FABRIC ANALYSIS.

The analysis of textile fabrics forms an interesting and at the same time most important subject for the designer, superintendent, manufacturer, the sales agent, as well as others connected with the textile industry.

The object aimed at is to ascertain by experience, tests and calculations, full details as to the construction and characteristics of a fabric, cost of its production, etc., items which, if carefully solved, mean success.

A complete fabric analysis comprises not only the picking out of the arrangement of interlacing warp and filling (the weave) but also ascertaining the nature of the materials the latter are composed of, their texture, quality, counts and twist of yarn used, weight of fabric per yard and amount for each different kind of yarn used in the construction of the fabric; also the various processes commonly designated as dyeing and finishing the fabric has to be subjected to, to bring it into saleable condition for the market.

This complete analysis referred to may not always be necessary, in fact the experienced designer, in his line of goods, may rely very frequently on his experience only—having made similar fabrics before—and in most instances can tell at a glance the construction and average cost of fabric. Such men, however, are few, and again even such men will come in contact with fabrics not as well acquainted with; the mill may change on a different class of goods, again a designer may change his connection to a mill making a different class of goods he has been accustomed to, features which may compel him to make at least a part if not the complete analysis.

A thorough knowledge of weave-formation and fabric-structure will greatly simplify the work of the analyst. Not only will he become convinced that his pick-out is correct, but for instance, the harder a weave takes-up the filling, *i. e.,* the closer the interlacing, the stronger the warp-yarn must be, both as to quality of stock as well as twist.

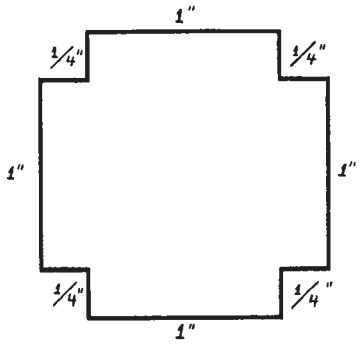
We will now in turn take up the various divisions of a complete analysis, with rules and practical examples.

Ascertaining Weight per Yard of Finished Sample.

The outfit necessary is:

A pair of most delicate scales, weighing at least to the one hundredth part of a grain.

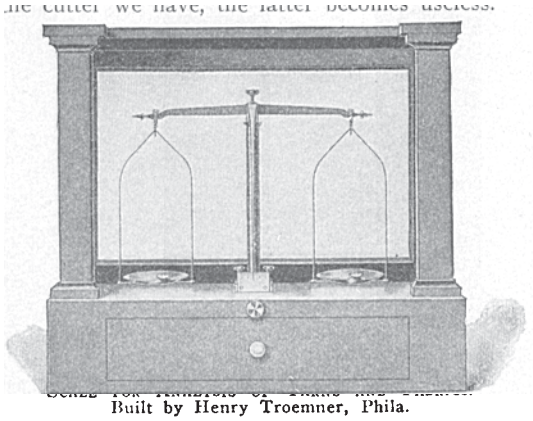
An inch rule, compass, pair of sharp scissors and a collection of cardboards in duplicate, of known sizes, say for example 2 by 2, 3 by 2, 3 by 3 inches, etc., to suit the various sizes of samples submitted.



PLAN VIEW OF CROSS CUTTER (*Actual Size*).
To Cut Fabric Sample exactly 2 square inches; Permitting also handy counting of Warp and Filling Texture for the Unit of one inch.

In place of the latter, a steel die or *cutter,* of a known size may be used, or two or more sizes of such cutters may be kept on hand.

The sample given for analysis is usually small. Cut this sample most carefully to the largest possible known size. The larger the sample to be tested, the more accurate the analysis, *i. e.,* the weight per yard, in this instance will be. For trimming, *i. e.,* cutting your sample to a known size, select the most appropriate size of your cardboard guides, the periphery of which mark with a crayon, pencil or in ink on the fabric and cut on these lines with a sharp pair of scissors, or place sample between two cardboards of corresponding size, carefully adjusting them in your left hand, so they are exactly one above the other, with the ends of the sample protruding between them; the latter then clip with your shears, held in the right hand, holding the two cardboards tight against each other with the left hand. This will give you a good trim, applicable to most any size of samples submitted, the various cardboard gauges being readily made, at no cost, and can be preserved for years, whereas steel cutters, as will be later-on referred to in detail, are expensive, easily damaged, not always true, and most often one measurement only is kept on hand, in turn preventing frequently the use of larger samples when such are at our disposal. When dealing with smaller samples than the cutter we have, the latter becomes useless.



Built by Henry Troemner, Phila.

After the sample has been trimmed to its proper size, set your compass to the corresponding proper dimension, place sample on a contrasting background and see by means of the compass that said sample was perfectly cut, rectifying carefully any possible variation if such should be found to exist.

Some Mills or Commission Houses, for the sake of easy work, prefer to stamp a known size from the sample submitted for testing by what is known as a cutter, *i. e.,* a steel die of a known size. They can be made in most any size, from one square inch to sixteen or more square inches; 4, 6 and 9 square inches are the sizes most often met with.

A very useful shape for a cutter more particularly when dealing with very small samples, is what is known as a *cross shaped cutter* and of which a plan view is given. This shape of a cutter gives us an area which is exactly 2 square inches. The length and width of the centre portions is 1½ inches, leaving the protruding four ends each 1 inch wide, giving afterwards in further analysis an opportunity for the designer to count the number of warp-threads and picks in one inch in the sample, with a chance to prove it with a second count if necessary.

In using any cutter for stamping out a known size of fabric for weighing purposes, care must be taken by the person who handles the device that the same is kept sharp all the time and that no nicks are made by careless handling. Use the proper smooth surface for placing on the sample to be stamped, so that the former will not injure the sharp blades of the cutter.

Having obtained a sample of a known size, the same is now weighed most carefully on a balance and its weight recorded.

RULE: Divide the number of square inches the sample contains into the number of square inches one yard of the fabric contains. Multiply result with the weight in grains of your sample previously recorded and divide the product by 437.5 (number of grains on one ounce) which will give you the ounces per yard for the fabric in question.

The width of a fabric varies with reference to woolen and worsted men's wear and dress goods, cotton and silk goods in all their varieties, narrow ware and broad fabrics, upholstery goods, carpets, etc.

Example: Fancy Cassimere, 54 inches wide; cut sample 3 by 3 inches, equal 9 square inches; to weigh 25 grains.

54×36 (inches in one yard) =
1944 square inches in one yard of cloth
$1944 \div 9 = 216 \times 25 = 5400 \div 437.5 = 12.34$

Answer: 12¾ oz., weight of fabric per yard.

Example: Worsted Trousering, 56 inches wide; cut sample 3 by 4 inches, equal 12 square inches; to weigh 40.5 grains.

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