THE TEXTILE MERCURY

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thoroughly throughout the fabric, but if the wool will be lathered out and allowed to drain, nearly all the liquor will be absorbed. Add a little neat's

A little quite white, showing that the dye-stuff in the form in which it is sold has no affinity for the wool. If now a few drops of sulphuric acid be added to the dye liquor the wool will become dyed. The sulphuric acid liberates the free sulphur acid of the dyestuff, and this is now in a form to combine with the wool fibre and dye it. This is the fundamental principle underlying the acid method for dyeing wool with the acid group of colouring matters.

The practical application of the principle laid down above is a matter of simplicity compared with that of the wet dyeing. The composition of the bath is given above; it is best to enter the wool at from 150° to 160° F., and then to slowly raise the temperature to the boil. This method of proceeding gives time for the free colour of the acid to be liberated from the dye-stuff on the one hand, and for its combination with the wool fibre on the other. In dyeing reproducibility with acid dye-stuffs it is a good plan not to add the acid until after the goods have been entered into the bath and worked for a short time to enable them to become impregnated with the dye liquor; the acid may then be added by boiling the goods until finished as usual. By this plan of working more even dyings can be obtained than by simply entering the goods direct into an acidified dye liquor.

Another plan is for a method of preparing indigo dye-stuff artificially. The patents start from phenylglyoxylal, which has already been used for the same purpose by other chemists; but whereas for so long only indigo itself has been produced, the present process is to prepare indigo dye-stuff. They have found that when this phenylglyoxylal is acted on by ordinary sulphuric acid gas, the dye-stuff is produced, that if the sulphuric acid be used, then the phenylglyoxylal undergoes both sulphonation and oxidation, thus forming that indigo dye-stuff formed. The operation is carried out by treating one part of phenylglyoxylal with 40 parts of fuming sulphuric acid containing 80% of anhydride, when a yellow solution is obtained. This is now mixed with ordinary sulphuric acid of about 60° Bé. strength, when a blue solution is obtained, from which the indigo dye-stuff may be precipitated out by adding salt. The dye-stuff so obtained dyed wool or silk in the same way as the natural product, but gives rather brighter shades. It is doubtful whether this artificial product will come into the market, for it costs more than the natural product. The bleaching agent in most commercial transactions, and whatever product will be a good many products in such arts as those of textile colouring.

Nickel is now only rarely applied as a mordant in dyeing, partly on account of want of information as to the effects which may be produced by its aid, and partly on account of its expense. Its latter feature may be overcome by the use of nickel salts, as new sources of nickel are opened, so that it is quite likely that some day this metal will take its place beside chrome, iron, and alumina, as a regular dyers' chemical. It may be useful to give the results of using nickel as a mordant in dyeing and calico-printing, with the most common of the mordant-dyeing dye-stuffs. With aluminium, a red violet dye is obtained, the best results when used on the fibre by means of oil in the usual way; it is dyed, and then washed with warm water obtained is fiery, and rather more blue than the corresponding aluminium red. The use of lime salts is not so advantageous. Aluminium gives brownish or orange-yellow shades, which are not so fast as those, with alumina—Blue, green excellent results with nickel: the blues are very pure and beautiful. The nickel is dried on by means of oil, and the dyeing is done by entering into a cold bath, working for 15 minutes, then slowly raising to the boil and working for an hour longer. The shade then is a bluish-green, but on soaping it turns to a pure blue. The shade is too fast. Carbonate is dyed with nickel mordanted in the same way as alumina blue, and gives yellower shades of green than can be obtained with aluminium and iron. With nickel, gallate gives blue-violets, which are very fine. Gallate also gives very fast blue-violets. Persimmon berries give yellow resembling those obtained with chrome, but not quite so bright. All of these dyed woods can be applied with the aid of nickel, but the results are not very satisfactory. A brown can be obtained with nickel, by first mixing it with caustic soda and then treating with bleaching powder, more or less. The same process is used for dyeing maganese brown. Nickel can be used in calico-printing, the best form is the ammoniacal liquor, which can be obtained by precipitating a mixture of lead acetate and lead nitrate with nickel sulphate, and using the clear solution after making it up to a proper strength. The best proportion to use are equal molecules of aluminium and nickel oxide. It is best to print on cold cloths. The goods are printed, steamed, rinsed, soaked, and finally washed in water. Allowing the goods to remain in the liquor while being left very clear. Alizarine orange gives red brown (red being the white not being affected. Alizarine blue gives bright shades not unlike those obtained with methylblue, but much faster. Copper gives a yellow green, galloyanine blue-violets; and gallamine blue-violet shades, fast to soap, but not to chlorine.

