army shoes of the most excellent leather, four of which were too small because I forgot that I should be wearing heavy stockings with them.

I suggest, therefore, that this Society select shoes as the subject of the first scientifically derived standard, because of the dependent sequence involved and because such an excellent start has been made toward making a real standard. I further suggest that the standards already suggested by the members of this Society be re-examined, with the dependent sequence in mind, in order that work in standardization which bears the name of the Taylor Society may be really scientific.

HENRY W. SHELTON[1]: Most of our discussion so far has been upon the details of standards to be adopted. This is helpful, but the possibilities of such detailed consideration are unlimited. I should like to suggest one or two of the general principles underlying and governing all sound standardization.

If we agree upon the simple definition that a standard is "something carefully thought out and agreed upon as the best possible at the time" we shall avoid some of the misunderstandings many persons have on the subject in general. Standards may cover such varied subjects as materials, tools, machines, and work places, methods and operations, routine procedure, and general policy or principle of a company. Standards are the foot-rule by which results are measured. Therefore it is desirable that they be extended over the greatest possible portion of the whole business. This involves of course the establishing of conditions such that necessary exceptions to any standard will be reduced to a minimum.

There are three general phases of standardization:

a. The establishment of standards.
b. The maintenance of standards.
c. The improvement of standards.

In order to establish a standard way, for instance, of doing something, it is necessary to review the different ways in which it is now being done, then to find out the one best way. This should be better than any of the old ways because it combines the best of each of the old ways. Finally, after this careful deciding of what the new standard *should* be, it is necessary that everyone agree that that is what it *shall* be. You may have a standard in name, but you really have not one in fact until everyone agrees to it.

The only way to maintain a standard is to live up to it. A poor standard followed all the time gives better results than a good standard followed sometimes and not other times. The surest way to prove the strength or weakness of a standard is to live up to it. Such testing of every standard is desirable in order that the good standard may be proven and the weak spots of the poor standards shown up for correction. So no matter how defective an established standard may be considered by anyone, he should live up to it to the limit of his ability.

Responsibility for work violating an established standard should rest with the individual. The company should assume full responsibility for errors and losses resulting from the strict following of established standards. Inability to follow a given standard should be reported at once to the executive in charge.

This testing of existing standards by living up to them points the way to the improvement of standards. A given standard holds good only until a better standard can be found to take its place. That is why standards properly are not dead, but full of life and progress. Great care should be taken, however, to make sure that any proposed change of standard really is for the better and that it is fully examined and tested before being authorized and established. Mistaken changes in standards are too easily and frequently made.

It is obvious from what has been said that true standardization and the application of the "exception principle" must go hand in hand. Just as standardization enables the manager to know what is normal, so the exceptions to the standards enable him to measure change, good or bad. Only by knowing that the exceptions are exceptions and not the rule can these sign posts be accurately interpreted, and real progress made.

One word of warning regarding the temptation to impose standards without the agreement or consent of those concerned. If this is attempted the desired results will never be achieved. Whether the consent is based on a full understanding of what is proposed, or only on faith that what is proposed is right, consent itself must exist if the standard is not to become nullified and a dead letter. An unreliable standard in a shop is as much to be avoided as an unreliable yard or gallon measure. No standard can be relied upon in practice unless both the intellectual and emotional consent that the standard is reasonable and desirable is obtained from those affected by it.

[1]Industrial Engineer, Philadelphia, Pa.

RICHARD A. FEISS[1]: The aspect of standardization of product which interests me in this discussion is its benefit to the consumer. Of course as manufacturer I am interested in the benefit to production and selling and to the coordination of these. But this afternoon it is the consumer.

Standardization from the community point of view is of tremendous importance. With *proper* standardization there would be better stabilization—fewer high prices, fewer mills shut down, and so on.

Standardization through trade associations has possibilities and is important, but it has its limits. It can standardize sizes, grades, accounting, selling terms, and so on, but it is doubtful whether it can standardize styles and variety.

It is in the plant that real standardization must take place. The trade may have a variety of products to satisfy the community, but the plant does not need to attempt to supply all that variety. It can decide upon what part of that variety it will attempt to supply and then standardize that part. This combines standardization—with its advantages—in the plant with variety in the industry.

We have done just that. We have decided what we can produce best, emphasize that, and let other manufacturers of clothing produce what they can make best. The retailer today does not buy all of his stock from one manufacturer, no good retailer can survive unless he buys from several manufacturers. He therefore wants from each that which each can produce best. That gives the manufacturer an opportunity for standardization of what he decides to produce. It means more economical processing, better quality at a given price, long-run plant policies, continuity of production and—in short—advantage to manufacturer, retailer and consumer.

RAY M. HUDSON[2]: I am very much interested in the attitude of organized labor toward standardization, that is, with reference to standardization within the plant. It has been my pleasure and privilege to be associated with two industries in which there has been considerable constructive work done in changing from a variety of products of more or less complication to a relatively smaller number of products of a complex nature. One was the manufacture of an automobile; the other was the manufacture of tractors. There could well enough be standardization of the other sort in the fifty-seven varieties of tractors now on the market but I am not concerned with that part of it. It is the internal standardization of our own product, and of the processes incidental to production.

In our plant we have a considerable proportion of organized labor. Naturally when Colonel Babcock went there, the workers in our factory, knowing the reputation that he has for applying scientific management principles, were quite suspicious of his motives and purposes. However, those of you who were at the Harvard meeting last September probably recall some of the discussions in which a labor leader in our own plant participated. The man who spoke at that meeting is now president of our local trades and labor assembly, the strongest element in which is the machinists' association. We hear him quoted frequently and often as to his views, through the members of our shop committee.

In my weekly meetings with that committee I have found that their chief fear of standardization is that it will destroy their craftsmanship. The average machinist feels that his union card endows him with certain superior abilities which a person not possessing that card cannot possibly ever attain.

So these men fear that they would become routine workers through having repetitive processes forced on them,—would become more automatons than they would human beings.

Everybody was skeptical about the results we would get from standardizing processes, methods, etc. We have found as an actual fact in our own experience that standardization has done more to educate and help those men in the advancement of their own profession or work; that it has also stabilized conditions within our community, for we are running on a more even curve in employment than we have had in previous years without that standardization.

Consequently those men are beginning now to appreciate more than ever the advantages of standardization, and instead of the antipathy which we encountered at first from that same organized element, we are now getting some constructive suggestions or contributory effort, toward the further establishment of those internal standards.

[1]Vice-President and Manager of Manufacturing, The Joseph & Feiss Company, Cleveland, O.

[2]Manager Methods and Personnel, Holt Manufacturing Company, Peoria, Ill.