agency-clearing house would help there.

Some day I hope to see a national (or international) organization that will guide, direct, CERTIFY (for consumer's protection) as to quality - design, workmanship, end-use suitability, and sell. The one problem that faces any serious weaver is the constant fight to maintain standards and produce at a price that will show a profit. To attain that nice balance call for careful analysis of every part of loom production - even the shuttle is thrown! It means constantly to cut time (the most expensive component of anything handmade), yet never, never cut quality. A clearing house - sales agency would help here, also. For the slow, inefficient weaver would be in competition with speedier ones and soon either fall by the wayside or improve."

We have no comments on this letter. We could not agree more. Except perhaps that the woven articles should be distributed regionally to create centers of attraction for the tourist. After all, if anything could be bought anywhere, then why travel at all? But obviously this could be handled easily by this central agency.

Theoretically there is already an organisation which could develop this idea: American Craftsmen's Educational Council in New York. They have means. The ways are up to the active members.

****

What is the conclusion? So far there is no national organisation in the Northern Hemisphere which would accept in practice any standards whatsoever. There are local Guilds which do that. Our aim is to bring to a common level the different standards set by different Guilds, so that a Master Weaver of Mass. can be still considered a Master Weaver in Oregon. This will help to create a National Guild, whether it is a Guild of American Weavers, a Canadian Weavers' Guild, or still better a Weavers' Guild of North America.

****

ANALYSIS OF YARNS.

In the next issue of the Master Weaver we shall start analysis of fabrics, and therefore we may say first a few words about the analysis of yarns. Although a layman thinks that a weaver "should" be able to tell at a glance one yarn from another, the ptoblem is not as simple as that.

Theoretically, if we had to do only with pure, untreated, natural yarns, the analysis would not be too hard. But chemical treatment, such as mercerizing, weighting or even dyeing may change both the appearance and the properties of the yarn. When in addition the yarns are mixed in spinning (quite common process today), only the microscope can help.

In many handbooks of textiles we find beautiful tables and microscopic pictures, which show how different the various yarns are. In practice, when we try to use the method indicated, we find out that in most cases the answer is most doubtful, that the pictures greatly exaggerate the microscopic appearance of yarns, and that only

an involved chemical analysis is reliable. Such an analysis is possible only in a well equipped laboratory.

Still, difficult as it is, we simply must be able to distinguish a few common yarns, the ones most likely to be used in handweaving. The tests which we can use are based on: 1. Appearance, 2. Physical properties, 3. Chemical properties, 4. Burning test, and 5. Microscope.

We can eliminate at once the chemical analysis, because although there are a few simple tests which anybody can perform, they do not give us more information than the Burnign tests, and the more elaborate analysis is beyond an amateur's means.

Appearance of yarns is very deceitful, and can give us only a rough idea as to their nature. For instance: if the yarn is very shiny it can be either rayon, nylon, or pearle cotton. If it is glossy but a little duller it may be silk, mercerized cotton, or mercerized linen. If it is still slightly glossy but not so uniform (as if mottled) - it could be linen or wool. Finally, if quite dull, it is probably cotton.

As we can see, the answers are very unsatisfactory. Still, with a lot of experience we can guess (but only guess) pretty close. What helps enormously is a large collection of samples of yarns in all their varieties: natural, bleached and dyed, loosely spun, and with different grades of twist; fine and heavy. By comparing a new sample with our collection we can make our guess much more reliable.

Physical properties can give a few additional indications, provided that we have a certain quantity of the yarn - hardly anything can be done with a couple of inches. For instance the tensile strength (resistance to breaking) can be estimated roughly by pulling the examined piece of yarn (about a foot long) between fingers of both hands. We should compare only yarns of the same size and of the same twist. If a yarn of about 5000 yds/1b breaks very easily it may be wool, rayon, or linen tow; cotton is a little harder; if it hurts the fingers before it breaks, or if it has to be wound on two pencils to be broken - it is linen, ramie, hemp, or silk. Finally if it does not break at all - it is nylon.

The test for elasticity (another physical property) is too difficult to make with any precision. However if we suspect already that the yarn is linen we may stretch it nearly to the breaking point. If it does not come back, but remains stretched it is linen.

By combining the two above tests we may come still a little closer to the truth. And here most weavers stop. With a lot of practice we may achieve a fairly good percentage of right guesses, probably to be compared with the reliability of weather forecasts.

****

Much more reliable are the two remaining tests: Burning, and Microscope. But these require some equipment. For the burning test we need a tiny alcohol lamp or burner. It can be made of an old mustard jar (the smallest size). Clean the jar, make a hole in the cover about the size of a pencil, take some soft cotton waste and fold it as many times as necessary to make a wick which will fill the hole, and a few inches long. On the outside the wick should project

for about ¼". Fill the jar with burning alcohol. If you want to save on alcohol, cover the wick with a thimble.

