harness twill, since  $6 \div 2 = 3 - 1 = 2$ .

Weave Fig. 4 has for its foundation the 6-harness, even sided twill, being produced by means of drafting 3 threads in rotation and skipping 2 warp threads of the regular twill, the skip twill repeating on 18 warp threads and 6 picks.

In weave Fig. 5, we show again two different pieces of twills drafted, *i. e.*, 3 ends in one piece to alternate with 2 ends in the other piece, *i. e.*, drafting once 3 ends and the other time 2 ends between breaks of the foundation twill; the complete weave repeating on 10 warp threads and 6 picks.

Weave Fig. 6 is a broken skip twill; it is the mate to Weave Fig. 4 and naturally needs little explanation, the repeat of the weave being 36 warp threads by 6 picks. The twill and the pieces of twills run alternately for 18 warp threads from left to right and for 18 threads in the reverse direction. Repeat of weave 36 by 6.

Weave Fig. 7 is another broken skip twill, being the mate to weave Fig. 5, constructed with 15 warp threads twilled from left to right to alternate with 15 warp threads twilled the reverse direction. Repeat of weave 30 warp threads and 6 picks.

Weave Fig. 8 has for its foundation the  $\frac{2}{1}, \frac{2}{2}, \frac{1}{2}$  10-harness even sided twill, obtained by taking 2

threads in rotation and skipping ( $10 \div 2 = 5 - 1 =$ ) 4 threads of the regular twill; the skip twill repeating on 10 warp threads and 10 picks.

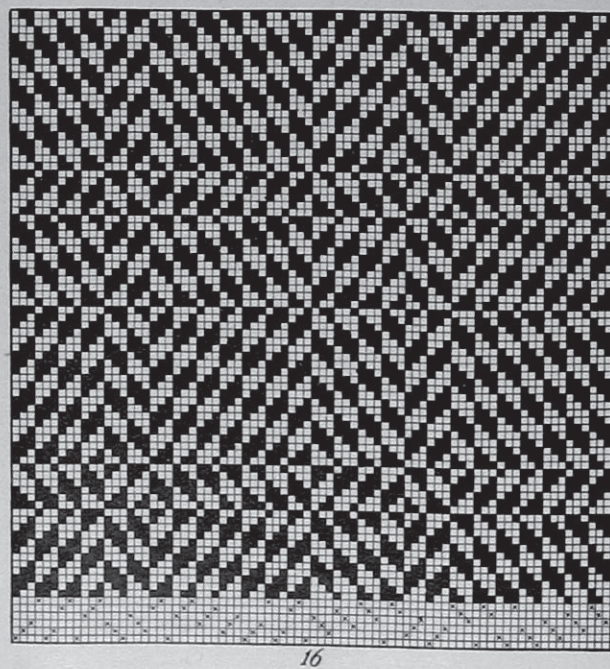
Weave Fig. 9 has for its foundation again this 10-harness even sided twill, using however, in this instance 3 warp threads in each piece of twill, the repeat of the skip twill in this case being 30 warp threads and 10 picks; with 10 harness for its fancy draw.

Weave Fig. 10 has again the same 10-harness even sided twill for its foundation, using in this instance 4 warp threads in each piece of twill, the new weave repeating on 20 warp threads and 10 picks.

Weave Fig. 11 is a broken skip twill, having for its foundation the same 10-harness even sided twill as the preceding three examples; the arrangement of drafting observed being: take 4 ends and skip, take 2 ends and skip, running your twill for 18 warp threads, from left to right, after which reverse the twill for the next 18 warp threads; the repeat of the skip twill being 36 warp threads and 10 picks.

**Pointed twills obtained by means of skipping warp and filling ways.** Explanation given in connection with the previously given weaves, we now have to apply to both, warp and filling ways; or in other words, when in the preceding eleven weaves we skipped only warp ways, we now, after drafting a certain number of picks in rotation also have to skip filling ways, *i. e.*, the skipping or missing of ends has to be done both warp as well as filling ways.

