The future of staple fibre

THE FUTURE OF STAPLE FIBRE

It does not require much imagination to realize that all those unfortunates whom war conditions have deprived of food and who have been obliged to absorb whatever was available — unappetizing stews, swede or bark soup — are more than happy to be able to return to a normal diet. Nor is it surprising that « Ersatz » materials should fall into oblivion as soon as they are no longer a necessity. But it has happened that the substitute product invented to parry against a temporary shortage of the « real stuff » has revealed qualities giving it a value of its own.

This has happened in the case of staple fibre, except for the fact that this material was not invented, as is so generally believed, merely to remedy the textile shortage during the war : it was the war which brought it to the fore, but its manufacture had already been discovered and carried on in several countries ever since World War I. Staple fibre is not a subsitute, it is a new textile fibre discovered by man in his search for ever more perfect products. Its qualities caused it to be employed on a large scale to eke out stocks of natural fibres. As a matter of fact, this development was prejudicial to its good repute, because the public, believing it to be only an « Ersatz », heaped its ire upon it. And yet, in some of the wartime mixture fabrics, the staple fibre was the only good quality ingredient ; it was the only fibre which could be woven in with shoddy and mungo and the poor quality of the materials thus produced was due to these waste and salvaged fibres. These unhappy times are now past and staple fibre is beginning to win favour for its own particular qualities. People know that it is produced by processes similar to those employed for the manufacture of rayon : the difference lies in the fact that staple fibre is not produced as a continuous filament like silk, but cut into lengths of 3 to 15 centimetres, which are then spun like wool or cotton. This manufacture has, of course, benefited greatly by the technical improvements brought to rayon making processes, and particularly by that called « spun dyeing » (an operation which will be dealt with in greater detail in a subsequent number of our journal) and another termed « high tenacity ». Experience gained in the spinning and weaving operations has also taught manufacturers the best methods to adopt in order to secure maximum results. Today, the manufacture and methods of application of staple fibre are very highly perfected, its advantages and disadvantages — what product in the world is entirely perfect ? — are known. Staple fibre has a great future. It will doubtless be further perfected and improved. This view seems to be confirmed by the fact that the United States — one of the world's greatest cotton producers, where sensational announcements concerning the discovery of synthetic textiles endowed with « every » desirable property are often made — have increased their staple fibre output tenfold in the course of the last decade. The consumption of staple fibre in America is so great that Swiss staple fibre has to be imported.

Now that the period of experimentation and research has drawn to a close, now that staple fibre is no longer called upon to serve so many masters in disregard of its own particular properties, people are beginning to agree that the new fibre can offer remarkable advantages in three categories of goods :

1. soft furnishing fabrics ;
2. fabrics for women's apparel ;
3. shirtings.

The first category also includes carpets.

In the soft furnishing group, Swiss manufacturers produce Jacquard weaves and plain and printed fabrics remarkable for their handle, their fresh colours, the sharpness and distinctness of their patterns and their resistance to wear ; furthermore, staple fibre remains clean longer than other fibres because of its smooth surface and it is, of course, absolutely moth-proof. The adoption of staple fibre for carpet-making has proved highly successful and the results of abrasion tests given on page 61, established by the Federal Laboratory for the Testing of Materials, at St. Gall, have received practical confirmation from the velvet pile carpet laid down in the Textile Section of the Basle Fair in 1946 and 1947.

For ladies' apparel, staple fibre is being employed more and more for the following :

a) Printed cloths, rayon warp, staple fibre woof ;
b) Muslins, cretonnes (warp and woof), for prints and plains (dresses and blouses) ;
c) Plain serge ;
d) Knopped cloths (imitation shantung), plain and printed ;
e) Dog-tooth fabrics for dresses and suits ;
f) Crepe mousse for dresses, wool, staple fibre and rayon crepe mixtures (fashionable qualities for spring and autumn wear) ;
g) Drills for aprons and children's garments.

