REPORTS AND INQUIRIES

Some Aspects of the International Standard Classification of Occupations

by

Neil McKELLAR

Dominion Bureau of Statistics, Canada

Development of an international classification of occupations has been an objective of statisticians and others interested in occupational information for over thirty years.[1] *It is only within the past decade, however, that representatives of national agencies in co-operation with the International Labour Office have attacked in earnest the complex problems that an international classification presents. The results of their work are now taking shape in the International Standard Classification of Occupations.*

The present article is limited to a discussion of aspects of the programme which are related to designing the broader groups of the classification structure and its application to statistical data. Although the classification is not yet completed its main structure is far advanced and a determined effort is being made to present a comprehensive international scheme that will find general acceptance among national statisticians well in advance of the population censuses to take place in or around 1960. Extensions of the classification now in hand are intended primarily to serve operational purposes such as employment placement and should result in a multi-purpose classification of broad usefulness.

Background of the International Standard Classification of Occupations (I.S.C.O.) [2]

The necessity for an international occupational classification was given formal recognition at the First International Conference of Labour

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[1] Discussion of some of the earlier work in this field will be found in I.L.O.: *The International Standardisation of Labour Statistics*, Studies and Reports, Series N, No. 25 (Montreal, 1943), Parts I-I and II-I ; idem : *International Standard Classification of Occupations*, Studies and Reports, New Series, No. 15 (Geneva, 1949) ; and Howard S. CARPENTER : "The International Classification of Occupations for Migration and Employment Placement", in *International Labour Review*, Vol. LXIX, No. 2, Feb. 1954, p. 111.

[2] The history and characteristics of the I.S.C.O. structure are dealt with only briefly here because they have been described already elsewhere. (See, for example, I.L.O.: *International Standard Classification of Occupations : Minor Groups*, Report II, Eighth International Conference of Labour Statisticians, Geneva, 1954 (mimeographed).) The present

Statisticians in 1923. It was not until the Sixth Conference in 1947, however, that a resolution was adopted advocating study of the problems involved in developing such a classification as a separate project. Earlier approaches were associated with related questions such as defining the gainfully occupied population and setting up a classification of industries.[1]

The Seventh International Conference of Labour Statisticians (1949) established certain principles to be observed in the development of the I.S.C.O. and adopted nine " major groups ", which were to provide a foundation for the classification structure.[2] The Eighth Conference (1954) approved a provisional list of " minor groups " (two-digit) and indicated the lines to be followed in the further development of the I.S.C.O.[3] Late in 1955 a Working Group of Experts, called together by the I.L.O. on the recommendation of the Eighth Conference, reviewed critically the work done up to that point, proposed a number of modifications, and approved a list of " unit groups " (three-digit). The report of this Group of Experts will provide the basis for recommendations to the Ninth Conference, to be convened in 1957. Since convertibility of the various national classifications beyond the unit groups is not now contemplated, it is hoped that the action of the Ninth Conference can wind up the present phase of the work on the broader I.S.C.O. structure and make available an agreed classification to serve as a guide in the coming round of population censuses.

The national statistical offices have been consulted repeatedly during the development of the I.S.C.O., not only through the various International Conferences of Labour Statisticians but also by correspondence during the intervals between conferences. The response to mail inquiries has reflected the views of many countries, some of which have expressed their opinions at great length. The most recent request for national comments was made in 1955 and the replies were fully considered by the Group of Experts.

The progress of the I.S.C.O. has been duly noted by the Statistical Commission and the Population Commission of the United Nations, both of which urged continuation of the work under way. The major groups adopted by the Seventh Conference were used, with minor modifications, by the Committee on the 1950 Census of the Americas

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discussion relates largely to certain problems which have arisen and with their proposed solutions. Special reference will be made to the action of a Working Group of Experts which was called together by the I.L.O. late in 1955, on the recommendation of the Eighth International Conference of Labour Statisticians, to aid in the preparation of proposals for the Ninth Conference.

[1] Cf. League of Nations : *Statistics of the Gainfully Occupied Population*, Studies and Reports on Statistical Methods, No. 1 (Geneva, 1938).

