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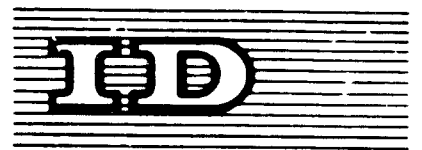
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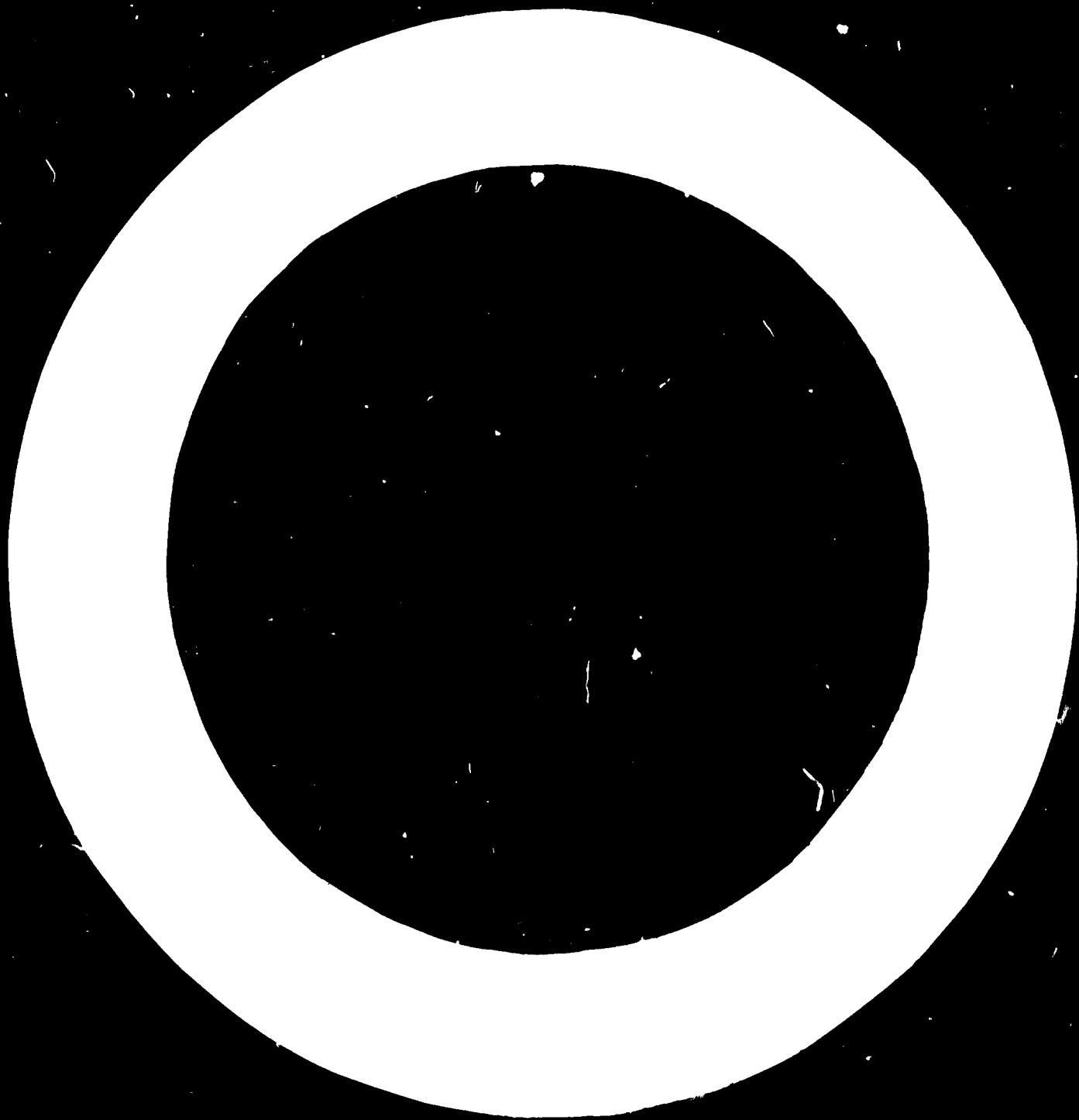
ORGANIZATION AND OPERATION OF A
NATIONAL STANDARDS BODY 2/

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ORGANIZATION AND OPERATION OF A NATIONAL STANDARDS BODY

Advantages of national standardization

As soon as a society develops beyond the point where each man does everything for himself, different types of job will be done by different people, and so an exchange of goods and services becomes necessary. The people involved in this exchange must speak a common language; they must know how to determine the value of goods and services, and also how to put them into use.