Here again the properties peculiar to staple fibre give remarkable results : freshness of colours, clearness of prints and perfect fall. Apart from this, spun dyed and high tenacity staple fibre has many great advantages.

Lastly, for shirtings, staple fibre is now very popular, chiefly because of the properties already mentioned : the fastness of the colours of spun dyed and « high tenacity » goods. The process of spun dyeing is relatively new and makes it possible to produce yarns which are absolutely resistant to boiling an sunlight. By this process, the dyes do not merely remain on the surface of the fibres, but become an integral part of them ; they are mixed with the liquid viscose before spinning. The most serious disadvantage of rayon and, consequently, of staple fibre, used to be its lack of resistance when wet ; this defect made many precautions necessary when laundering. In this respects, new viscose qualities have been perfected and they now have a much greater resistance when wet than ever before. They resist laundering much better and their durability is therefore greatly improved. It is therefore expected that « high tenacity » staple fibre will remain popular for shirtings especially in the « écru » lines, which were formerly exclusively of silk, and for coloured and écru, summer and sports shirts. All shirtings, poplins, zephyrs, cretonnes, and so on, are supplied with crushproof and unshrinkable finish.

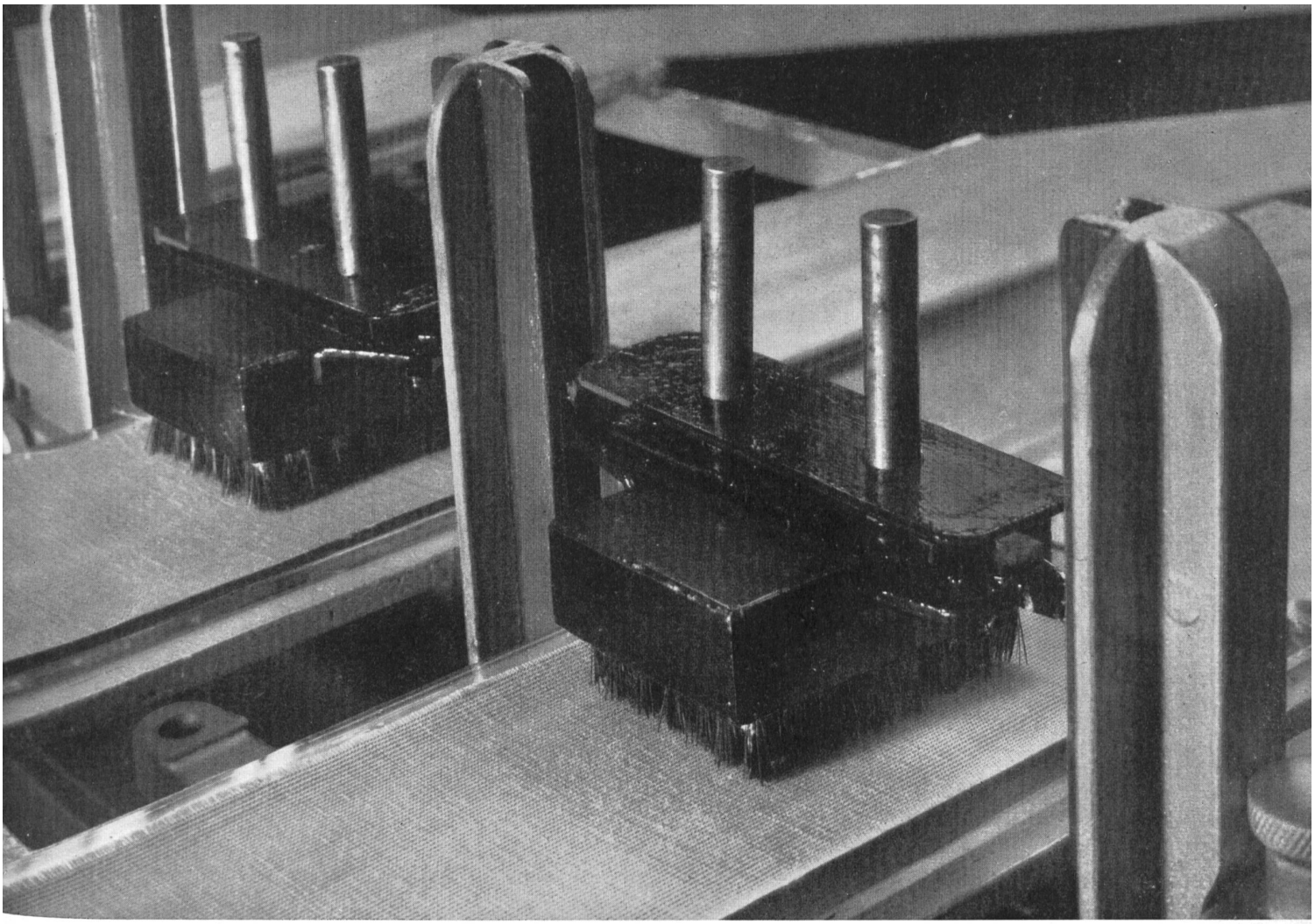
A few statistics will be found on page 62, which illustrate the increased solidity of the improved, « high tenacity » staple fibre yarns and fabrics as compared with the standard product.