[2] The groups were :

1. Professional, technical and related workers.
2. Managerial, administrative, clerical and related workers.
3. Sales workers.
4. Farmers, fishermen, hunters, lumbermen and related workers.
5. Workers in mines, quarries and related occupations.
6. Workers in operating transport occupations.
7. Craftsmen, production process workers and labourers not elsewhere classified.
8. Service workers.
9. Occupations unidentifiable or not reported.

[3] See *International Labour Review*, Vol. LXXI, No. 3, Mar. 1955, pp. 293-295. The Eighth Conference favoured certain changes in the major groups and these changes are indicated in the article cited and referred to later in the present article.

(C.O.T.A.) [1] and in the I.L.O.'s International Classification of Occupations for Migration and Employment Placement (I.C.O.M.E.P.). These classifications have provided a pattern for a number of countries in preparing occupational classifications for national use.

The development of the I.S.C.O. has, therefore, taken full account of national experience in occupational classification and its basic divisions have been recognised on the national, regional and international levels. As endorsed by the 1955 Group of Experts the broad framework of the I.S.C.O. consists of 10 major groups, 62 minor groups and 168 unit groups. The 10 major groups are as follows:

1. Professional, technical and related workers.
2. Administrative, executive, managerial workers.
3. Clerical workers.
4. Sales workers.
5. Farmers, fishermen, hunters, loggers and related workers.
6. Miners, quarrymen and related workers.
7. Workers in transport and communication occupations.
8. Craftsmen, production process workers, and labourers not elsewhere classified.
9. Service workers, including workers in sport and recreation.
10. Occupation unidentifiable or not reported.

Related Classifications

The development of an occupational classification for purposes of economic statistics must, of course, be undertaken with due regard to the nature and functions of related systems, such as classifications of industries and of status (as employer, employee, etc.). None of these statistical tools stands entirely alone; each aids and supplements the others in presenting a rounded picture of the kind of economic activity followed by the individual covered. Yet each classification is independent of the others in the sense that it uses a different set of facts and presents a separate facet of the relationship between the individual and his job. Before considering the occupational classification as such it is necessary to review the principal differences between the concepts of occupation, industry and status.[2]

There are different ways of classifying jobs just as there are different ways of classifying any entity. Thus in classifying individuals according to their jobs one can classify by the nature of business of the establishment in which the job is located, or by the relationship of the individual to the enterprise (as employer, employee, etc.), or by the kind of work performed by the individual.

The first kind of classification (i.e. according to the nature of business of the establishment) is classification by *industry*, which is used here in the broad sense as synonymous with branch of economic activity. It is the most widely used economic statistical classification

[1] Cf. Inter-American Statistical Institute, Committee on the 1950 Census of the Americas: *Occupational Classification for the 1950 Census of the Americas: Definitive Edition, 1951.*

[2] For a more detailed treatment see League of Nations: *Statistics of the Gainfully Occupied Population*, op. cit.; and United Nations, *Application of International Standards to Census Data on the Economically Active Population*, Population Studies, No. 9 (New York, 1952).

because it provides groupings of great utility for economic analysis and can be applied in surveys obtaining information on enterprises, establishments, or individuals (although the unit for classification purposes is the establishment). Because of the widespread interest in such a classification for international purposes several have been proposed since the early 1920s. The one currently used is the International Standard Industrial Classification of All Economic Activities, which was developed by the United Nations Statistical Commission and recommended for use by the Economic and Social Council in 1948.[1] In this classification establishments engaged in economic activity are classified according to the principal product produced or handled, or the type of service rendered. When information is obtained from the individual (e.g. in a population census) he is classified on the basis of the principal activity of the establishment in which he is currently employed (e.g. grain farming, coal mining, baking, manufacture of rubber tyres, rail transport, education, laundering).