Weave Fig. 12 has for its foundation the 4-harness even sided twill, the drafting observed being:



take 4 ends warp and filling ways, after which arrange the break, *i. e.*, miss one warp thread and one pick of the regular twill until repeat for the skip twill is obtained, and which in our example calls for 16 warp threads and 16 picks.

Weave Fig. 13 has for its foundation the 6-harness even sided twill, the drafting observed being: take 6 ends and skip, both warp and filling ways, the skip twill repeating on 18 warp threads and 18 picks.

Weave Fig. 14 has for its foundation  $\frac{2}{1} \frac{2}{1} \frac{1}{2}$  10-harness even sided twill; drafting, however in this instance, only a portion of said weave before arranging a break, both warp and filling ways, *i. e.*, take 8 ends (considering either warp or filling) and skip 4 ends when drafting warp ways, or 4 picks when drafting filling ways, the complete repeat of the new weave being 40 warp threads and 40 picks; which however, by means of its proper drawing in draft can be drafted on 10 harnesses.

Weave Fig. 15 has for its foundation the 6-harness even sided twill, and shows the drafting of uneven pieces of twills, both warp and filling ways, *i. e.*,

take 7 ends and skip,

take 2 ends and skip,

take 5 ends and skip,

take 2 ends and skip, both warp and filling ways; in turn calling for 16 warp threads and 16 picks for the repeat of the new skip twill, and which, on account of its foundation weave, can be woven on 6 harnesses, provided this is necessary, on account of limited capacity of the harnesses at our disposal.

Weave Fig. 16 shows us a broken skip twill, skipping both warp and filling ways. The foundation weave is again the 6-harness even sided twill, and the drafting of the weave is given below it, in *cross type*; the same being:

take 3 ends, twill from left to right and skip  $\times 4 = 12$  ends  
 take 3 ends, twill from right to left and skip  $\times 2 = 6$  ends  
 take 3 ends, twill from left to right and skip  $\times 7 = 21$  ends  
 take 3 ends, twill from right to left and skip  $\times 4 = 12$  ends  
 take 3 ends, twill from left to right and skip  $\times 2 = 6$  ends  
 take 3 ends, twill from right to left and skip  $\times 7 = 21$  ends

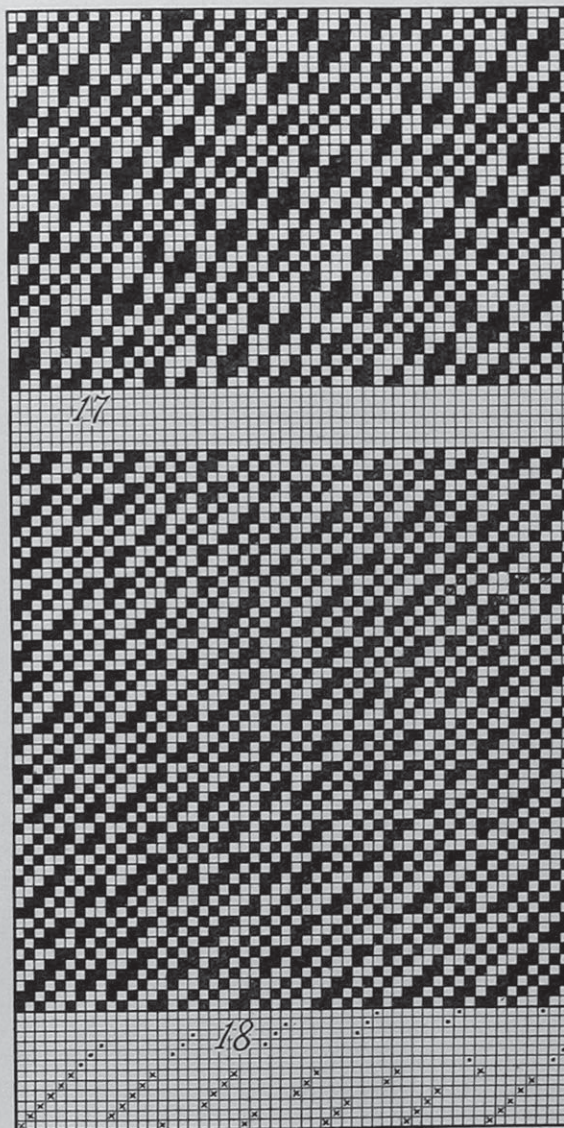
78 ends;