Glossaries of terms and definitions will facilitate communication between people involved in such exchanges. Specifications will define the ways in which value can be determined. Methods of sampling describe the most economic ways of selecting parts of materials or products in order to be able to make a representative evaluation. Methods of gauging, of testing and of analysis provide agreed yardsticks for measurement. Codes of practice describe the best procedures for installing, using and maintaining equipment.

There are advantages for both producer and user in the production of standardized goods: the user will be supplied with worthwhile commodities which are reliable and fit for the intended purpose and with components that can be interchanged; store-keeping will be made easier, because there will be less variety in the range of equipment; book-keeping will be less burdensome, and goods and services should become more easily available.

From a wider view it can be seen that standardization is highly advantageous to a country as a whole. It helps towards the achievement of greater efficiency in ensuring that human effort is directed to the most economic ends, and also helps in the conservation of essential raw materials both home-produced and imported. As a result of the increased efficiency and productivity towards which standardization contributes, a continuous improvement in the standard of living should take place.

Functions of a national standards body

The desire to lay down standards can be found at all levels of social activity, beginning with the individual who formulates his own specific requirements. Looking at progressively larger groups, we see in succession :

1. a company standard used in an industrial or commercial concern for guiding its purchasing, manufacturing and sales operations
2. an association or trade standard prepared by a group of related interests in a given industry, trade or profession
3. a national standard produced by a national standards organization
4. an international standard or recommendation, such as those of ISO or IEC, resulting from agreement between those countries which have a common interest in the subject.

These stages represent successive steps in the process of creating order out of potential chaos. In a developing country standards will be prepared both by individuals and by companies. It is however possible that organized groups of related interests do not exist and also that companies may not employ staff who possess the necessary expert knowledge to prepare standards. In this case the government will have to set up and develop a body or department to organize standardization in a fully co-ordinated way. In a highly industrialized country the organized body is usually generated from the work already carried out by individual firms, trade association or government agencies. In such a case the standards organization requests industrial concerns and purchasing authorities to nominate members of their staff with expert knowledge to form the national committee responsible for preparing standards. However, in developing countries it will frequently be found necessary for the central standardizing authority to appoint individual experts to draw up the national standards in the first instance. Naturally, these experts will not be dependent only on their own knowledge but will be able to draw on the standards of other countries and of the international standards bodies.

It should be noted that although many highly industrialized countries rely on the principle of preparing standards through the work of fully representative committees, they often empower a limited number of experts without real representational authority to draft the first stages of a standard.

Whatever the method used to prepare national standards, it is most important to ensure that eventually they should command the confidence of both producer and user. It is therefore wise, at some stage in drafting the standard, if possible, to make sure that the opinions of a sufficiently representative number of informed interests are obtained and that these opinions are taken into account before the standard is finally issued.

The major function of a national standards body can be seen as the preparation and promotion of national standards; it might also act as a certification authority. Certification marking, supported where necessary by statutory regulations, is a convenient way of providing a variety of purchasers with reliable evidence of good quality, and so is a valuable service which can be provided by the national standards body for industry, government purchasing authorities and the individual consumer. Administrative, as well as testing, staff is of course required to provide such a service but the overall saving may be great, avoiding much duplication which is still incurred in many industrialized countries. It is clear however that the service should be concentrated on products widely used and for which certified compliance with a standard is vital.

(A national standards body may also choose to participate in international standards work and this will be fully discussed at a later point.)

Organization and establishment of a national standards body

The basis of organization of a standards body, the status of standards issued and their enforcement procedures will involve legal measures; a small nucleus organization will be required to deal with these and to prepare for the wider functioning of the organization. A provisional council or committee reporting, for example, to the Minister of Industry, with a senior official of that Ministry as its Chairman, will provide advice and support. Representatives from various interested groups of the community should be brought on to the council. These might include societies of professional engineers and architects, research bodies, chambers of commerce, leading firms, public authorities, universities and technical colleges, hospitals and medical services, and government departments, all of whom would be in a position to indicate particular needs, to use standards information and to provide some of the sources of expert advice and membership of technical committees. Their support will be essential in the task of making sure that standardization is effective and also that it is accepted. Government departments and other large purchasers, such as public authorities and publicly owned industries, can encourage and develop through their purchasing specifications the use of standards, which in simplifying purchasing will prove advantageous to them.

