

## THE MANUFACTURE OF BEAVER OVERCOATINGS.

The same comprise a variety of heavy-weight woolen goods used for overcoats, cloaking, etc. This explains that they must protect the wearer during cold weather, hence their construction must be such that will retain heat to the body of the wearer. Their average finished weight is about 27 oz. per yard, with variations of about 2 ounces one way or the other, according to the wear the fabric is intended for.

The construction of these fabrics varies with the wear they are subjected to; for instance if destined for outdoor purposes and this under all kinds of

the strength of the fabric. To obtain this result, the proper kind of raw material must be used; at the same time the amount of twist introduced in the back filling must not be more than is absolutely required for the desired strength of the fabric, since a hard twisted yarn will retard gigning, which, when forced will result in a partly broken thread, and in turn in a fabric of inferior strength.

The looser the interlacing (weave) of the back filling, the softer the resulting fabric structure will be; however, too large a float should be also omitted.

With reference to the face of the fabric, the same is produced by the warp, hence warp effect weaves are the ones most often used.

To be able to raise the required nap on the face of the fabric the greatest care in the selection of stock must be used; a short, fine quality of clothing wool, *i. e.*, a fibre which will result in a velvety thread, the numerous ends of the fibres of the thread standing out from its core must be used. Any unnecessary twist in the yarn must also be omitted; both items if observed assisting felting as well as gigning during the raising of a short, heavy nap, as has to be raised out of said felt.

This will indicate that for the construction of these fabrics, weaves have to be used calling for 2 systems of filling, (face and back filling) since a back filling, as compared to the use of a back warp, will always produce a better nap, since the teeth of the teasel of the gig strike the filling in a perpendicular direction, whereas they strike the warp in a parallel position.

We will now give a few standard beaver weaves.

### One System Warp and Two Systems Filling.

#### (1) ARRANGEMENT OF FILLING.—1 FACE: 1 BACK.

Double satins present a smooth face, besides result in a stronger fabric structure than regular satin weaves, on account of the filling twice interlacing with the warp in one repeat of the pattern.

The warp produces a smooth effect in a double satin, and since the warp has to form the face of the fabric in the resulting beaver structure, our double satins thus form most excellent weaves for the face of the present subdivision of beaver weaves to be explained.

Figs. 1, 2, 3 and 4 show specimens of such weaves, diagrams *a* showing in every example the single cloth weave, *i. e.*, the respective double satin as used in connection with *b* its respective beaver weave. The corresponding regular satin (warp up) is used in the latter for the interlacing of the back filling.

*Full* type shows face weave, *Cross* type back weave.

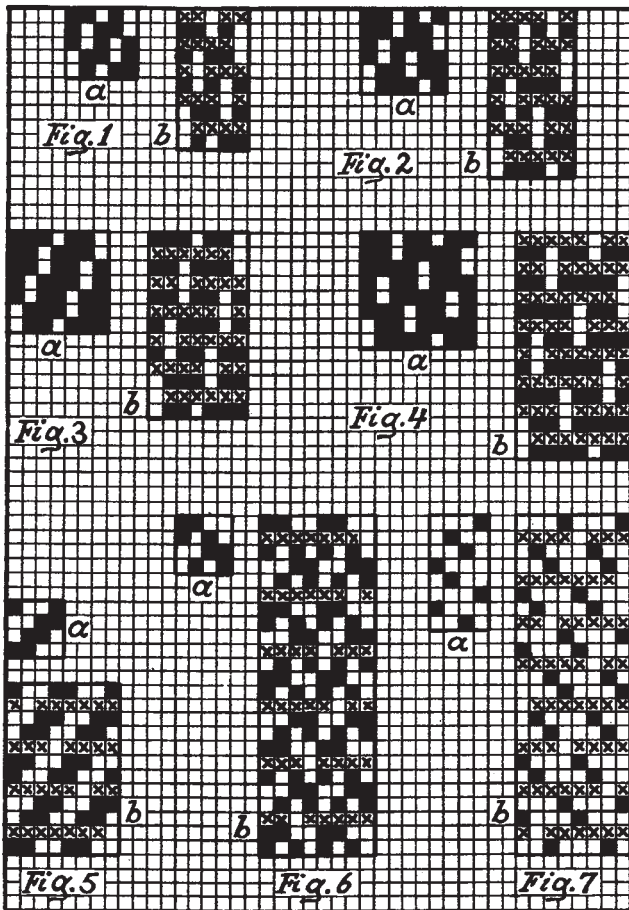
Fig. 1<sup>a</sup> shows the 5-harness double satin and

