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The Boundaries and Divisions of Standardization

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An experience of many years in the Standards Committee of the American Institute of Electrical Engineers and the fact that the writer has recently become president of the Electric Power Club which has done much work in the Standardization of electrical machinery have caused him to consider the proper jurisdiction of the various organizations interested in the subject.

Fundamentally there are three broad divisions of standardization:- First, Scientific; Second, Technical; and third, Industrial. As true examples of scientific standards, we have the resistivity and temperature coefficient of copper. A proper matter for techmical standardizing is the safe temperature limits of the various kinds of insulating material. As clear cases of industrial standardization may be cited the shaft diameters and speeds of different types and sizes of electric motors. A scientific problem should be handled by the U.S. Bureau of Standards or the American Physical Society. A technical electrical matter should be decided by the A.I.E.E. and an industrial electrical question properly belongs to the National Electric Light Association or Electric Power Club.

The best way to solve the problems of standardization is not by conferences between a number of bodies acting jointly on the various subjects. Of course co-operating is very desirable in some cases, but in dealing with many matters it is unnecessary. Standardization should be carried on in accordance with the following general scheme:- First, each organization should have definite jurisdiction, within which it has full authority. Second, each organization should as far as possible confine its action within its own jurisdiction. Third, when questions arise that are on the border, or when the authority and interest of two or more organizations overlap, then conference between the interested parties should be held.

In order to determine jurisdiction, the following plan of procedure may be adopted:- When any organization considers it desirable that something should be standardized, its secretary communicates that fact to the secretaries of the other bodies likely to be interested in the same subject. Communications between the standards committee is not sufficient because there may be several in one society and they may change from year to year. In most cases from the nature of the particular matter involved, it is clear that it properly belongs to a certain organization, and the others will accordingly acquiesce. In other instances, it is evident that a question is on the boundary between two bodies and they will therefore agree to co-operate in acting upon it. Of course, failure to answer such a communication within a reasonable time would be tantamount to an abandonment of any claim to the matter involved. When there is doubt or difference of opinion as to jurisdiction that cannot be settled

by correspondence between the parties interested, then the case may be referred to an arbitrator, for example, the Director of the U.S. Bureau of Standards, or the President of one of the national engineering societies not interested. The arbitrator merely decides which body of bodies shall have ~~xxxxx~~ jurisdiction over that subject. The actual standards are determined by dais body or bodies.

The first standardization of electrical apparatus and methods was the work of the A.I.E.E. several years before anything of the kind was done in other countries. In fact it was the first comprehensive scheme of standardization generally adopted in any branch of science, technology or industry. At first the Institute was the only body competent or willing to undertake such work and the standards were so general that they were important to almost all the branches of electrical engineering. Hence there was no question of jurisdiction at that time. Now there is much specialization with many organizations to cover the various branches. For example, the Electrochemical Society, and the Illuminating Engineering Society are strong and active in their respective fields which are more or less included in electrical engineering. These are technical bodies of the same general character as the A.I.E.E. and there are also organizations largely industrial such as the N.E.L.A. and the Electric Power Club, composed of manufacturers of electrical machinery, which ~~xxx~~ covers much of the same ground as the A.I.E.E. but from a different standpoint.

On account of the very rapid differentiating and specializing in electrical science, technology and industry it would seem that some general plan is needed for present and future standardization. In some cases it is quite evident that a certain body should have sole authority over a certain subject. For example, the electrochemists as a body should certainly determine all standardizing in that branch in spite of the fact that hundreds of members of the A.I.E.E. are also interested in it. An organization of men who devote themselves to a particular subject should be able to determine standards for it more correctly and more quickly than the A.IE.E. This is true even though a committee or sub-committee is selected for its special knowledge of the subject, because the Institute as a whole is not qualified or interested to act upon the report of such a committee, however, good it may be. Special subjects should be dealt with by those who live with them, so to speak, devoting their thoughts and efforts to them.

In all matters affecting standards it is of the utmost importance to give them very careful consideration. It is much better to have no standard than to have an ill-advised one or to have different standards for the same thing. It is hard to rectify mistakes of this kind. In looking back over the history of electrical and other standardization, we see that the tendency has been to standardize too quickly, too often and too much. There have been dozens of wire gauges, for example,

electrical books in the English language may use the American, Birmingham or the Standard British gauges, each materially different from the other two. Many superfluous technical terms have also been introduced. Experience, therefore, indicates that we should be conservative in establishing standards. This is another reason why each organization should limit its action to those matters which it best understands. Thus fewer mistakes and at the same time better progress are likely to be made. All standardization Committees should be careful not to rush in where angels fear to tread!

It is surely a mistake for any organization to reach out and attempt to standardize in any field that does not clearly belong to it. Each organization already has far more that is unquestionably within its province than it can possibly cover and new ground is being rapidly opened up. The standards Committee and sub-committees of the A.I.E.E., for example, have been working very hard for two years on a revision of its Standardization Rules. The general scope is not much greater than that of the former rules, but the new ones will be much more correct and complete. Nevertheless, there are many points that it would be desirable to cover more definitely and a number of branches of the subject could advantageously be extended and important new matter added. Certainly the duty of the Institute is to cover its own particular field thoroughly before it seeks out or wanders into other fields to which its title is even questionable.

The Electric Power Club has one general Standards Committee and there are eight sub-committees, each devoted to a particular class of electrical machinery, for example, one for large A.C. generators, another for large D.C. generators, etc. etc. A great deal has been and will be accomplished, but there is much more ground than it is possible to cover properly even though the work is strictly confined as it should be to the sizes of shaft, pulley, etc. Speeds, nomenclature, ratings for different service and other matters that are industrial in contradiction to the technical or scientific.

A great deal of trouble is caused to manufacturers and users of machine tools owing to the varying types, sizes and speeds of electric motors employed to drive them. Hence, the standardizing of motor dimensions for machine tool drive is very desirable. It is solely an industrial matter that shouldbe dealt with by the Electric Power Club and the National Tool Builders Association acting jointly. Neither the A.I.E.E. nor the American Society of Mechanical Engineers should have anything to do with it, because it is clearly outside of their jurisdiction. As a matter of fact, it has been considered by committees of both of these bodies. Little has been accomplished, however, because it was thought necessary to consult all four organizations, and everybody's business is nobody's business.