Such a council would be a permanent part of the formal organization and would be the authority, subject, if considered advisable, to government control, for the activities of committees preparing standards and for the management of testing and certification arrangements.

It is generally accepted that however much compulsion is exercised in the establishing of standards, full participation of interested parties is essential to making the operation effective.

The degree of such participation will depend on circumstances: it is possible to delegate too much of the work involved in preparing

standards to committees, but without this delegation of work valuable knowledge will be wasted, opportunities for better understanding of each other's problems by producers and users will be lost, and the standards issued are likely to be less acceptable.

There is also an argument that if industries and organizations give financial support to the standards organization they are more likely to respect and promote its objects. In the early stages, however, in many developing countries, government finance only will be available. As the organization develops, it may be possible to obtain financial support from private bodies that benefit from its work. Fees from testing services can also make a contribution to its activities.

Initiation of programme

The problem of priorities to be assigned to various aspects of standards work and to individual projects is an acute one for both developed and developing countries. From the experience gained by BSI over a number of years in advisory visits to developing countries, and through contact with officials from many countries in the early stages of working with standards, it has become our opinion that in taking the first steps to establish its standards organization, a developing country should withstand the temptation to start with an elaborate structure as can be found in many developed countries and should instead concentrate its effort on a limited field. This would enable the new organization, however small, to demonstrate its capacity to bring about real economic improvement.

In planning development in a country, it is important that due consideration be given to the particular economic and social conditions that exist in a country, including the regional structure, because there is a real danger that development that follows in detail the pattern of technology in highly developed countries may lead to distortions and movements of population which cause the situation to worsen rather than to improve. The introduction of an 'intermediate technology' has been suggested, taking account of the need to employ the unskilled, and of other social factors, rather than aiming at a theoretical degree of efficiency which has only been achieved in developed countries with a large number of supporting services, such as education and modern transport. Similar considerations must be borne in mind when studying the best methods of applying to developing countries the standards techniques which have grown up over the years in industrialized countries. A large standards organization like BSI has developed gradually to its present size and scope, building on experience and on the demands of industry and a public becoming gradually more sophisticated. Many current standards would have had no place in past social and economic conditions.

This does not mean that the experience of other countries and organizations is not of the greatest value, but rather that it must be applied with discrimination and in the light of economic and social conditions. It should be emphasized that a developing country should consider it as its primary task to adopt existing standards and techniques and to secure their

application, and to build on existing organizations for testing and certifying, rather than to create machinery for large-scale preparation of new national standards.

In deciding on the initial form of organization and in planning the programme and assessing the standards requirements, many groups in the community should be asked for their views and their co-operation. These same groups should be represented on the provisional council, whose duties have been described above.

As a first step a survey is required of the fields in which the need for standards and their enforcement is most urgent in relation to economic plans and objectives.

These include :

a. Exports

A country that relies heavily on increasing its export of primary products must maintain high standards for such exports, in grading, packaging, freedom from impurities, and so on, or otherwise the confidence of purchasers will be lost. Even a small proportion of exported sub-standard materials may mean a loss of a market. The standards themselves may be dictated by the world market, or by the principal importers, or established in international standards agreement; the local machinery to ensure their observance must be examined and if necessary strengthened. Gradings may need to be introduced or extended and the necessary testing facilities and inspection arrangements ensured. If there are different standards and different grading requirements in different overseas markets, the possibility of getting agreement through international discussion should be considered; the formulation of a standard by the exporting country with knowledge of the product may be the right starting point.

Similar consideration must be given to the quality of other products exported.

b. Industries supplying the home market

Some existing or newly established industries will benefit particularly from quality standards for their products; there may be a prejudice against local manufactures, or inferior imports may be accepted in the absence of criteria on which they can be judged; both in relation to local production and imports, legislation on misdescription may need to be strengthened.

