

have taken its place. In floorcloths we have in the same space of time seen the rapid rise of Kirkcaldy as a centre for the production of goods of the very highest artistic merit, while the common floor oilcloth industry has in Lancashire made rapid strides in the hands of the Rylands and the Williamsons; and elsewhere it has also developed to an astonishing degree. The older Wilton or Axminster carpet made by the finger loom has, practically speaking, vanished from the list of English products. The goods are really woollen velvets, with variegated colours, and as originally produced the design was formed by applying the cords in the same way as in the old damask draw loom. For lobby and stair carpets, ordinary plain cloth weaving was resorted to, the warp being of various coloured yarn, so very closely set together and confined in the reed as to conceal the weft. The old finger loom now only exists at Wilton and Merton, and in the business of such a firm as that of Rylands and Sons its products have no chance of competing with goods made by power. Another highly important change in connection with the carpet trade of late years must also be noted here. We refer to the tendency developed amongst manufacturers to pass over the merchant and go direct to the retailer. In no other branch of the textile trades has this tendency become so marked, and it seems difficult to account for it in the present instance, unless it be that merchants have not always given manufacturers that consideration to which the latter may consider themselves entitled. It certainly does not benefit the distributor to produce such results; but we are equally doubtful as to whether the manufacturer derives as many advantages as he originally anticipated from the altered method of doing business.

On another point Mr. Edwards offered some remarks which will be read with interest not only by manufacturers, but by merchants as well. He touched, in fact, a subject in which those who produce textiles, whether of cotton, woollen, linen, or silk, are deeply concerned, and which has before now produced ill-feeling. We refer to the discourteous treatment which some buyers mete out to the gentlemen who call upon them for the purpose of selling their productions. One would fain think that those who behave in this way are few and far between, but that they exist, especially in London, every manufacturer knows only too well. We are glad to see such healthy sentiments as the following proceeding from the mouth of a buyer of Mr. Edwards' standing. "With regard to their connection with manufacturers," he said "when he was made buyer he thought over the whole surroundings of his position very carefully. He felt that he had to do business with a circle of gentlemen who moved in very much higher society than ever he had been doing. They were gentlemen of wealth and position, many of them justices of the peace, mayors of towns, and holding very high positions in the districts in which they lived. And he felt, although he had seen a deal of uncourteous treatment with regard to those who endeavoured to sell to him their productions, that he had no right to treat them in any other way than as gentlemen. These had been the views which he had endeavoured to follow in connection with the working of his department."

The claims of the manufacturers are here put in a nut-shell, and the buyer who, holding such opinions, sees that they are carried out in the division over which he has control, will never be the loser. Those who cannot treat the manufacturer with the consideration to which he is entitled are certainly not the first to hear of any special bargains which the latter may have to offer, so that it pays from a purely business point of view for the merchant to treat the manufacturer, as he in turn desires his own customers to treat him.

Letters from our Readers.

The Editor does not necessarily endorse the opinions of his correspondents.

A WOOLLEN MILL WANTED IN DENVER.

(TO THE EDITOR OF *The Textile Mercury*.)

There are probably among your readers men of capital, with a technical knowledge and practical experience, who are open to consider and investigate any new and virgin field for woollen manufactures. I would call the attention of any such men to the good opening which undoubtedly exists at Denver, Colorado, for a small woollen mill making, say, blankets in the first instance, with capacities for indefinite extension. The following facts speak for themselves:—

Denver has now 150,000 inhabitants, is still growing, with every prospect of continued growth. It is the geographical, railroad, commercial and financial centre of a territory as large as the German Empire, which territory is rapidly filling up on account of its great and varied mineral, agricultural, horticultural, and pastoral resources, with consequent unlimited manufacturing possibilities. It has no commercial rival for 600 miles in any direction, and with its numerous radiating railroads has all necessary collecting and distributing facilities.

