FABRIC ANALYSIS.

ASCERTAINING RAW MATERIALS USED IN THE CONSTRUCTION OF FABRICS.

(Continued from December issue.)

COMPARING HAIR AND WOOL. Examining the actual hair (since wool is only a variety of it) under a powerful microscope, we find the same lies straight

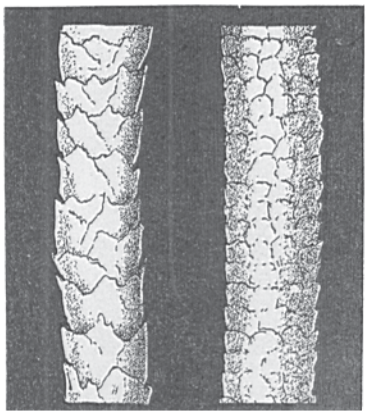

Fig. 18 *Fig. 19*

and even, and presents a comparatively smooth surface compared to the serrated surface of the wool

AUSTRALIAN MERINO.

fibre. To explain subject, Figs. 18 and 19 are given and of which Fig. 18 shows a wool fibre treated with

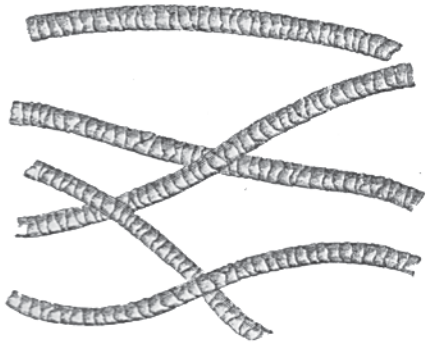

Fig. 20

caustic soda, and Fig. 19 a hair (human) treated in the same way, so as to show the serrations distinctly.

Other animal fibres used in the textile industry are the covering of fur obtained from the Cashmere Goat, the Angora Goat (Mohair), the Alpaca, the Camel, the Common Goat and the Cow; besides Horse hair.

CASHMERE WOOL AND HAIR. The same are the covering of the Cashmere Goat, *viz:* a soft, woolly,

CASHMERE GOAT.

white or grayish undercoat, and a covering of long hairs. The woolly undercoat is the more valuable fibre, and is wool fibre in its structure, as will be seen from Fig. 20. These fibres vary in length from 1¼

Fig. 20a

to 3½ inches and possess no medullary substance. The outer hairs are of a length of from 3½ to 4½ inches, and possess the central or medullary substance, as shown in Fig. 20 *A*.

ANGORA GOAT

MOHAIR is the name given to the hairy covering of the Angora goat. It is of a pure white color (more rarely gray) rather fine, more or less curly, of high lustre, and on an average of from 5 to 6 inches long.

although in some cases as long as 12 inches. Their outer scales are extremely delicate, giving the fibres a spotted appearance all over their surface, as is shown in Fig. 21. Besides the mohair, there grows upon the

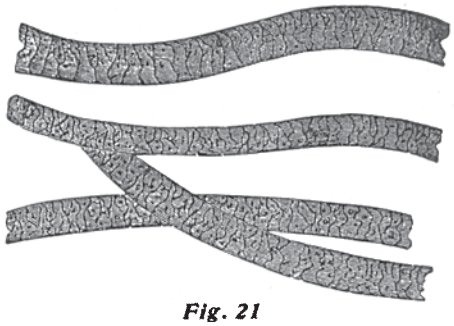

Fig. 21

Angora goat a short, stiff hair (kemp), a relic of the common goat. Its presence depends upon the kind of breed, being nearly nil in the pure animal. This kemp fibre in mohair always reduces its value, in proportion to the amount that is present.

ALPACA OR PACO.

ALPACA and similar wools are obtained from a group of animals comprising the Alpaca, the Llama, the Vicugna and the Guanaco, and of which the one mentioned first is the most important.

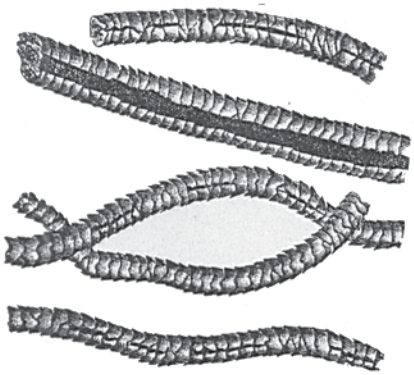

Fig. 22

The Alpaca, a domesticated animal, furnishes a fine fibre, see Fig. 22, about 6 to 8 inches long, except when the animal is only sheared once in two years, and when the fibre is then considerably longer. Its color is white, gray, brown or black. It is a lustrous fibre, although this lustre is inferior to that of mohair.

LLAMA OR YAMMA.

The outer scales of the fibre are extremely fine, and the central or medullary substance is present either

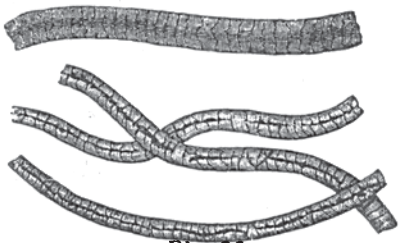

Fig. 23

throughout its entire length or in small elongated masses.

The Llama furnishes a coarse, long unelastic, white and brown wool, mingled with true hair.