The question will arise whether an existing national standard of some other country is suitable for local production, whether it can be easily adapted for local conditions or a new standard is required. It may be necessary to unify divergent standards that have grown up. In offering subsidies or protection to existing or new industries that it wishes particularly to encourage, the government should see that its efforts are not wasted on products that are below reasonable standards. Another factor that requires examination is the extent to which the amount of subsidy or protection required can be limited by the adoption of standard techniques to increase output and productivity and so reduce costs.

c. Imported goods

The problems faced by developing countries in using capital equipment imported under technical aid schemes from countries with differing standards are well known and there are no clear solutions, although the steady increase in international agreement on standards for all types of capital equipment and components will gradually have its effect. Certainly the developing country should not tie itself to particular sources of supply by a legally enforced regime of standards in the interests of uniformity; but wherever possible it should insist on standards complying with existing international recommendations and on full information about the specifications, in regard to quality or ratings and performance in given conditions, so that there is no wasteful misuse of equipment. One of the most important functions of a standards organization is to provide a source of information on international and national practice.

d. Safety regulations and codes, building regulations

There is much existing information both in regard to the content of relevant standards and codes, to the forms of legislation and to testing requirements and facilities. However, regulations in force, probably originating in the industrialized countries, may need review in the light of climatic and other conditions, failures in observation, changes to new materials and increased production by local industries.

Having decided in which fields the implementation of standards is most urgent, it is important to review international recommendations and existing national standards of international repute, and to adopt or possibly adapt these where applicable rather than incurring the difficulties of preparing national standards. The advantages of this procedure have been discussed at an earlier point, but it should be emphasized that the growth or persistence of multiple standards should be eliminated at the earliest possible moment. Practices may have grown up which differ from those in other countries, or two different standards for local products may be in use and it is necessary to decide which is to be accepted or on the combination of these features from both best suited to the country's needs.

Physical requirements

In the initial stages before the formal establishment of a standards organization, it is necessary only to employ a quite small staff. The senior officer responsible for organization of information, for negotiation with the variety of interests concerned, for planning and publicity, will clearly need to be of high calibre, with a technological background and with initiative and judgement. Supporting staff may need to spend some time attached to an established standards organization, not necessarily in a fully industrialized country, but one at an intermediate stage, in which similar economic, climatic or other conditions exist, or where similar problems have been successfully tackled, such as those regarding standardization and the certification of export products.

One of their important tasks will be to create a library, or develop any existing one, so that full information on standards of international repute and on the recommendations of the international standards bodies, is properly classified and maintained, and those concerned have ready access to standards and codes applicable to the country's economy. The library should also provide guidance on techniques of standardization, its application to the control of quality, to manufacture of preferred sizes and ranges as a means of simplifying production and reducing costs, and to use of plant and equipment, building practice and so on. In building up this necessary background for future work, help will certainly be given readily by national standards organizations.

The importance of testing facilities to the standards programme is fundamental. Without them, standards will be paper standards and the confidence in quality and reliability which is one of the main objects of introducing standards will not be attained. Whether for exports, or certification schemes, there is a need to verify compliance with the standards which are adopted. Moreover, some testing will be needed in the course of setting standards for local products.

The means to be adopted for testing the products for which standards are essential is a first consideration. Some testing facilities will probably exist, in educational institutions, research organization, or in associations of producers or manufacturers. The extent to which they can be used by the standards authority will depend on circumstances and the possibilities for collaboration will have to be explored.

There may be long term disadvantages in a large amount of dependence on research or academic institutions, because they can only regard routine testing as of secondary importance to their main work and the type of testing required industrially and commercially is often far different from that with which such institutions are familiar. A central testing laboratory as part of the standards authority or closely allied with it may prove to justify itself in its contribution to the preparation and implementation of standards. It may be the most economical use of manpower available.

Testing is of course not only required for the end product but also by the purchasers of raw materials and components, and there are other purchasers like government departments who require testing to be carried out. The existence of an independent testing laboratory and its use by purchasers can do much to develop trusted standards and to ensure that tenders are judged on a reliable basis of comparison. It is important to plan for the gradual extension of testing together with that of the standards programme.

It has been indicated that a standards body may, in addition to its major function, the preparation and promotion of standards, act as a certification authority. One way in which this has been carried out is that manufacturers may make a voluntary request to the standards organization to inspect their production process, to select samples, and to decide whether the product complies with the relevant specification. It is then usual for the standards authority to devise a scheme of supervision and

control, related to the manufacturing process and the manufacturer's applied quality control. Certification mark investigations can educate manufacturers in the exercise of better control systems, leading to a reduction in sub-standard production and a lowering of manufacturing costs.