The special agent of the United States Bureau of Animal Industry has just made an official investigation of the sheep industry of Colorado, and has prepared an exhaustive report for the Department of Agriculture. He reports that since the decline of the range cattle business, the sheep industry has been advancing steadily and will no doubt become in the near future the principal live-stock business of the State, as there is no class of live stock more naturally adapted to Colorado than sheep, and during recent years they have been the most profitable. Official figures further show that there are about 2,000,000 sheep in Colorado, and the annual wool clip of the State is therefore about 10,000,000 pounds. Of these sheep about 25 per cent. are Mexican, about 10 per cent. Cotswolds; there are some Shropshires, and probably about 60 per cent. Merinos. Of the wool clip of Colorado, 25 per cent. is "carpet wool," 50 per cent. "medium fine," and the balance "heavy fine," with a very little "light fine." About one-half of the wool clip now passes through Denver, but the entire wool clip of the State is sent East, unscoured, at an average freight of \$1.50 per 100 pounds, while during 1890 the freight was as high as \$2.40 per 100 pounds. The coarse wools go largely to Philadelphia and the finer grades to Massachusetts, Connecticut, and other New England points, 2,000 miles distant, where they are made into carpets, blankets, cassimeres, underwear, haunels, hosiery, etc., which in part find their way back to Colorado. In other words, while the country tributary to Denver (according to the estimates of our leading Denver dry goods merchants) already annually consumes at least \$500,000 worth of blankets, and at least another \$2,000,000 worth of other woollen goods, which might just as well be manufactured here. There is not a woollen mill within 600 miles of Denver (the nearest being at Salt Lake City, Utah), and Colorado is annually sending ten million pounds of wool 2,000 miles to manufacturing points East, involving two freights and a series of middlemen, each one of whom has to have his profit. A woollen mill at Denver would have many advantages. For instance, there would be a saving on the raw material of about five cents per pound, as it takes 3 lb. of wool in the grease to make 1 lb. of washed wool, saving the freight on the 3 lb. going East and on the 1 lb. of manufactured goods coming back, to say nothing of commission to middlemen, storage, and insurance. The saving in fuel in Denver as against New England is from \$2.50 to \$4 per ton. Labour is very little higher, and has been calculated at the highest at one-third more than what is paid in the Eastern States.

The woollen goods commanding the largest and readiest local sale are wool and merino underwear, hosiery, blankets, and flannels, at present manufactured in and obtained from New England (principally), and the Eastern States as well as California, at an average freight of \$2.50 per 100 lb.

A gentleman has just moved his plant from Massachusetts to Denver, and is about starting a factory here for the knitting and manufacture of underwear, his raw material, however, being largely yarn from Bradford, Yorkshire, England, made from fine Australian wool. A cotton mill, a paper mill, a match factory, and other industrial establishments are nearing completion; other manufacturers in various lines are arranging for or contemplating moving to Denver, but up to the present no one has proposed to use the local wool and supply the local market for blankets, etc. Is it not worth full investigation by the right parties? At the present moment, a most suitable site, with large building and invaluable water rights (so difficult to meet with here) can be obtained at a moderate sum, within a few miles of Denver, peculiarly adapted for an infant woollen industry, including ten acres of adjoining land which would admit of all reasonable future expansion of the business.

I was raised in the midst of a manufacturing district and have been surprised, during my seven years' residence in Denver, that the opening for a woollen factory has hitherto been overlooked. Did I understand the business myself, this letter would not have been written. Parties inclined to investigate the matter further will do well to visit Denver, and see for themselves.

THOMAS TONGE,
321, Boston Building, Denver, Colo., U.S.A.
(formerly of Manchester, England.)
4th April, 1891.

The British and Italian Governments will shortly appoint Commissioners to negotiate for the renewal of their treaties of commerce with Servia which expire next year.

A WARRANT has been issued under her Majesty's Royal sign manual, approving a form of constitution for "The Imperial Institute of the United Kingdom, the Colonies and India, and the Isles of the British Seas."

