

TEXTILE TESTS FOR HIGH SCHOOL.¹

BY JULIA F. TEAR,

Hyde Park High School, Chicago.

In the teaching of Domestic Art, the question of "what to teach besides sewing" is a constant problem. In this city and I presume in many others, the question of "what to teach besides cooking" seems to have been more or less definitely answered. The work in cooking has more content and what that content shall be, more definitely determined than in sewing. In endeavoring to give the girls training so that they will acquire a sufficient amount of skill in the technical work of sewing, it is hard not to lose sight of other aims and not to narrow our viewpoint. Many of the girls may be placed in circumstances such that it will not be an economy for them to do a large amount of sewing but all of them must deal with textile materials, not only in choosing their own clothing but in purchasing household materials. The subject of Textiles is so wide and the time that can be spent on it so limited, that what work is given must necessarily be that which will be of the most value to the girl. The information she acquires should have some direct bearing on the life the average girl will live after she leaves school. Some appreciation of good color and good design in textile fabrics is certainly one phase. Another important phase of the subject is the economic aspect. In order to purchase with intelligence, some appreciation of the quality and value of materials is necessary.

In this day with the cleverness of manufacturers in making up poor fibers into attractive but poorly wearing fabrics, it takes an expert to determine the quality of materials with any definite accuracy. Since we can not make textile experts of our pupils in the short time that we have them, what can we teach that will be of greatest value to them?

In order to become intelligent buyers, they must first become familiar with the standard materials. If they learn the look, feel, quality and price of a certain piece of material they will have something by which to judge other pieces of material. To do this one may have the pupils collect the more or less standard materials, learning the width and price of each. This work ought to be connected as far as possible with the sewing being done at that time. In doing this work, such questions as the following, naturally arise: "Is the material worth the price?" and "How can

¹Read before the Home Economics Section, Central Associations, Hyde Park High School, Chicago, Nov. 27, 1914.

you tell whether or not the material is what it has been represented to be?"

A study of the characteristics of the fibers in their raw and pure state will give the pupils some ability to determine the kinds of fibers in a piece of material. A study of the processes of manufacturing gives an idea of the kinds of adulterations that are possible and also some reasons for the adulterations. When the pupils get some conception of the enormous amount of labor necessary to produce our commonest materials that we demand at low cost, they can see some of the causes that have led to the adulterations now so prevalent on the market.

Since cotton is our commonest material and since the cotton fibers are used to adulterate the more expensive ones, it is well to begin with that. The points they should consider in buying cotton materials and the means of detecting inferior goods are as follows:

1. Cotton material is often heavily sized. When this sizing is washed out, the material has no body and little strength. In muslin, often the sizing can be seen in the interstices of the goods when it is held in front of a strong light. If the material is rubbed hard between the hands, the sizing comes out and this place can be compared as to its body with the material from which the sizing has not been removed.

2. Cotton is often weakened by the bleaching agents used. Goods that has been overbleached tears more readily than the other.

3. Goods that has a high luster, put on by pressing between rollers, is often sold as "Mercerized Cotton." This luster is removed by washing while in genuine "Mercerized Cotton," the luster is permanent.

With linen the adulterations are more complicated and the tests are more difficult. Mrs. Woolman says in her book on "Textiles" that the microscopic test is the only sure test to distinguish between linen and cotton. This test ought to be given to a class, not because they are expected to use it afterward, but by seeing and handling materials that are tested that way they become familiar with the material and have some basis for judging others.

The adulterants used in linen and the means of detecting them are as follows:

1. Sizing; it can be detected in linen in the same way as in cotton.

2. Cotton may be finished to look like linen, or material may have some linen and some cotton threads, this latter being called "Union Goods" which should be priced accordingly.

To detect cotton, the surest test is the microscope—the cotton being twisted fiber while linen is straight.

Another method is to break the threads, ravel out several threads, compare their appearance and their strength. Linen is the glossier, smoother and stronger.

The olive oil test is another simple test. First, sizing must be washed out. Then a drop of olive oil is put on materials to be tested and then blotted. The linen is transparent and the cotton opaque.

The adulterations used in the manufacture of woolen goods are very numerous and difficult to detect. Cotton may be combed in with, and spun with, the wool; or cotton may be used for the warp, or wool may be felted on to a loosely woven cotton foundation.

To detect a warp wool or a foundation of cotton, several threads of warp and wool should be raveled out and carefully examined and broken.

A sure test to detect the presence of cotton is to boil the sample of the material in a five per cent solution of caustic soda for five minutes. All the wool is dissolved, the cotton remaining. If boiled in five per cent solution of sulphuric acid, the cotton will be destroyed and the wool remain.

By testing several samples in this way, the pupils can soon learn what form the adulterations are likely to take. In a large class with no special laboratory conveniences, the teacher will have to do this by demonstrating. With a small class and available equipment, the pupils take an interest in doing this themselves. Perhaps those who take chemistry can test several pieces and give the results to the class.

In silk the common adulterations and methods of detecting them are as follows:

1. The using of inferior fibers such as cotton or linen. The threads may be ravelled out and carefully examined.

2. Weighting with solutions of the salts of tin, lead or zinc. This can be approximately determined by burning a piece of silk. Pure silk is entirely consumed, the weighting remains as ash.

For cotton, linen, wool, and silk materials it is well to give even as a demonstration, the effect of acid, alkali and heat on the fibers and make the application of the effects on each to the processes of laundering and to the removal of stains.

If these tests are carried out in class the girls ought to go out with their interest aroused, their powers of observation increased, and, we hope, more intelligent as purchasers.