To conclude, mention must be made of the hollow filament and extra-fine staple fibre qualities. Not so very long ago, 1.5 denier was the utmost fineness obtainable for staple fibre. Today, 1 and 1.25 deniers are obtainable in the high tenacity qualities and these filaments are used for spinning very fine yarns up to N° 200, which formerly could only be produced with Egyptian cottons.

It is a great mistake to think that staple fibre — any more than other textile fibres, whatever their origin or the claims put forward when they are launched on the market — can be universally applied ; it would indeed be most unfavourable to its popularity to pay it such tribute ! During and since the war, staple fibre has done much to maintain industrial activity in the textile trades and has enabled manufacturers to keep both the home and foreign markets supplied. Today, the special properties of staple fibre can be placed at the service of quality production ; it need no longer be used as a makeshift, but as an original fibre to be appreciated for its own peculiar qualities and for the material advantages the Swiss textile industry, and its numerous clients the world over, stand to gain thereby.

R. Chessex.

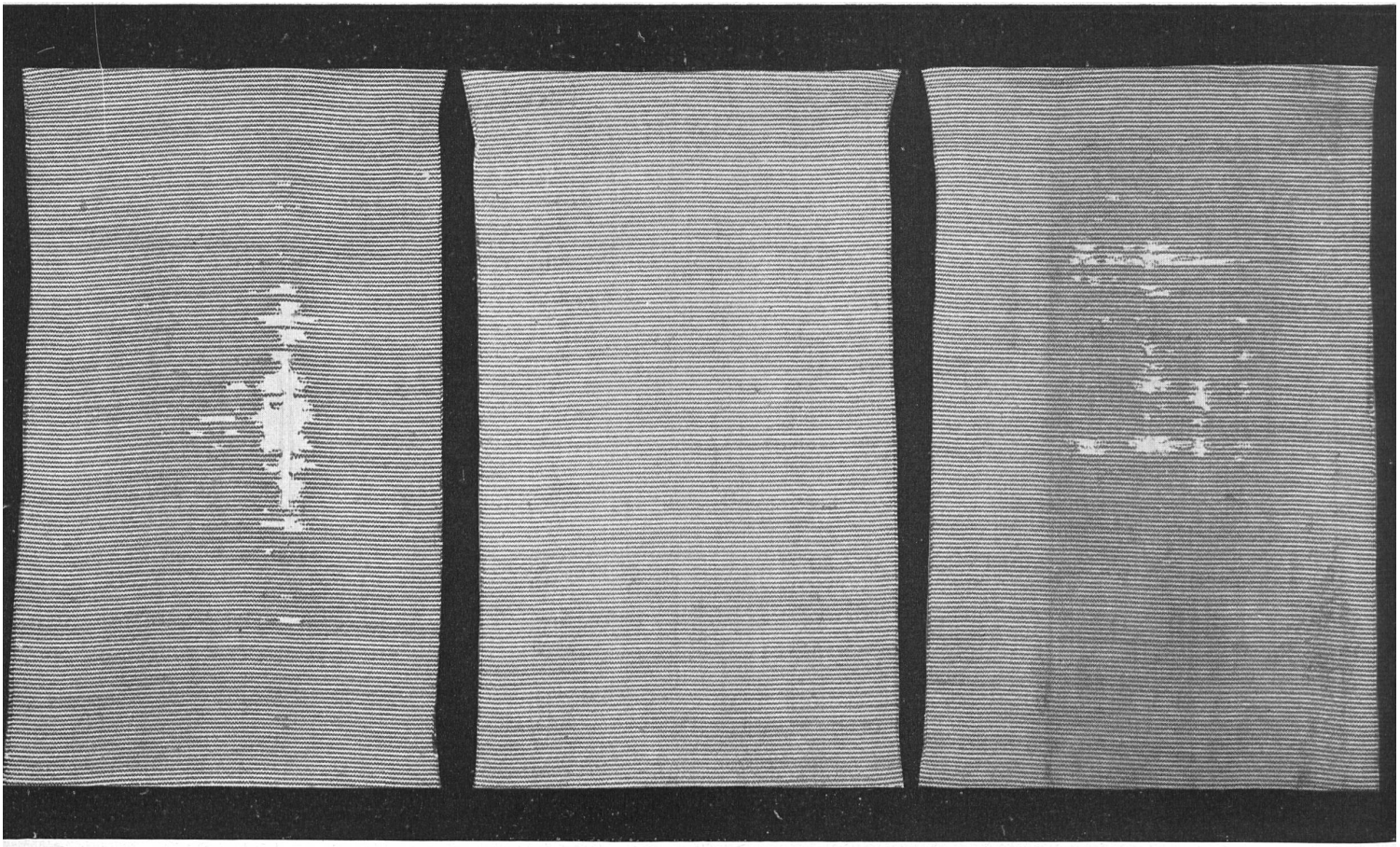
The stereotypes illustrating this article has been kindly lent by the Société de la Viscose Suisse in Emmenbrücke.