THE COST OF PRODUCING WOOL IN AUSTRALIA.—According to reliable statistics received from Melbourne, the quantity of wool produced in Australasia has increased during the past seven years by 40 per cent., while the value, in consequence of falls in prices, has only risen 14 per cent., involving, according to some, a great narrowing in the profits of growers, whose costs are said to be in proportion of the quantity produced, and not to its value. This is, however, questioned by other competent authorities. It is pointed out that during the past six years there has been a reduction of from one to two per cent. in the interest rate of money employed in wool production, and that, owing to the fall in values affecting nearly all commodities, the cost of station supplies has been very greatly reduced. Another thing tending in the same direction is the fencing and other improvements which have been made on the stations. Last, but perhaps not least, the cost of landing a very large proportion of the clip on the seaboard has been very greatly reduced by the extension of railways. It seems, therefore, not unlikely that a good deal of the reduction in wool values has been caused by the lower cost of production and carriage to market. The only *per contra* item seems to be that rents have risen during the past seven years.

Designing.

NEW DESIGNS.

NOVELTIES IN WOOLLENS AND WORSTEDS.

The first step towards a thorough comprehension of the art of textile design is the realisation of those delicate and apparently insignificant principles that form the basis upon which all future progress depends. We can give no better instance of this than that furnished by the investigation of the colour perception in mankind. Science fully demonstrates that this perception, considered by many as a constant factor, is in reality an

acquisition gained only by the constant exercise of the powers of discernment. In like manner is the art of textile design acquired by constant exercise of the powers of discernment until a constantly increasing fineness of judgment enables the designer to produce beautiful effects with a surety unattainable in any other way than by such training. As the student of decorative art must exercise his judgment in the selection of appropriate ornament, so must the textile designer in like manner judge the material with which he has to work, selecting colour, weave, etc., in accordance with the principles which experience has slowly, almost imperceptibly, taught him. It is not possible then to lay too much stress on the fact that the textile designer cannot consider too minutely the tone of the material with which he has to deal. To the beginner the characteristics of the yarn to be employed pass almost without notice; to the practised hand the design is formed with the yarn in view throughout. It is this required "harmony of tone" which renders the production of novelties in worsted and woollen coatings, trousering, etc., a much more intricate accomplishment than the adaptation of figures to textiles, though in this latter case there is a certain amount of the same discernment necessary, but having usually standard types of cloths to which the figures are applied, there is certainly much less scope for judgment than in the case of the cloths first mentioned.

In the following designs we have endeavoured to adhere to the above principles, producing our plans with the type of yarns to be used constantly in view.

Design 36 is an effect originated with the idea of using a fairly hard-twisted warp, with a soft weft, thus producing gradation from an almost worsted structure to a typical woollen structure. The make, it will be observed, is a modification of a four-and-one effect throughout, resulting in a horizontal twill in the weft section and an upright twill in the warp section. The following will prove an effective mode of development:—

Warp.
 1 thread 15 sk. black,
 1 " 15 sk. black and white twist,
 12's reed 3's.
Weft.
 1 thread 15 sk. black,
 1 " 15 sk. white or grey,
 36 picks per inch.

Weft to be softer twist than warp.
 Other systems of warping are, of course, applicable, but it should be observed that in the above the colour, both in the case of warp

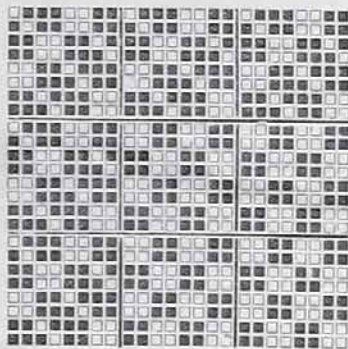
and weft, forms a twill in opposition to the real twill of the cloth.