Fig. 1<sup>b</sup> the same arranged for a beaver weave.

Figs. 2<sup>a</sup> and 2<sup>b</sup> show the 6-harness double satin thus treated.

Figs. 3<sup>a</sup> and 3<sup>b</sup> show the 7-harness double satin, and Figs. 4<sup>a</sup> and 4<sup>b</sup> the 8-harness double satin thus treated.

Weaves given refer to lighter weights of fabrics, more particularly adapted for cloakings and medium weight overcoatings, since on account of the arrangement of the filling of one pick face to alternate with one pick back, we cannot use a much heavier count of yarn for the back filling than used for the face filling. Provided we want to use a heavier count of yarn for the back filling, *i. e.*, produce a cheaper and heavier fabric, we then must use,



weather, like police and drivers' overcoats, etc., *i. e.*, in connection with lower grades of beavers, a more or less stiff, board-like, somewhat waterproof structure is wanted, a fabric which besides giving warmth to its wearer will possess a well felted, closed face, preventing snow and rain from entering the fabric structure.

However, with medium and better grades of beavers, a soft, more or less pliable fabric structure is wanted, *i. e.*, a structure which will contain in its body a great number of pores, which, filled with air, become a poor conductor of heat and in turn assist in protecting the wearer against the influence of cold weather. Such fabrics have a smooth, soft face, with a hairy, well gigned, covering on the back, thus imparting to the fabric its characteristic pliable handle. The latter has to be produced by means of gigning, for which reason the backing used must be of such a composition and twist to permit of the easy raising of a cover on the gig, with as little waste in material (gig flocks) as possible, and this without influencing

## (2) COMBINATION OF FILLING.—2 FACE: 1 BACK.

Fig. 5 shows such a weave and where *a* shows the single cloth weave, *i. e.*, the 4-harness even sided twill and *b* said weave backed 2 picks face to alternate with 1 pick back. Repeat of the latter weave is 8 by 12. The face picks are shown by *full* type and the back picks by *cross* type.

Weaves 1, 3 and 5 are apt to show a twill effect in connection with low warp textures, a feature which in connection with cheap and medium grades of cloakings may not be objectionable, but which, in connection with overcoatings is not desired and where then an absolutely smooth face, minus any twill effect is desired.

In exceptional cases it may be desired to use a still heavier count of back filling and when we then must use,

## (3) COMBINATION OF FILLING.—3 FACE: 1 BACK.

Fig. 6 shows such a weave. *a* is the face weave, the 4-harness even sided broken twill, and *b* the backed weave, repeating on 8 warp-threads and 32 picks. Face picks are shown by *full* type and back picks by *cross* type.

## (4) COTTON WARP BEAVERS.

The same hold an important place in connection with lower grades of overcoatings and cloakings, and if properly constructed, can not readily be distinguished from all wool structures. The object aimed at in their construction is to bury the cotton warp into the body of the fabric, *i. e.*, hide it on the face by the face filling and on the back by the back picks. This will show us that in this instance the face filling alone has to produce the face of the fabric, hence attention must be paid to the proper selection of the stock for it, the same as was explained in connection with the selection of stock for the warp when dealing with weaves Figs. 1 to 4; only that in the present instance lower grades of wool, in connection with better grades of shoddy can be used, the latter for the reason that the fabric has lost its *all wool* character in connection with the clothing merchant as well as the consumer, on account of the cotton warp entering in its construction.