Appareil pour contrôler l'usure des tissus. — Brush-Test Apparatus. — Aparato para comprobar la resistencia a desgaste de los tejidos. Apparat zur Feststellung der Reibungsfestigkeit.

Résultats d'abrasion de tapis en laine et en fibranne, établis par le Laboratoire Fédéral d'Essais des Matériaux et Institut de Recherches, à St-Gall.
Results of abrasion tests : wool and staple fibre carpets. Federal Laboratory for the Testing of Materials at St. Gall.
Resultados de excoriación de alfombras de lana y de fibrana, establecidos por el Laboratorio Federal de Ensayo de Materiales e Instituto de Investigación de San Gall.
Abnutzungsresultat bei Woll- und Zellstoff-Teppichen, festgestellt von der Eidgenössischen Material-Prüfungsanstalt in St.Gallen.

Déperdition en poils en % après Percentage loss of pile after Pérdida de pelo en % después de Verlust an Haaren in % nach	Coups de brosse — Number of brush passages Pasadas de cepillo — Bürstenstrichen			
	1000	2000	3000	4000
Laine pure . . . . . % Pure wool. . . . . % Lana pura. . . . . % Reine Wolle . . . . . %	3,46	11,65	21,5	31,65
Fibranne . . . . . % Staple fibre . . . . . % Fibrana . . . . . % Zellwolle . . . . . %	2,93	8,1	12,5	15,5



Essais de résistance de la fibranne — Staple fibre after abrasion tests
Pruebas de resistencia de la fibrana — Feststellung der Widerstandsfähigkeit der Zellwolle