The second method of classifying people in their jobs (i.e. by the relationship of the individual to the enterprise) is by *status* (as employer, employee, etc.). This grouping depends upon the kind of service performed by the individual and therefore the kind of remuneration received. The self-employed (employers and own-accounts) operate their own business in anticipation of an excess of revenues over expenditures. A distinction is often made within this group on the basis of whether they employ paid assistants or not (i.e. between employers and own-accounts). Employees (including managing directors of corporations) work for a stated wage or salary per unit of time, production, sales, distance travelled or the like. Unpaid family workers assist in an enterprise operated by a member of the same household without set remuneration. This classification is used mainly in surveys obtaining information from individuals, such as population censuses and vital statistics. The Population and Statistical Commissions of the United Nations have recommended the use, for purposes of international comparisons, of the four status categories mentioned above. Substantially the same recommendation has been made by successive international bodies in this field since the work of the League of Nations Committee of Statistical Experts in 1938.[2]

The third classification dealing with individuals in their jobs (i.e. by the kind of work performed by the person) is by *occupation*. In this case the individual is classified according to the nature of his work regardless of the kind of establishment in which it is performed or of his status. For example a carpenter, a truck driver or a waiter is classed as such whether he works in a factory, a retail store, a hotel, or for a shipping company. He is also classed in the occupation performed whether he operates a business on his own account or works as a paid employee. Some occupations are quite closely associated with particular industries or products and have the same name, for example, tailor with the tailoring (or clothing) industry ; cooper with the cooperage industry ; baker with the baking industry. Such cases are typical of skilled crafts or trades which, historically, have been

[1] United Nations, Statistical Papers, Series M, No. 4 (New York, 1949). For some earlier international lists see *Statistics of the Gainfully Occupied Population*, op. cit., and *The International Standardisation of Labour Statistics*, op. cit.

[2] The various recommendations are summarised in *Application of International Standards to Census Data on the Economically Active Population*, op. cit.

carried on by master craftsmen in small establishments where the products are often sold directly to the customer (and frequently made to order). Perhaps this is one reason why the concepts of industry and occupation are sometimes confused. In fact the early recommendations for an international classification considered occupations as being associated with industries and the classification given primary mention was one of principal occupations within each industry.[1] With the spread and development of mass-production methods and greater division of labour the occupational structure has become more complex and occupations not associated in particular with any industry (such as clerical workers, professional and technical workers) have become relatively more numerous. Thus, today most countries have a statistical classification of occupations quite separate from that of industries.

Purposes

The primary function of an international statistical classification is to assist in obtaining comparable data from various countries and thus facilitate international comparisons. In the case of the occupational classification the data referred to are statistics of the economically active population, such as those obtained from population censuses, or of groups within the economically active population such as social insurance coverage, vital statistics, immigration statistics, placement statistics, and wage statistics.

The administrative uses of occupational data are generally recognised. In appraising the manpower resources of a country in connection with a production programme, for example, it is necessary to have detail by occupation. Vocational guidance programmes, apprenticeship and training programmes, placement services, labour unions and others interested in employment problems are all users of occupational data.

Occupational data are also useful as an indicator of the level of development of an economy. The occupational make-up of a population is influenced by the extent of division of labour, the degree to which factory-type operations have been developed and the methods of transport and distribution employed. Thus a study of occupational trends in an economy reveals, through the changing patterns of numbers engaged in different kinds of work, the nature of economic development that has taken place.

Occupational data are also important for social research. Even broad groupings such as clerical workers, professional, technical and related workers, or service workers, are significant social groups. When the finer detail of the classification is considered, however, it is clear that occupational classes and combinations of classes often provide homogeneous categories from the viewpoint of social attitudes and behaviour. These categories are especially useful in studies dealing with such factors as rates of population growth, family size and composition, family income and expenditure, housing policy and social insurance policy. Internationally the data obtained through the occupational classification permit comparison among groups of countries and thus facilitate regional and global analysis.

[1] *The International Standardisation of Labour Statistics*, op. cit., p. 49 ; and *Application of International Standards to Census Data on the Economically Active Population*, op. cit., p. 118.

In addition to its function of co-ordinating existing data, the international classification assists in developing new sources of occupational information. The I.S.C.O. is not proposed as a substitute for national classifications, but countries may take the international classification into account in revising and extending their existing systems, or it may be adopted, with modifications, by countries that are developing occupational classifications for the first time. These applications of the classification are not confined to purely statistical investigations but include operational uses such as selection and placement activities and wage determination.[1]

PRINCIPLES

Ideally, in establishing a scientific classification structure one chooses the most appropriate characteristic of the units being classified and applies it consistently to achieve significant and mutually exclusive categories. Such a procedure is appropriate in fields of natural science in which the important characteristics of the units being classified change so slowly that for practical purposes they can be taken as fixed. Those designing classification systems in the economic and social field are often tempted to apply the strictly scientific method, and it is possible to design an occupational classification, for example, in such a way; but if this is done the results are not of the greatest practical usefulness.