Gallamine-dyeing results. Perunia berries give a good yellow. Catch gives a good brown.

NOTES ON RECENT PATENTS IN DYEING.

The Farbenfabriken of Elberfeld have lately taken out several patents relating to the preparation of colouring matters. One of these is for the manufacture of mordant-dyeing dye-stuffs from alizarine. Another is for the production of fuming sulphuric acid. Sulphuric acid has already been used for the same purpose by other chemists; but whereas for so long only indigo itself has been produced, the present process is to prepare indigo dye-stuff. They have found that when this phenylglyoxylal is acted on by ordinary sulphuric acid gas, the dye-stuff is produced, that if fuming sulphuric acid be used, then the phenylglyoxylal undergoes both sulphonation and oxidation, thus forming that indigo dye-stuff formed. The operation is carried out by treating one part of phenylglyoxylal with 40 parts of fuming sulphuric acid containing 80% of anhydride, when a yellow solution is obtained. This is now mixed with ordinary sulphuric acid of about 60° Bé. strength, when a blue solution is obtained, from which the indigo dye-stuff may be precipitated out by adding salt. The dye-stuff so obtained dyed wool or silk in the same way as the natural product, but gives rather brighter shades. It is doubtful whether this artificial product will come into the market, for it costs more than the natural product. The bleaching agent in most commercial transactions, and whatever product will be a good many products in such arts as those of textile colouring.

Dr. Charles Drayson, of the Clayton & Lofthouse Co., has been at a patent for the production of lake pigments from asuline dye-stuffs. Some time ago Miller Jackson patented a process for preparing lake pigments by the aid of resin, which he first converted into a soap, and then used this for preparing the lake from the dye-stuff. Dr. Drayson's process is an extension of this. He prepares a resin soap in the usual way, and precipitates this with sulphate of zinc, whereby he obtains a precipitate of zinc carbonate, which, when combined with a dye-stuff to form a lake pigment, he finds that only the so-called basic asuline colours are available for this purpose, but out of these he can prepare a wide range of pigments. Instead of sulphate of zinc he can use the chlorides of other metals, but he finds that these salts do not completely precipitate the resin, for which he says, he now for the first time recorded; and certainly we have not seen it stated before. On adding a solution of the prepared pigment to a solution of resin soap, part of the latter is precipitated, but the precipitate is completed on adding a solution of the colouring matter. It is desired to precipitate the resin and make it into a lake pigment. These lake pigments are soluble in a number of volatile solvents, like carbon bisulphide, benzene, solvent naphtha, etc., and can be used for colouring varnishes, making printing ink, etc.

Acid pigments have been largely prepared by first making the violet and then substituting by means of sulphuric acid. A German firm of colour makers have lately patented a process whereby these acid pigments can be made directly by a synthetic method, and by a modification of the dye-stuffs, using the yellow blue and acid blue and acetic acid to obtain. The patent specification is full of technical language only comprehensible to the chemists of the nomenclature of organic compounds. Some of the interesting matters described are sold on the market, and are very good products.

WASTE SOAP LIQUORS are the subject matter of a patent taken out by Messrs. Kinmill and Craig. These are produced in the process of scouring wool. The method consists of using them and collecting them in large tanks and treating them with sulphuric acid, which decomposes them, causing the fats to rise to the top. This is then collected and pressed in a hot press, and the grease so obtained is sold for a variety of purposes. The patentees point out that there are two defects in this method, both of which arise from the use of sulphuric acid: First, at the temperature which is used there is some risk of the grease being done to carbonizing; and, secondly, the acid also acts on the metal work of the press, causing its corrosion. To overcome these the patentees' process aims at reducing these defects. They work with lye in place of caustic soda and chlorine, and bleaching powder, whereby they obtain a greasy mass, consisting essentially of soap, but containing also some free fat. This greasy mass is treated with sulphuric acid, which removes the fatty matter which is then pressed as usual. The patentees say that one object of their invention is to do away with sulphuric acid for reasons of expense, and yet add it as a final step in their process. The bleaching powder will act as a bleaching agent to the fat, and thus a better-looking product will result; otherwise there does not seem to be much improvement in this over the ordinary process, but in all cases of this sort it is very difficult to give an absolutely opinion.