If the inspection report and test results on the selected samples of the produce are satisfactory, and if the manufacturer accepts the proposed scheme of supervision and control, a licence is granted enabling the manufacturer to apply the registered certification mark of the standards organization to his product and to advertise that he has been granted a licence.

There are a number of reasons for laying down quality control and testing requirements which must be observed by a manufacturer if he is to obtain a licence. The national standards body lends its authority to the quality of a manufacturer's product and so has the responsibility of ensuring that, with a high degree of certainty, the product will continue to comply with the specification during the period of the operation of the licence. The certifying authority has the power to sample the licensee's product on the open market and have it tested.

The manufacturer pays the expenses associated with the certification scheme. In return he has the backing of the national standards authority that his goods comply with the standard, the prestige that results from this, and the financial savings that arise from the elimination of inspection and testing by purchasing organizations which accept the affirmation of the national standards body.

Certification has particular value for the ordinary consumer. It is important to him that the maker's claims should be substantiated, in regard to both the general quality and durability of his purchases and to their safety, although he is not equipped to check personally the alleged compliance of goods with specifications.

It is vital that a licensee himself should operate a properly supervised system of quality control. An ideal situation would arise when complete reliance could be placed solely on the manufacturer's own control and testing, supervised by the national approvals authority. This ideal may never be fully realized, but the advantages of independent certification with the educational function that the certifying authority can exercise, are so obvious that countries with developing industries would be well advised to consider the development of certification under the authority of the national standards organization, even if, in the early stages, financial support has to be given to the system.

A final point is that one may foresee the growth of reciprocal recognition of national certifying schemes between countries that exchange goods and services. In the case of a developing country dependent on its exports, it might be very important to ensure that the authority to certify the compliance of its produce with standards rests in the hands of its national standards organization, whose status and competence would be recognized everywhere.

Application of standards

Once standards are prepared, it is essential that they become viable tools in the hands of the manufacturer and user. Paper standards are futile; it will be expected that standards that have received in their conception and preparation the support of trade associations, government departments and users, will be put into operation.

There are several ways of bringing about the implementation of standards, which fall between two extreme limits. One limit can be defined as the imposition of standards by legislation; the other as implementation by persuasion and voluntary adoption.

It is impossible to generalise on which mode of implementation is best: in a highly industrialized country, however, manufacturers and users are already conditioned to appreciate the value of standardization and the principle of voluntary adoption is likely to be successful. On the other hand in developing countries benevolently operated legislation is likely to obtain the most rapid immediate results.

This is not to say that in developing countries standards should be prepared by legislative procedures; it seems preferable that the normal facilities available to a national standards body should be used and that the legislation should make cross-reference to the standards body's publications. This will avoid the difficulty that when a standard is drafted by legislative procedures it is difficult to amend and keep up to date because the machinery of legislation is not normally attuned to the making of rapid changes and this inflexibility may prevent progressive development.

International co-operation

There remains the very important field of international co-operation in the development of world standards, a subject noted previously in passing.

The exchange of goods between countries clearly calls for collaboration between national standards bodies in order to achieve maximum co-ordination of national standards. The benefits derived by a national from the domestic operation of its standards expand notably when it associates itself with international activities in standardization. This co-ordination activity is mainly carried out under the International Organization for Standardization (ISO) and its affiliated organization dealing specifically with electrical matters, the International Electrotechnical Commission (IEC). There are now fifty countries which are members of these organizations.

The international work in these organizations is operated through technical committees constituted of representatives nominated by those countries that are interested in the particular project. The results of their work are issued as Recommendations which are then incorporated in the national standards of the member countries. In this way the essential features of national standards become aligned. The objectives of this work

are to achieve in international trading the advantages that can be derived from standards prepared at the national level: simplification in production, in trading transactions and communications between suppliers and users, interchangeability of equipment and components made in different countries and the elimination of unnecessary variety.

It is to the advantage of developing countries to participate in the work of international standards organizations. The fact that their representatives may initially not be in a position to make a leading contribution to the proceedings should not be regarded as a disadvantage. New associations are formed, better appreciation of the viewpoints and standardization practices of different countries is obtained, and growing experience will soon allow the representatives to bring forward proposals for discussion. The recommendations of the international bodies will be understood more readily if there is positive participation, and the national standards of a developing country will thereby benefit by incorporating appropriate material from these recommendations.

In co-operation with individual national standards bodies, it may be possible to obtain training programmes for staff from the developing country's standards body. It may also be possible to arrange for the secondment of advisers from overseas to developing organizations.