We shall need also some sort of pincers or tweezers to hold the burning yarn. The idea is never to hold the yarn in your fingers, if you do not want to get a nasty burn.

We do not need anything very fancy as a microscope. One which gives magnifications from 100 to 300 is enough. We can find one in any mail-order catalogue for less than $ 10. No accessories are needed except glass slides. These can be cut from an old window pane.

We cannot go here into the instructions about using the microscope. These should be supplied with the instrument. Still better: read a book on this subject. The sample to be examined (about ¼" long) must be pulled apart and spread on one piece of glass and covered with the other. With our power there is no need for special fine glass covers. We may find out later that it helps if a drop of oil (e.g. paraffin oil) is placed in the center of the glass so that the fibers will be immersed in it. The tope glass will spread this oil around the sample. Both glasses must remain in close contact, therefore we should use a very small quantity of yarn to be examined.

****

In the following directions for analysis we make the burning test first. We touch about 3" of the yarn to the alcohol flame, and observe what happens. Then we blow out the flame before it touches the tweezers and smell the smoking sample.

The burning test itself is seldom decisive. Therefore we proceed with the microscopic test, either to confirm the previous result, or to decide between two or more possible solutions. The number at the end of each item in the burning test indicates what to look for in the second test.

Before making the microscope test one should get familiar with: 1-st - the microphotographs of different yarns to be found in books on textiles; 2-nd - the microscopic appearance of known yarns in our own microscope. The two are hardly ever the same. Pictures taken for publication are often made with special microscopes, with samples chemically treated, and in special light. As a rule, our own pictures are seldom as clear as the ones in books.

INSTRUCTIONS FOR ANALYSIS

Burning test.

1. Smell like burned feathers. A black bead at the end of the yarn. The bead breaks in fingers when cold: Wool or Silk (7).
2. Smell like burned paper; even or slightly uneven flame. No bead: Cotton, Linen, Hemp, Jute, Rayon (8).
3. Smell like celery. Yarn melts near fire, small flame. Dark bead remains fluid for a while, then becomes very hard: probably Nylon (9).
4. Faint smell similar to 3. Melts near fire. Very bright, white flame. Smoke, Bead: probably Orlon (10).
5. Acid smell. Melts. Hard bead: probably Acetate Rayon (11).
6. Does not burn: Metallics, or Fiberglass (12).

To distinguish between the different smells, try first known samples of yarn. The smell of nylon is very characteristic, even if it is not quite like celery.

Microscopic test.

7.- Scale visible on sides, and as irregular marks across the fiber: WOOL.
- Fine transparent fibers, no scale, no marks: SILK.

8.- Fibers look like ribbons, short marks nearly parallel to the fiber, ends spread, tapered, or cut at an angle: COTTON, or JUTE.
- No ribbon effect, marks across the fibers, often compared to bamboo stalks. Bent fibers have irregular or broken curves. Ends mostly tapered - LINEN, or HEMP.
- Irregular fibers with some ribbon effect. Short marks nearly parallel to the fiber. Very few and faint marks across. Frayed ends and even sides of fibers: RAMIE.
- Very regular fibers, all of the same size. Continuous marks along the fiber: RAYON.

9.- Very regular fibers. No marks: NYLON.

10.- Fibers look like ribbons but only at the bent. Closely spotted all over - ORLON.

11.- Very regular fibers. Few continuous marks along the fiber: ACETATE RAYON.

12.- Fibers regular and transparent - FIBERGLASS.
- Fibers completely black - METALLICS.

We have still two unsolved problems: Cotton and Jute, and Linen and Hemp. But in both cases the doubt may arise only with very coarse yarns. Jute cannot be spun as finely as Cotton, and the general appearance is different. Hemp cannot be as fine as Linen. But fine hemp and coarse linen are more of a problem, and only chemical analysis can give the final answer.

We must repeat once more that the rules given above are not easy to follow, and before we attempt any serious analysis we should get acquainted with the behaviour of samples of yarns which have been identified before, both in the burning test and under the microscope.

It may happen that the result given by the burning test does not correspond with the appearance of the yarn uder the microscope. We may suspect then that the yarn is a mixture, and a close microscopic examination should give us a hint as to the components. For instance a mixture of wool and nylon may be puzzling in burning, but the two yarns are so different under the microscope, that they should be recognised. But ramie mixed with linen would be a problem even for a specialist. It may also happen that we work with a new synthetic yarn, a rare variety of one of the classic yarns, or with a common one which has been damaged by chemical action.

****