repeat of complete weave 78 warp threads and 78 picks, and which by means of draft given below weave can be woven on 6 harnesses, provided such should be necessary on account of capacity of dobby.

**(B) Skip Twills Having Unbalanced Even Sided Twills for their Foundation.**

Using this class of even sided twills in the construction of skip twills, as already previously referred to, means the necessity of additional harnesses as compared to skip twills having balanced even sided twills for their foundation, for the fact that either combination of the even sided twill requires its own set of harnesses, a feature readily explained in connection with weaves Figs. 17 and 18, given specially to explain this subdivision of the skip twills, and of which weave Fig. 17 shows us such a skip twill, in which the skipping is done only warp ways. The foundation twill used is the  $\frac{3}{3} \frac{1}{1} \frac{2}{2}$  12-harness even sided twill and that of its mate, the  $\frac{2}{3} \frac{3}{1} \frac{1}{2}$  12-harness even sided twill, the drafting observed being: take alternately 3 ends from the first mentioned weave and then 2 threads from the second combination, and continue to draft alternately in this way, 3 threads from one combination and 2 threads from the other

combination of said unbalanced even sided twill, until the repeat of the skip twill is obtained, and which is 20 warp threads and 12 picks. In this instance we will use a 20-harness straight draw, for the fact that the repeat of the skip twill was obtained previously to using every one of the warp threads of our two combinations of the foundation twills.



Weave Fig. 18 shows us the application of an unbalanced even sided twill arranged for a skip twill, skipping warp and filling ways. The foundation twill used is the *2 up 2 down 1 up 1 down*, 6-harness even sided twill and its mate, the *2 up 1 down 1 up 2 down*, 6-harness even sided twill, the drafting observed both warp and filling ways is: take 6 ends and arrange break, take 3 ends and arrange break, and continue to alternately take 6 ends of one combination of the weave and 3 ends from the other combination of the weave, arranging breaks when changing from one

combination to the other, until repeat of the skip twill is obtained, and which in the present instance calls for 54 warp threads and 54 picks for its repeat. Below the weave we give the drawing in draft necessary to produce this weave on 12 harnesses, using two kinds of crochet type to simplify matters to the student, showing him in this way how to construct a double draw, easily understood by the weaver, using 6 harnesses in sets together for each combination of the foundation twill.

It will be advisable here to call the reader's attention to "How to calculate the repeat of a skip twill without having to paint out the complete weave," or in other words, how the designer will lay out his plans for these weaves by means of the drawing in draft only. For this reason let us consider our last given weave, and where we will notice that the first warp thread, considering the bottom of the weave, reads 2 up 2 down, etc. Considering the second 6 ends drafted, *i. e.*, more particularly warp thread 10 of our weave, we then find that the 2 up 2 down, etc., interlacing has been raised one pick higher, *i. e.*, 2 up 2 down, considering warp thread 1 starts with pick 1, whereas the same interlacing of 2 up 2 down in warp thread 10 calls for pick 2 of the weave for its start. Since every other warp threads of the foundation weave follows the same principle of being raised 1 pick every  $(6 \div 3 =) 9$  warp threads, and since the repeat of the foundation twill is 6 warp threads, we thus find that the complete skip twill has to repeat on 9 (repeat of arrangement of drafting)  $\times$  6 (repeat of the foundation twill) = 54 warp threads. The same affair holds good also filling ways, hence repeat in that direction also 54 picks.