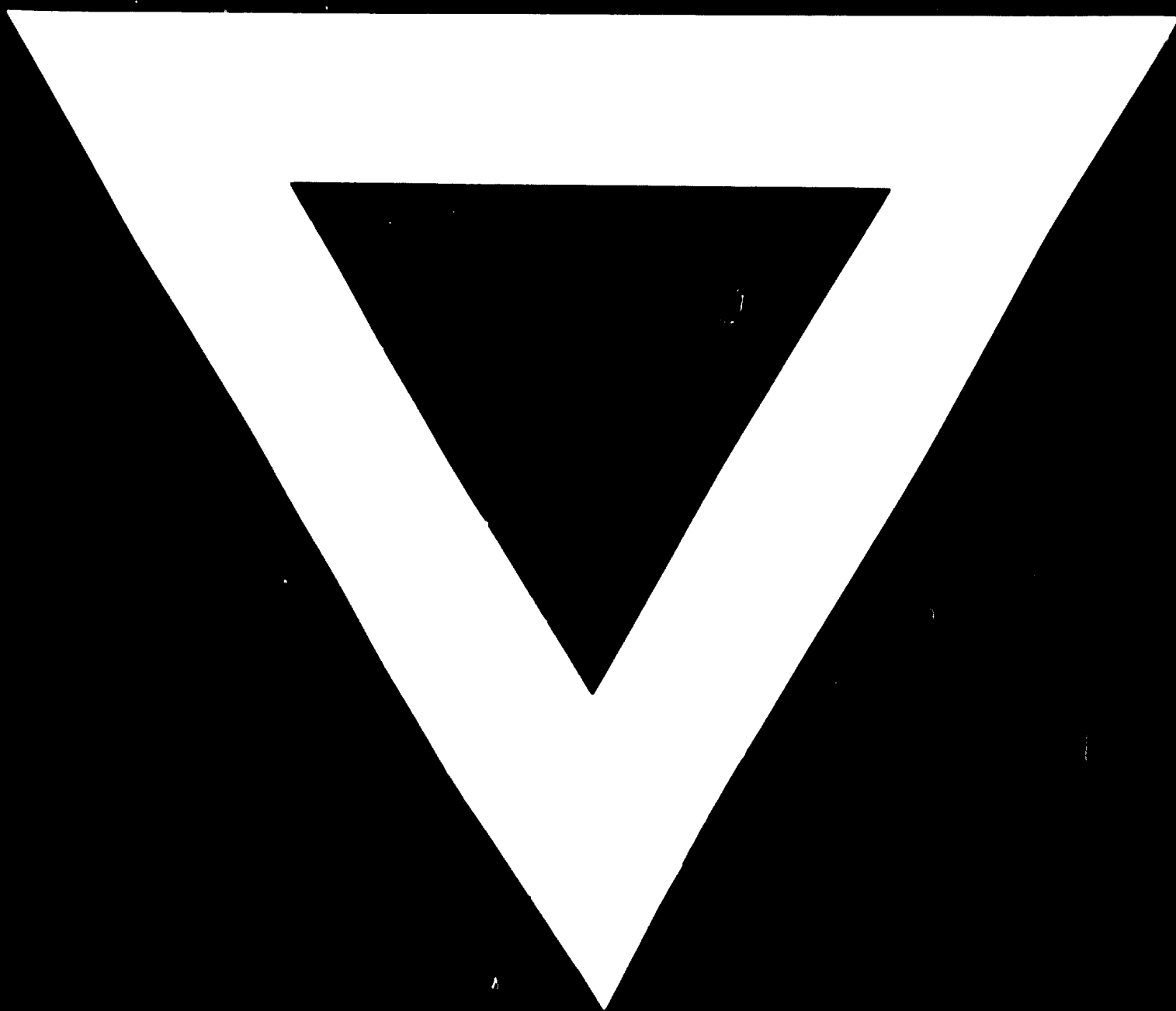
Conclusion

This paper has attempted to be a brief guide to the setting-up and operating of a national standards body, and has aimed to give some idea of the advantages of standardization.

These advantages are evidenced by the fact that the leading industrial countries have established national standards authorities, many of which are of long standing. Since such countries do not support activities that are unproductive, this can only mean that co-ordinated standardization is an asset to a nation.

For developing countries especially national standardization can be of considerable help to their industrial and economic progress.





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