In *Design 37* is given a stripe effect, consisting of two-and-two twill, in combination with sixteen threads and picks of hopsack slightly modified. The best method of developing this effect will be as follows:—

Warp.
 16 threads 25 sk. stained yellow brown woollen,
 16 " 25 sk. dark yellow brown woollen,
 10's reed 4's.
Weft.
 All 26 sk. dark yellow brown woollen,
 40 picks per inch.

Checking with more intricate forms of colour will also prove effective, care being taken not to obliterate the make.

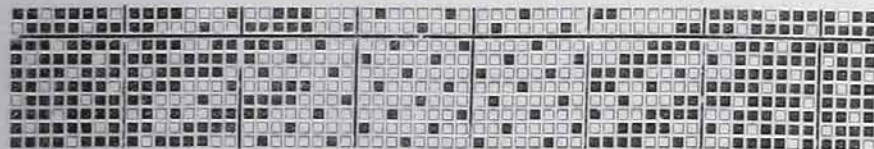
Design 38 is a similar effect in check form.



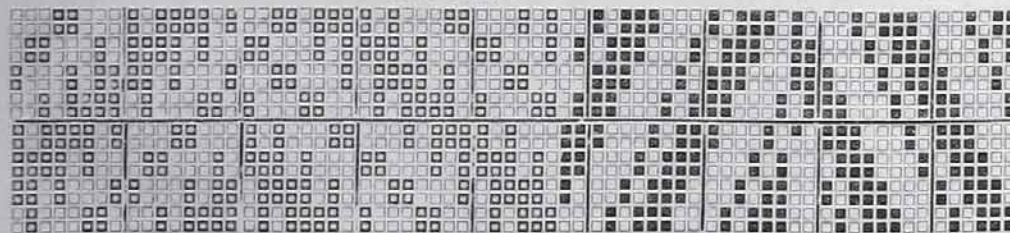
DESIGN 38.

Design 39 is an effect, producible on 16 shafts, as shewn in the draft, for five worsteds. Briefly, it consists entirely of a rearranged twill, but note should be made of the fact that in addition to ordinary and upright twills in combination, an additional effect in the varying length of the twills in any one direction is introduced. The upright twills, being most regular in form, should be developed in solid colour, while twist or mixture yarns are in harmony with the broken effect of the twill running at an angle of 45°; consequently the following will prove suitable:—

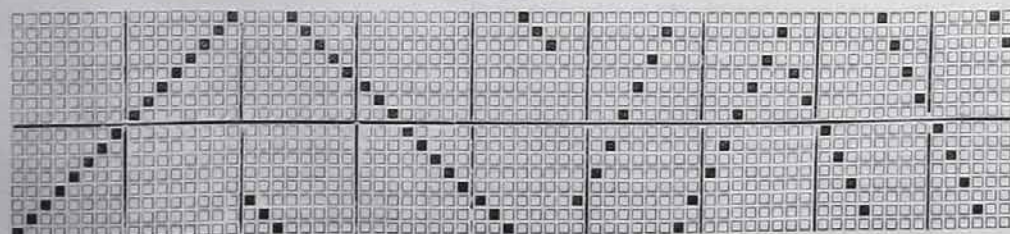
Warp.
 4 threads 2'50's black worsted,
 8 " " dark grey worsted,
 8 " " black worsted,
 4 " " dark grey worsted,
 6 " " black worsted,
 4 " " dark grey worsted,



DESIGN 36.



DESIGN 39.



DRAFT FOR DESIGN 37.

11 threads 2'50's black worsted,
 1 " " black and white silk twist,
 16 " " black worsted,
 1 " " black and white silk twist,
 7 " " black worsted,
 14's reed 6's.

Weft.
 All 25's black worsted,
 84 picks per inch.

The silk twist is introduced to lend brightness to the combination, and is consequently introduced where it shews to the best advantage.

FASHIONABLE LIGHT-WEIGHT CANVAS OXFORD SHIRTINGS.

