

materials, and another allied trade becomes an integral part of the movement. Finally, the finished product may be used in conjunction with an entirely distinct line of industry, which is materially affected, and therefore considers itself vitally interested.

Being a trade as well as a plant problem, any individual concern interested in obtaining the greatest possibilities of standardization in individual plants, should realize the necessity of creating an active interest in standardization throughout the trade. The national trade associations which exist in almost every field of industry offer a most promising means of realizing the benefits of standardization in its fullest sense by making possible maximum progress in individual plants, through cooperation. Any trade association ignores a wonderful opportunity to serve its industry if an adequate standardization program is not developed.

Standardization as a trade activity has been undertaken already by organized effort in a score or more industries, including gas, musical instruments, boxes, dyers and cleaners, rubber goods, metal lath, cooperage, bicycles, pumps, sand and gravel, meat packers, flour, automobiles and accessories, clothing, lumber, paint, shoes, petroleum, and railway equipment.

The work of standardization, as carried out by a trade association, is different in character from that undertaken in individual plants, which it supplements but in no way replaces. The standardization work of a trade association usually falls into three classes:

1. The work of interesting the members of the trade individually and collectively in the possibilities and benefits of standardization.

2. The work of determining along what general lines standardization is feasible in the trade, and stimulating the efforts of individuals along those lines.

Frequently this necessitates technical and commercial investigation of such a broad and fundamental character that the entire trade must participate.

3. Most important of all, that work which might be characterized as "standardizing standards" in individual plants and in allied trades.

For instance, it is natural for a manufacturer developing standardization to attempt to confine purchased materials to a limited number of types and sizes. A score of piano manufacturers might each standardize on one size of upright, but each require a back of different size, these backs varying only slightly from each other. With proper cooperation, they could easily and satisfactorily standardize on the

same sizes of back. They might decide on a number of standard size backs; yet if they have not cooperated with the piano supply trade, they might find that the back manufacturers themselves had standardized on backs varying just enough from the standards of the piano manufacturers so that the latter would be special sizes. With proper cooperation the standard sizes of both piano and back manufacturers could be the same. Again, the piano manufacturers might standardize on five mahogany finishes, which if decided upon without cooperation with furniture manufacturers, might not coincide with any of the nine finishes standardized by the latter.

This lack of "standardizing standards" is not so simple as it sounds, for the human factor enters largely, and the conflicting interests, ideas and prejudices of competitors and of different trades must be harmonized.

There are at least seven especially important trade economies to be obtained by standardization:

1. *Decrease in capital investment in all branches of the trade, and in all individual plants.* This is especially true in those trades making products to specification. Economy is especially apparent in the inventories of tools, patterns and manufactured parts.

2. *Elimination of waste in experimentation and designing.* Much of the experimentation and designing in individual plants is made unnecessary when scientific investigation and tests have been made by the trade, for the benefit of all members.

3. *More speedy and reliable deliveries.* With standardization, the manufacturer is often able to carry stock available for quick delivery which he would not carry if he were not assured of a group demand for it, because of its standardized character. There is also more opportunity to divert production from one customer to another under stress of circumstances. During the recent period of materials shortage, the situation would have been greatly relieved in many trades if the materials requirements of its members had been standardized.

4. *General decrease in prices.* Lack of standardization in a trade makes it a specialty trade; and any specialty trade is distinctly a high priced trade. Not only are the prices high on the special orders themselves, but through indirect results, particularly overhead cost and a general tendency to slow up labor and machinery, they place production on a more expensive basis.

Following are summaries of statements on this point brought out during the discussions at the convention of the Musical Supply Association of America last May, from which the opinions to be quoted later are also taken:

"There are piano manufacturers with seven styles and sizes of cases, although they make less than 1,000 pianos a year. The manufacture of products under such conditions is the manufacture of specialties, and is more expensive than the production of a few standard sizes. The speaker makes 150 styles. If standard sizes could be brought down to a few, a conservative estimate of the saving would be ten per cent, a part of which would go to the manufacturer for his cooperation." Incidentally, this shows why standardization must be a cooperative trade matter rather than an individual plant problem.

"The speaker (a manufacturer of grand cases) has thirty-five forms. . . . They could be decreased to five and make no material difference. . . . Such a standardization would mean less stock in process, and production would increase. . . . probably as much as twenty per cent."

"The speaker spoke of an order for 75 special backs which decreased production in the plant from 100 to 125 per day to 75 in 1½ days, and at the same time necessitated changes in processes, resulted in annoyance to the entire organization, and extra pay. This shows the high cost of producing special supplies."

5. *The introduction of new processes and machinery facilitated and made possible.* This economy was brought out strikingly at the convention referred to above, when it was stated that piano plate makers are compelled to use so many patterns that it is not feasible to develop molding machines. Standardization would hasten the development of practical machine molding.

6. *Elimination of false and wasteful ideas prevalent in the trade, relative especially to design, quality and methods.*

"The manufacturer can profit by eliminating unnecessary styles, sizes and particularly 'ideas' in plates. Especially would it take 'freak plates' out of the trade."

"Standardization in plates would eliminate many annoying features. There is now a great amount of unnecessary lettering. This keeps in each plant one or two men to adjust letters, and frequently results in mistakes in lettering. Some of the ideas which manufacturers insist upon really result in a poorer

plate. There is a great waste in making patterns. For instance, this concern made five patterns for a certain manufacturer, but never made a single plate from any of them."

"Saving in standardization from plate manufacture would be ten per cent, resulting particularly in the elimination of annoying features."

"At present, bars are often too heavy and panels too light. There is now an excessive variation between the 150-pound and the 300-pound plate. The latter plate is unnecessarily heavy."

"There is some saving in the amount of materials which have to be carried for useless features on plates."

7. *Decrease of ruinous competition due to ignorance.* Standardization means more dependable advance estimates of quality, cost, and time delivery. It automatically makes better cost systems possible, and more likely to be developed. The net result is elimination of uncertainty and ignorance which results in bids, quotations and promises which cannot be met by the reliable manufacturer.

No organized attempt to promote standardization in a trade should be undertaken without enlisting the active and intelligent support of the merchandising branches of the trade, particularly the retailers. One of the chief selling points of most articles is distinctiveness in some form or other. The merchandiser—and this applies to the advertising and selling departments of the manufacturer—instinctively opposes standardization through fear that it eliminates distinctive features. This fear exists in all trades, but more than commonly so in those selling highly manufactured articles, and especially those having characteristics of style, and in the field of the so-called "art industries." This fear is groundless, however, for real standardization will in the end give more opportunity for individuality in those ways which really promote the distinctiveness of the product, and at the same time will make a product of better quality at less cost. In fact, standardization compels attention to individuality in those features where there should be individuality, by preventing attempts at individuality in those features where individuality is superficial and useless, and where standardization and quality should prevail. To illustrate again by the piano, it is absurd to believe that by having a back one inch off standard size, by using a 250-pound plate instead of a 235-pound plate, by having round instead of square holes in a plate, by using red felt on the hammers