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Standards—A New Tool for Science

SCIENTIFIC research is moving ahead today at a faster pace than at any time in our history. For industrial research alone, this country is now spending twice as much as it did in 1940. New scientific discoveries have created vast new industries and enlarged existing ones. The electronic industry grew from \$230 million before the war to \$4½ billion in 1954. Instrument controls accounted last year for almost 10 percent of the nation's capital expenditures. Industrial use of atomic energy is just over the horizon. Since the war the manufacturing capacity of the United States has increased 65 percent. There is every indication that this expansion will continue.

The vast variety and complexity of scientific discoveries have also increased the complexity of our industrial economy. New production methods create new problems of an intricacy and magnitude never known before. Industrial interdependence is growing rapidly and is leading to further complexities.

One of industry's greatest jobs today is to translate the data of pure science and engineering into practical economical applications. The research scientist who ventures into new fields of discovery creates new data and terminology. Before these can be used they have to be brought into a common denominator with existing data, terminology, and practices. The tools to achieve such practical application are standards.

Without standards, duplication, overlapping, contradiction, and confusion are inevitable. At a recent conference of automation engineers and manufacturers, for instance, it was pointed out that in the new field of automatic controls, the same terms and symbols mean different things to engineers in the hydraulic, pneumatic, and electric fields. These people decided to develop a standard terminology for automatic controls. They need it before they can effectively standardize equipment and production methods involving automatic controls. In a competitive economy, the need for standards is dictated by economic pressures. All of our mass production methods rest on standardization. And mass production is the basis of our high standard of living.

As a result of voluntary cooperation and acceptance by many groups, nearly 1500 American Standards of nationwide application are now in daily use. Some 4000 technical experts and businessmen are presently working on committees under ASA auspices to develop new standards and keep approved ones up to date. Some 370 standardizing projects are now being carried forward, ranging from standard methods of tests and ratings for components in electronic circuits to safety standards for toys.

But existing methods of standards writing are not enough. Up to now most standards have been written when waste, confusion, and chaos made standardization almost imperative. The new industrial era demands a broadened use of standard techniques. New scientific discoveries and facts are accumulating faster than they can be converted into practical application.

In order to cope with this flood of new material and the complexities it creates, ASA is pleading with all concerned to accept a new method of standards writing. Standards should be pre-planned and written in anticipation of the needs that the rapid progress of our sciences creates. Pre-planned and coordinated standards are a key to a practical and efficient use of our new technologies. A lack of adequate standards may create a chaos that will prevent practical application of the scientist's work. Standards work done now, in advance of need, will not have to be done later—at a terribly increased cost in materials, manpower, and money. The comparatively simple steps taken in standards today can avoid complications that might take decades to unscramble.

The scientist's interest in standards is evident. The results of his research are not fully utilized if they are not translated into standard engineering and production practices. His cooperation in standards writing is needed as much as that of the engineer, manufacturer, businessman, consumer, and others who benefit from standards.

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