The Vicugna furnishes two different kinds of fibres, *viz.:* a fine woolly under hair, covered with scales and free from medulla, see Fig. 23, and a coarse

VICUGNA.

upper or beard hair, having the medullary substance strongly developed.

The Guanaco yields fibres of varying quality; however it is of even less importance than the Vicugna.

CAMEL HAIR is of two kinds, *viz.:* very fine, curly, reddish or yellow brown hairs, about 4 inches in length and known in commerce as camel wool, and coarse straight, dark brown to blackish body hairs, about 2 to 2½ inches long. Both kinds of hair show, under the microscope, see Fig. 24, faint scales. The medullary

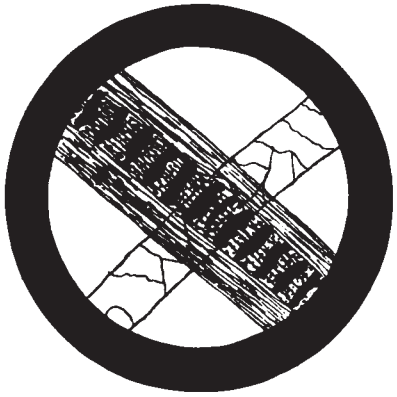

Fig. 24

substance always appears in the coarse hair, whereas in the fine hair it is either wanting or appears in insulated masses. The fibres from the Alpaca, Llama and Vicugna are frequently referred to in the market collectively as Camels hair.

GOAT HAIR. The Common Goat, when raised in the open air, has a woolly fur which is shed in the spring and which hair is adapted for spinning, with wool, into coarse yarns.

COW AND CALF HAIR are coarse, stiff fibres, of a white, reddish brown or black color, possessing a slight

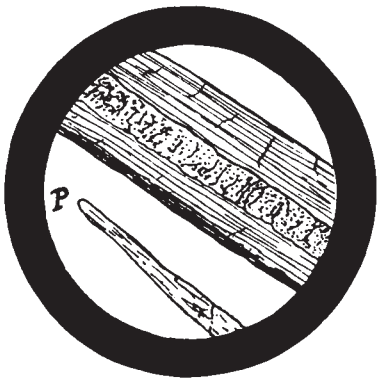

Fig. 25

lustre, and in turn are spun, mixed with low grades of wool, into coarse yarns. Fig. 25, a specimen of the fibre, shows the central or medullary portion of the fibre. The fibre indicated by *P* shows a pointed end of one of these hairs.

HORSE HAIR. Of this, two kinds are met with in commerce, *viz.:* tail hair, or the long hair, measuring at least 23 inches, though it occasionally attains a length of 32 to 34 inches, and mane hair, or the short hair, and which rarely exceeds 19 inches in length. White and black are the colors most esteemed, while red, gray, etc., hair is less valuable.

(*To be continued.*)

COTTON CARDING.

(*Continued from December issue.*)

THE CONDITION OF THE LAP greatly affects the cleansing and parallelizing of the fibres at the card, for which reason the sheet of cotton which is passed to the feed roller should be even in weight, yard for yard, if the sliver taken from the doffer is to be regular in weight. This factor cannot have too much attention paid to it, because irregularities in the feed will be reproduced in the sliver delivered by the card. The laps should neither be dirty nor too thick, as these characteristics tend to increase the percentage of waste made at the carding engine. Licking laps should be carefully guarded against, as they have a very deteriorating effect upon the working of the wires and the quality of the carded sliver produced.

If the lap has a soft and thin end, a bad selvedge is reproduced in front, and the sliver coming from the doffer frequently curls at the end, especially where the speed of the doffer is high. Curling under the comb causes uneven sliver, waste and loss in production, due to the end or sliver breaking down, necessitating frequent piecing up. The same will also occur when the lap is not as wide as the working surface of the card clothing, for which reason laps should be made from two to three inches wider than the width of the wire on the card.

The lap sheet is passed between the wedge-shaped guides in front of the feed roller, the terminal space being rather less, say two inches narrower, than the width of the wire on the cylinder, this being a plan adopted on account of the tendency of the fibres to spread out on the cylinder, the difference in width of feed thus preventing, to a large extent, uneven edges of the sliver and side waste. However, if the width of the cylinder wire is too great for the width of the laps, then the flats strip badly at the ends, owing to the thinness of the film at that point; the stripping brush not being able to take the fibres from the flats, resulting in their filling up at the ends. The weight per yard of the laps used in the card varies from 9 to 16 ounces, according to the width of the card and kind of cotton used.

THE OBJECT OF PERFECT FEEDING is to comb out the fibres, clean them and feed them, as far as possible, individually to the cylinder, the weight of the lap under operation determining the setting of the dish feed plate to the lickerin. The action of the lickerin upon the cotton presented by the dish feed plate is identical to placing it lightly in the path of a body of coarse moving combs. To get perfect feeding, it is important that the dish feed plate be so constructed as to enable the lickerin to take up the individual fibres and not lumps, which would result in imperfect carding. The shape of the nose of the dish feed plate is constructed so as to suit the quality of cotton being used.

When short stapled cotton is used, it is obvious that the lickerin teeth must be nearer to the dish feed plate than when using a long stapled cotton. A rupturing of the fibres often results from having the dish