A gauche :	Fibranne standard (Flisca) frottée 19 000 fois à l'état humide.	*Au centre :*	Fibranne à haute ténacité (Arma Flisca) frottée 19 000 fois à l'état humide.	*A droite :*	Fibranne à haute ténacité (Arma Flisca) frottée 45 000 fois à l'état humide.
Left :	Standard Staple fibre (Flisca) after 19 000 brush passages (wet).	*Center :*	High tenacity staple fibre (Arma Flisca) after 19 000 brush passages (wet).	*Right :*	High tenacity Staple fibre (Arma Flisca) after 45 000 brush passages (wet).
A la izquierda :	Fibrana estandard (Flisca) cepillada 19 000 veces en humedo.	*Al centro :*	Fibrana muy resistente (Arma Flisca) cepillada 19 000 veces en humedo.	*A la derecha :*	Fibrana muy resistente (Arma Flisca) cepillada 45 000 veces en humedo.
Links :	Standard Zellwolle (Flisca) nach 19 000 Bürstenstrichen in nassem Zustand.	*Mitte :*	Hochnassfeste Zellwolle (Arma Flisca) nach 19 000 Bürstenstrichen in nassem Zustand.	*Rechts :*	Hochnassfeste Zellwolle (Arma Flisca) nach 45 000 Bürstenstrichen in nassem Zustand.

Résistance à la traction de la fibranne standard et de la fibranne à haute ténacité :
Tractive resistance of standard staple fibre and high tenacity staple fibre :
Resistencia a la tracción de la fibrana standard y de la fibrana de gran tenacidad :
Reissfestigkeit der Standard Zellwolle und der hochnassfeste Zellwolle :

Longueur de rupture en kilomètres *

	A Fibranne standard	B Fibranne à haute ténacité à l'état mouillé (Arma)	Augmentation de la résistance de A à B
Filé N° 120-2			
à l'état sec :	12,4	19,14	+ 55 %
à l'état mouillé :	6,93	11,4	+ 65 %
Tissu tissé au moyen de ce filé			
à l'état sec :	10,5	15,35	+ 48 %
à l'état mouillé : (dans le sens de la trame)	5,7	10,—	+ 75 %

Length of rupture in kilometres *

	A Standard Staple fibre	B High tenacity staple fibre when wet (Arma)	Increase of resistance from A to B
Yarn. No. 120-2			
When wet :	12.4	19.14	+ 55 %
When dry :	6.93	11.4	+ 65 %
Fabric woven from this yarn			
When dry :	10.5	15.35	+ 48 %
When wet : (in the woof)	5.7	10.—	+ 75 %

Largo de ruptura en kilómetros *

	A Fibrana standard	B Fibrana de gran tenacidad en estado mojado (Arma)	Aumento de la resistencia de A a B
Hilado No 120-2			
en seco :	12,4	19,14	+ 55 %
mojado :	6,93	11,4	+ 65 %
Tejido hecho con este hilado			
en seco :	10,5	15,35	+ 48 %
mojado : (en el sentido de la trama)	5,7	10,—	+ 75 %

Reisslänge in Kilometern *

	A Standard Zellwolle	B Hochnassfeste Zellwolle (Arma)	Steigerung des Widerstandes von A bis B
Garn No. 120-2			
In trockenem Zustand :	12,4	19,14	+ 55 %
in nassem Zustand :	6,93	11,4	+ 65 %
Mit diesem Garn gewobener Stoff			
In trockenem Zustand :	10.5	15.35	+ 48 %
in nassem Zustand : (in Schussrichtung)	5.7	10.—	+ 75 %

* Longueur de rupture en kilomètres = Nombre de kilomètres de fil ou de tissu suspendus librement, nécessaire pour amener la rupture par leur propre poids.
* Length of rupture in kilometres = Number of kilometres of yarn or fabric which are required, when suspended, to cause rupture by their own weight.
* Largo de ruptura en kilómetros = Número de kilómetros de hilo o de tejido suspendidos libremente, necesario para obtener la ruptura por su propio peso.
* Reisslänge in Kilometern = Kilometerzahl des frei aufgehangenen Garnes oder Stoffes, die erforderlich ist, um den Bruch durch das eigene Gewicht herbeizuführen.