Designing.

NEW DESIGNS.

WEAVE TWILLS.

A favourite method of producing figured grounds for waistcoats or dress fabrics in which an extended drawing, known as an upright and ordinary twill, the following particulars for production being suitable—

All 2½/s. fancy mixture 9½ yards 4½ d.

5½d. mixture woolens 36 spicks per inch.

An effective modification of this design will be to change the twill in one direction into a three and one and a half effect, when the following notification should be adopted—

All 2½/s. black worsted 12½ yards 4d.

2½/s. black mohair 46 spicks per inch.

Of course the above effect may be woven for a piece-dye. The above sets are for dress fabrics. For those intended to be used for waistcoats or mantlings the following are useful particulars—

All 2½/s. dark blue 14d. 4½ d.

2½/s. dark brown waste 56 spicks per inch.

The construction of Design B is based upon the fact that eight and sixteen twills are obtained by weaving together in a perfect manner with them. A fifteen set is required in the foregoing 2½/s. worsted, with about 5¼ threads per inch. Many other effects on a similar principle will no doubt be suggested.
COTTON DRESS GOODS DESIGNS.

When the period for mourning garments expires, there will be an surplus in the home trade for coloured fancies in every possible textile material. As we at one time prognosticated through these columns that Scotch watch tartans would be revived, which really took place shortly after we had given patterns for same, so shall we be called upon to a forecast in the same direction. These tartans seem to command attention at all times and seasons. Perhaps one main feature in connection with their popularity is the consummate colour arrangements of the crossings, independent of the weaves, and now that we have so many bright brilliant dyes for enhancing the ornamentation of all tissues, no wonder or surprise need be felt at Scotch plaids, clan tartans, and their modifications in stripes, taking a leading position.

In the spring, cotton canvas in light neutral shades, as well as same in decided dark colours, will be in use for daily wear as serviceable costumes, while white and printed muslins will compose tosets for more dressy occasions. Zephyrs and other fancy cotton gingham cloths will be used for plain morning gowns.

Design A now gives somewhat of a novelty so far as combination effects, and all-over diagonal in cotton dress goods are concerned.

It may be found useful in a variety of fabrics; in fact it is so constructed that any counts or material in shirtings, vestings, or costings, or any of the materials above named, can be utilized by this weave. It is on 11 shafts, straight-over draft, with 32 picks to the inch. This weave is applicable, and as any cloth of fabric, heavy, medium, or light, may be produced from it, particulars can scarcely be given without going through the different multiples; but we may just point out that for dress goods 20's cotton warp, 48 ends per inch, 16's weft, 64 picks, will form a guide. It may be woven in solid colours, or piece-dyed. Contrasts may be made to create capital effects, the warp possibly being a very dark or extremely light tint. Ultramarine blue is a favourite shade. Weft grey or cream, warp grasshopper green, with faint pink weft; warp dark red, weft grey; heliotrope or brown warp, with orange weft; billiard green warp with the brightest blue weft obtainable, these will give some idea how beautiful and effectual contrasts may be formed.

Design B is for cotton satins, which will be in vogue for the various cut-out door pastimes. This is a fabric that must be made from the best of materials and without a single weave, on 16 shafts, 16 to the round.

Design C is merely a variation on 8 shafts, straight-over draft, 8 to the round, same particulars as B. We have given this arrangement for limited weaving machinery, where perhaps 16 shafts would be unattainable. The product will be found equally valuable as a cloth, and as there seems some desire for a special back to these goods for the purpose of acting as a substitute for linings and a rough carded surface, we will endeavour in our next issue to furnish weaves for this purpose.