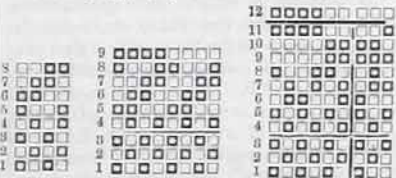
In 30's warp and weft, 3 in a dent, 90 ends per inch of warp; 60 picks of weft.

1st Pattern: All bleached white or cream, draft 90 ends, 3 in a heald, one heald per dent, on 1, 2, 3, 4 shafts, 18 single ends, 3 in a dent, on 5, 6, 7, 8 shafts; 12 ends, 3 in a heald, on 1, 2, 3, 4 shafts; 18 single ends, on 5, 6, 7, 8 shafts; 12 ends, 3 in a heald, on 1, 2, 3, 4, and 18 single, on 5, 6, 7, 8; repeat from 90. Weft, dark brown, dark blue, dark green, grenat, mid-coral, Napoleon, or rose. Pegging plan, No. 1.

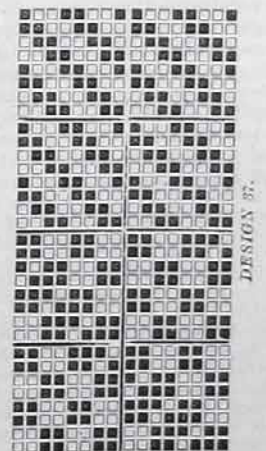
2nd Pattern: Same as first 17 counts, etc. Warp, all cream, 18 ends, 3 in a heald, on 1, 2, 3, 4 (see 2nd pegging plan); 12 single, 3 in a dent, on 5, 6, 7, 8 shafts; 18 ends, 3 in a heald, on 1, 2, 3, 4 shafts; 12 single, on 5, 6, 7, 8 shafts; 3 ends, 3 in a heald, on 9th shaft; 12 single, on 5, 6, 7, 8 shafts. Wefts same as given in 1st pattern, 50 picks per inch.

3rd Pattern: Second pegging plan, 3 ends single on 1, 2, 3 shafts; 3 ends, 3 in a heald, 4th shaft; 3 ends single on 1, 2, 3 shafts; 3 ends, 3 in a heald, on 4th shaft; 3 single on 1, 2, 3 shafts; 3 ends, 3 in a heald, on 4th shaft; 3 single on 1, 2, 3 shafts; 3 ends, 3 in a heald, on 9th shaft; 36 single ends on 5, 6, 7, 8 shafts, and repeat from 3 single, all 3 in a dent. Weft as in 1st and 2nd.

4th Pattern: 18 ends, 3 in a heald, on 1, 2, 3, 4 shafts; 3 black, dark brown, or dark blue on 1st shaft; 12 ends of cream, 3 in a heald, on 2, 3, 4, 1 shafts; 6 black on 9, 10 shafts; 3 in a heald; 12 ends of cream, 3 in a heald, on 2, 3, 4, 1 shafts; 3 black, 3 in a heald, on 2nd shaft; 18 ends, 3 in a heald, on 3, 4, 1, 2, 3, 4 shafts; 6 cream, 3 in a heald, on 10 shafts; 6 cream, 3 in a heald, on 11, 12 shafts; 6 cream, 3 in a heald, on 9, 10 shafts, and repeat with 18. The weft pattern the same, only when using the double pick of black, take the tread in pegging plan No. 3 marked x, also



No. 1. No. 2. No. 3.
 CANVAS SHIRTINGS PEGGING PLANS



DESIGN 37.

omit the three sixes of cream on the 9, 10, 11, 12 shafts. To be more explicit, and prevent mistakes, the checking pattern will be (if warp has 72 ends per inch and weft 72 picks), 18 cream, double pick of black on tread \times 12 cream, 6 black on tread \times 12 cream, double pick of black on \times 38 cream; or the weft pattern would be very effective as follows:—56 cream, double pick of black on \times 36 cream, double pick of black on \times , and repeat from 56 cream. These patterns are well worth producing, as they are likely to be in great demand during the coming seasons of summer and autumn for out-door wear.