Fig. 7 shows us a specimen of such a cotton warp beaver weave, the same having for its face the 4 by 8 irregular satin, shown in diagram *a*. Diagram *b* shows the latter arranged 2:1 for backed cloth.

Repeat: 8 warp-threads and 32 picks.  
Full type indicates face and Cross type back picks.  
(To be continued.)

## Cotton Consumption and Supplies.

The amount of cotton consumed in the United States during December, 1916, as 536,587 running bales (counting round as half bales), compared with 555,005 bales for December, 1915.

Cotton on hand in consuming establishments on December 31 was 2,362,960 bales, against 1,853,046 bales on the same date in 1915.

The amount of cotton in public storage and at compresses was 4,065,178 bales, compared with 5,195,653.

Linters not included above were 69,610 bales consumed during December, 1916, and 76,932 bales in 1915; 106,627 bales on hand in consuming establishments on December 31, 1916, and 110,222 bales in 1915; and 142,472 bales in public storage and at compresses in 1916, and 149,042 bales in 1915.

The imports of foreign cotton during December, 1916, amounted to 34,339 bales of 500 pounds each, against 43,724 bales for the same month in 1915.

## NATURAL DYESTUFFS.

## PRODUCTION AND USES OF INDIAN TURMERIC.

This dyestuff, also called *Indian saffron*, is the tuber or underground stem of the *Amomum curcuma*, or of various species of *Curcuma*, chiefly *Curcuma tinctoria*, a plant which grows freely in India, China, Japan, and the East Indies.

There are two forms, the hard, highly-colored rhizome used as a yellow dyestuff for hundreds of years, and the fairly soft, pale-colored, edible root that is employed as a condiment in curries; etc. Externally the tubers are of a drab or yellowish-gray color but internally they are of a deep yellow or brownish-orange. When ground, turmeric forms a light, resinous powder, which possesses a powerful aromatic smell and taste.

With regard to commercial qualities, the Chinese, and especially the Formosan turmeric is considered to be the best, with the Indian produced in Bengal, Pegu, and Madras ranking next. So different are some of the forms of turmeric that it has often been urged they must be produced from botanically distinct varieties. In the American and European trade the China, Madras, Cochin, Bengal, and Java grades are recognized. Cochin turmeric is a globular tuber and usually appears on the market cut into slices. It is edible, and is possibly to some extent often *C. augustifolia* (Indian arrowroot) or *C. montana* rather than *C. longa*. Some writers state, however, that the special qualities of the dye rhizome are more a question of age than of specific distinctions. If left in the soil for a longer period or if dried and stored for some time before being used the tubers assume the dye condition.

The roots, particularly when ground, should be stored in a dry place, since if moist the coloring matter is somewhat rapidly destroyed.

## Exports to the United States

have been nearly all for use as a dye. Shipments are in two solid forms, either as rhizome "fingers," which are big, hard, and heavy pieces of root, or as "bulbs," a small, round form. The total exports to the United States from all ports in the Madras Presidency for the six months ended June 30, 1916, were 1,745,924 lb., valued at \$108,733.

## Cultivation, and Its Cost

The districts in the Madras Presidency where turmeric is chiefly cultivated are Erode, Trichinopoly, Karur Salem, Nellore, Cochin, and Cuddapah. The yearly output for the Presidency is estimated roughly at about 3,000 tons, but a good deal of obscurity prevails as to the production and yield of this crop. The returns are given in maunds, a measure that may vary from 82 to 25 lb.; it is often not possible to discover whether the figures refer to dry or green tubers; and, lastly, ignorance prevails regarding the races of plant grown. In Coimbatore it is said that turmeric is grown with yams, maize, castor, etc., the rhizomes being planted on ridges in June and July and dug up in March and April. As a rule turmeric is not grown more than once in three years and is followed by raggee and paddy.

The cost of cultivation seems to be about \$38 per acre and the yield from 3,000 to 5,000 lb. of prepared turmeric (value \$39 to \$65) and 6,250 lb. of yams (value about \$65).

The plant occupies the ground for nearly a year. When prepared as a condiment the root is called, in the vernacular (tamil), manjal, and when prepared