The above examples should give us an idea as to how select a weave for any simple pattern in case of two textures. When more than two textures are desired we proceed exactly as in case of more than two colours ("Modern Overshot" MW 18/1). But since different textures mean also different counts of yarn, we must be rather careful. With heavy yarns the shots of weft may be spaced too far apart to produce a uniform surface. Therefore each new project in texture should be first worked out on small samples.

So far we discussed only texture effects in weft. This is because in pattern weaving it is much easier to control the fabric in weft than in warp. For instance if we notice that a particular yarn is not suitable we can easily change it if it is weft, but not if it is warp. But once the pattern is established nothing prevents us from "turning" the draft i.e. using a mixed warp and plain weft.

The story is entirely different if we produce texture effects both in warp and weft. We shall tackle this new problem in the nearest future.

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SYNTHETIC YARNS.

With the ever increasing variety of weaving yarns it is often difficult to distinguish between the natural and the artificial fibers. To make our task easier we shall divide all fibers into four groups:

1. Natural fibers. The term is self-explanatory. These fibers are spun in their natural state, although they may be bleached or dyed or both. Bleaching and dying does not or rather should not affect the original properties of the material.

2. Processed fibers. They are also natural fibers but treated chemically in such a way that their physical properties are changed. As examples may serve: mercerized cotton, and weighted silk.

3. Artificial (synthetic) fibers. In this case the fibers are made from raw materials which in their natural state could not be used as fibers at all.

4. Mixed yarns.Here we have a group of yarns which are spun from both natural and synthetic fibers, such as wool and nylon for instance.

We have already described natural fibers with the exception of wool, which you will find in the next issue. We have also discussed processed yarns. Now we are taking up the next group - synthetic fibers and yarns.

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Let us start with general considerations. First of all, why synthetic yarns at all? What is the purpose of creating completely

new fibers when there are so many natural ones? The obvious answer should be that artificial yarns are in some respect better. For instance that they are stronger, warmer, softer, more resistant to wear, heat, humidity, decomposition etc.

Although it may be true, as far as one particular property of one particular yarn is concerned, in general the synthetic yarns are not superior to the natural ones. Far from it.

But they all have one advantage in common: they are easier, and cheaper to make in large quantities. With the cost of manual labour becoming higher and higher, the natural fibers are getting also more and more expensive. Not all operations which the fibers must undergo before spinning can be mechanised. Although enormous progress has been made in case of cotton without any apparent damage to the quality, this was not so easy with flax, still more difficult with wool, and least satisfactory with silk. The latter requires the largest amount of manual labour, and this is the reason why the first artificial yarn (rayon) was made to imitate silk.

The problem of natural yarns in mass production does not end with the cost of labour involved. There is also climat, soil, transportation, and a lot of other factors. For instance cotton will not grow in northern latitudes, flax requires rich soils, good wool can be produced only when the average temperatures and the amount of rainfall are just right, and silk depends on the presence of mulberry trees.

None of these problems exist in case of artificial fibers. One can make synthetic yarns practically anywhere.

But then why should handweavers be interested in synthetic fibers? The reason is not economical, since in handweaving the cost of yarn is of secondary importance. But human nature being what it is, we are tempted to try any new yarn which appears on the market. On the other hand it helps when we can realise in advance what to expect, and this is why we write this article.

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RAYON - Contrary to the popular belief "rayon" is not a name of a definite fiber, but of a whole class of fibers, made from a variety of materials. There are rayons made of cellulose (wood, or cotton rejects), or of protein (peanuts, corn, soya beans, milk, seaweed). Different rayons have different properties, but unfortunately when buying rayon yarn we seldom can get enough information as to its composition.

The best known rayons are: acetate, viscose, cuprammonium, ardil, vicara, lanital, fibrolane, aralac, alginate. The first three behave more like cotton, the other yarns are supposed to ressemble wool. But they are much weaker and less resistant in all respects. Some have rather unpleasant properties being for instance highly inflammable; some dissolve in acetone, acetic acid and even alcohol. They melt in a very low temperature. Their only merit besides being cheap is that they often possess a very high sheen, so high in fact that it must be moderated by artificial means.

NYLON. This as many other synthetic fibers is made of phenol, which in practice means coal tar. Its main drawback is that it gets soft and sticky at a very low temperature, and therefore cannot be ironed. It darkens in the sunlight. Otherwise it is strong, elastic, easy to dry, resistant to friction, decay, etc. In handweaving behaves poorly: too strong when stretched along a straight line, too weak when bent (as in a knot). Unpleasant in touch, but this may be a personal factor.

VINYON. Made of a resin. Weaker than nylon. Less resistant to chemical solvents. Softens already in 165°F. It also shrinks much below boiling point of water by 12% (one inch in eight!).

SARAN. Similar to Vinyon. Still weaker, but a little more resistant to heat.

ORLON. Similar to nylon, but weaker. More resistant to sunlight. Can be spun to produce an imitation of wool.

TERYLENE. Made of petroleum, salt, and coal. As strong as Nylon. Resistant to sunlight, and more resistant to heat.

PERLON. Similar to Terylene, and nearly as strong. But it melts at 345°F.

POLYTHENE. About the lightest of all fibers, and also more resistant to heat than most of them, but much weaker than nylon.

GLASS. It could be a good fiber since it resists nearly anything: high temperature, abrasion, chemical action of any kind, age, etc. But it is brittle and not elastic.

We realise that this is a very sketchy description of synthetic fibers, but a complete survey would take more space than we can afford. Those, who are interested will find more information in books about industrial weaving, provided that they are of a very recent publication.

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VELVET RUGS.

When we say "velvet" we usually mean a fabric and not a weave. And we are not going to speak here about the traditional velvet fabric. Although it certainly can be hand woven, and for that matter it has been done so for centuries, it is an extremely laborious process. Even an expert who weaves nothing but velvet can produce not more than a yard a day.

But if we so to speak enlarge the fabric by using heavy wool instead of fine silk for the pile and proportionately heavier warp and binder, we shall have a fabric identical with velvet in all respects except that it will have a consistency of a light rug.