FANCY GINGHAMS—THREE PATTERNS.

Plain weave in 30's warp, 30's weft, all cotton, best yarns, 80 ends per inch, 80 picks.

1st Warp Pattern: Weft, check the same, 24 light gobelin blue, 24 red brown, 2 light gobelin, 20 red brown, 4 gobelin, 18 brown, 6 gobelin, 16 brown, 8 gobelin, 14 brown, 10 gobelin, 12 brown, 12 gobelin, 10 brown, 14 gobelin, 8 brown, 16 gobelin, 6 brown, 18 gobelin, 4 brown, 20 gobelin, 2 brown, and repeat with 244 gobelin.

2nd Pattern: Cassimere twill, 4 shafts, same counts, etc., as first, 60 cream, 2 dark buff, 20 cream, 2 dark buff, 16 cream, 2 dark buff, 12 cream, 2 dark buff, 10 cream, 4 dark buff, 8 cream, 4 buff, 8 cream, 4 buff, 8 cream, 4 buff, 8 cream, 4 buff, 6 cream, 4 buff, 6 cream, 4 buff, 6 cream, 12 buff, 12 cream, 136 dark buff.

Repeat from 60 cream; weft pattern the same. For variety, new slate in place of buff, and the following mid heliotrope, light strawberry, sage green, lily of the valley, pink, terra-cotta, and light golden brown, retaining the cream at all arrangements.

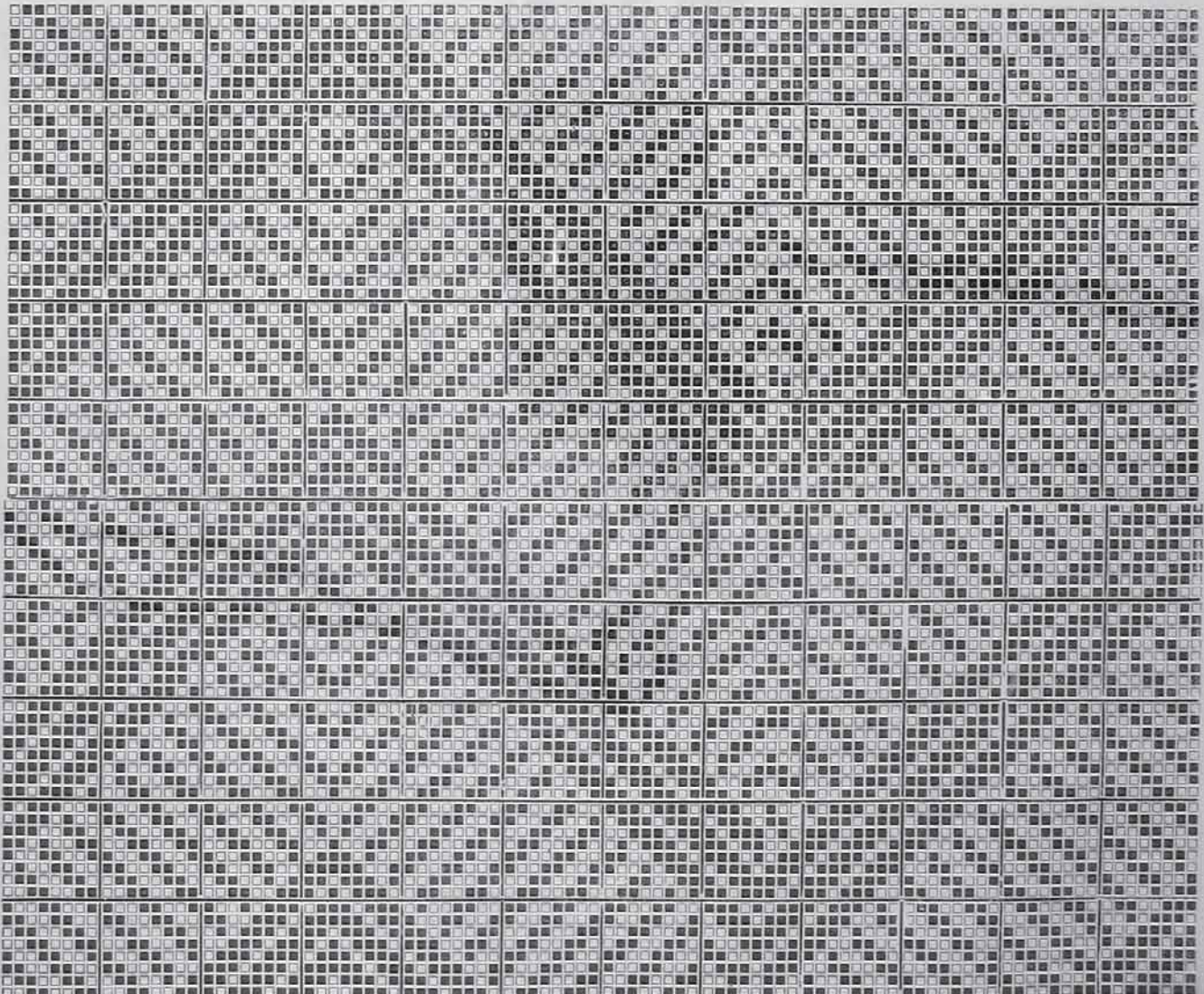
3rd Pattern: Tartan plaid, cassimere twill, weft pattern the same. 160 very light lilac, 12 dark blue, 24 dark terra-cotta brown, 6 white, 6 dark terra-cotta brown, 6 white, 6 dark terra-cotta brown, 16 dark emerald green, 16 mid-coral, 6 white, 12 mid-coral, 6 Napoleon blue, 12 mid-coral, 6 white, 16 mid-coral, 16 dark emerald green, 6 dark terra-cotta brown, 6 white, 6 dark terra-cotta brown, 12 dark blue. Repeat with 160 very light lilac. All the three patterns being on 4 shafts with same draft, can easily be converted into plain, twilled, or matting weaves without any difficulty, and can be relied upon as being quite fashionable for the summer season.