This calculating of the repeat for the final skip twill, after ascertaining the change of interlacing of the first warp thread in the first repeat of drafting, and the first warp thread in the second repeat of drafting, as explained in connection with weave Fig. 18, holds good for any skip twill, and naturally will greatly simplify the work for the designer, since by locating the first warp thread of the second repeat of drafting and comparing it to the first warp thread of the weave, with reference to the starting of the foundation twill on a certain pick, and taking the repeat of the foundation twill at the same time in consideration, will give him at once the repeat for the complete weave.

In connection with our example, we found that every repeat of drafting started one pick higher, and when by multiplying the number of ends in one repeat of arrangement of drafting with the repeat of the foundation twill, the repeat for the skip twill is obtained.

If, for example, the arrangement of drafting would call for: take 6 ends of combination number one, to alternate with 4 ends taken from combination number two, of our foundation twill, then considering warp thread 11, we would have found that the same has been raised 2 picks compared to the corresponding interlacing of the first warp thread of the weave, and when then the repeat of the final skip twill would have been 10 (repeat of arrangement of drafting)  $\times$

(6 repeat of foundation twill  $\div$  2 using every other pick =) 3 = 30 warp threads and 30 picks.

#### Questions:

PRODUCE SKIP TWILLS, SKIPPING WARP WAYS ONLY:

- (1) Foundation Weave: 3 up 3 down, 6-harness twill.  
Drafting: Take alternately 4 ends and 2 ends, until repeat (18 by 6) obtained.
- (2) Foundation Weave:  $\frac{3}{1} \frac{3}{3} \frac{1}{3}$  14-harness twill.  
Drafting: Take sections of 3 ends, until repeat (42 by 14) obtained.
- (3) Foundation Weave:  $\frac{2}{1} \frac{2}{2} \frac{1}{2}$  10-harness twill.  
Drafting: Take alternately 3 ends and 2 ends, until repeat (50 by 10) obtained.
- (4) Foundation Weaves:  $\frac{2}{4} \frac{4}{2}$  12-harness even sided twill and its mate weave, since it is an unbalanced even sided twill.  
Drafting: Take 3 ends of above combination quoted, to alternate with take 2 ends of its mate combination, until repeat (20 by 12) obtained.

PRODUCE SKIP TWILLS, SKIPPING WARP AND FILLING WAYS.

- (5) Foundation Weave: 2 up 2 down, 4-harness even sided twill.  
Drafting: Take 6 ends and skip, until repeat (24 by 24) obtained.
- (6) Foundation Weave: 3 up 3 down, 6-harness even sided twill.  
Drafting: Take alternately 9 ends and 3 ends, until repeat (36 by 36) obtained.
- (7) Foundation Weave: 4 up 4 down, 8-harness even sided twill.  
Drafting: Take 6 ends and skip, until repeat (48 by 48) obtained.

## JACQUARD DESIGNING.

(Continued from page 224.)

Fig. 24 shows us another fabric sketch in which the figure is placed after the 8 leaf satin setting; the same position of the individual figures as explained in the previous example being observed in the present instance, the four different positions of the figure being respectively indicated by means of letters of reference *a a'*, *b b'*, *c c'*, and *d d'*, as shown in the one repeat of the design given in dotted lines.

We will now explain some of the settings after our irregular satin arrangements, and for which reason Figs. 25, 26 and 27 are given.

Fig. 25 shows us the same figure as previously used in connection with fabric sketches Figs. 22 and 23, placed in this instance after the 4-harness broken twill setting, shown previously on point paper in connection with diagram Fig. 19a, numerals of reference being quoted in one repeat of the fabric sketch, in order to guide the student with reference to placing the figures, two repeats each way of the fabric sketch being given.

Fig. 26 shows us another fabric sketch, two repeats each way, having again for its plan of placing the