SILK DESIGN FOR VESTINGS, ETC.

The popularity of out-door recreations has created a demand for comfortable, easy, and ornamental fabrics, and there is a growing fashion for loose jackets and vests, fine gingham in plain or twilled weaves, with or without silk mixtures, and fancy light-weight canvas. Oxford shirtings are another distinctive feature of the season. White or cream-tinted linen

duck, with small woven spots, red, blue, or black, are in request, as well as fancy weaves, such as basket, plaid, and stripes. Yellow, the most beautiful and creative of all colours, is in several new shades, banana, a golden cream; Cleopatra, an orange tint; medlar, the connecting link between yellow and maroon. Only two shades of green are seen at present, *Eau de nil*, and lily of the valley. We give a suggestive design for a fancy vesting or loose jacket, which may be made in any material. If spun silk 20's is used or organzine, the weft may be 16's silk tram, or the warp may consist of 40/2 cotton, and weft 12's silk tram, 80 ends per inch, and 40 picks.

Another variety: 48/2 cotton for warp, 60 ends per inch, and 60 picks of 16's tram. The design shews in the dots weft to the face, and will require a small jacquard for the weave. Contrasts will be required to give the full effect. Warp, all black, brown, maroon, chocolate, dark blue, or green; weft, all white, cream, light pink, yellow, orange, cardinal. If made in all linen warp and weft, the following particulars will be found suitable:—72 ends per inch of 46's linen, 72 picks of 46's linen; weft, all light, buff, cream, silver, grey, light pink, *Eau de nil*, and Chartreuse, which is a brimstone yellow; or the whole of the warp may be of these tints, and the weft red, blue, brown, black, or any dark shade that will give a pleasing contrast.



SILK DESIGN FOR FANCY VESTINGS, ETC.