Economic and social institutions and relationships are characteristically subject to constant change. Thus there exists even in one society at a given time a considerable range of actual situations. It is necessary, therefore, in choosing the appropriate common characteristic in these cases, to rely to a very considerable extent upon knowledge of the nature of the events being dealt with, based on experience in handling actual situations. Thus, for practical purposes, it has proved more useful to rely upon a number of principles applied together (although not simultaneously) so as to isolate categories that are known to be significant.

The main objective that has been followed in designing the I.S.C.O. is to bring together those performing similar functions. Similarity of function, however, can be viewed or determined principally by any one of a number of factors, including education and training, material worked with, tools and equipment used or working environment. Each of these factors has been of particular importance with respect to certain groups; for example, education and training for professional, technical and related workers; material worked with for leather cutters, lasters and sewers; tools and equipment for watchmakers, jewellers, engravers; working environment for miners, quarrymen and related workers. This does not exhaust the list of particular factors used, but it indicates their wide range. No one of these criteria, or any others, would be sufficient in itself to separate the number of significant groups required for adequate analysis of the working population. It is not possible to provide a few neat rules that can be applied rigorously to produce an occupational classification in any one country. Internationally the problem is even more complex and, as indicated above, a great deal of practical knowledge from many sources has been applied in the development of the I.S.C.O. up to the present time.

[1] See CARPENTER, op. cit.

Problems of Practical Application

Statisticians interested in the development of the I.S.C.O. are generally less concerned with the principles upon which the system is established than with the treatment of certain problems that arise in the practical application of the system. Either in response to varying national needs or as a result of simple historical development, the approaches made to these problems under the various national systems manifest considerable variation. Most of the remainder of this article is devoted to a discussion of such problems and their proposed treatment at the international level.

Occupation and Status

When commenting on the classification some countries have introduced the concept of status. This has come about in two main ways: one in which the country proposes certain status groups as part of the occupational grouping, and the other where it is contended that the major groups covering professional and managerial personnel are themselves status and not occupational categories.

The first proposal, in one of its forms, is concerned with the question of unpaid family workers. In this connection an "unpaid family worker" is taken to be a person of working age who assists, without a set wage, in a business enterprise (frequently a farm) operated by a member of the same household. It is said that these individuals should be shown separately in each major occupational group because, although counted as economically active, they may be considered to have no influence on the labour market. This view has not been adopted in the development of the I.S.C.O. for a number of reasons. First, "unpaid family worker" is not descriptive of a kind of work but purely of a relationship to the establishment in which the work is performed. Secondly, unpaid family workers are shown as a separate category in the status classification recommended by the United Nations. It is assumed that the status classification will be used along with the I.S.C.O. where applicable and that unpaid family workers (in each unit group, if considered advisable) can be segregated through cross tabulation of occupation by status. Thirdly, it appears incorrect to say that such workers do not influence the labour market. Presumably, if the unpaid family worker were not available he would have to be replaced by a paid worker. Fourthly, although agriculture and, in some countries, retail trade present special problems for international comparisons because of unpaid family workers, this is known and can be taken into account when analyses are being made.

Some statisticians have proposed that the major groups should be based deliberately upon status and not occupational criteria. The advocates of this plan declare that broad occupational groupings are too heterogeneous to have much value in analyses such as demographic studies, and that broad groupings based upon social status criteria have been found useful for such purposes. They point out also that in some countries "socio-professional" or social status groupings are obtained by a rearrangement of existing classes in the occupational classification. This being the case, they argue, it would be more convenient and more economical when tabulating census data to have the major occupational groupings based upon social status criteria such as education, training or skill; esteem of the occupation; earnings.

In a particular country this argument may have a good deal of force. It is likely to be more applicable in a small country than a large one, however, because a small country usually has greater homogeneity in economic and social relationships between groups. Internationally, the range of economic and social relationships is very wide and the problem of finding a suitable set of social status groups is extremely complex. The larger occupational groups are useful for a variety of purposes for which it is important to have a broad division on the kind of work done, and this is particularly true of purposes for which a cross-tabulation of occupation with other economic or demographic factors is required. As pointed out above, moreover, the problem of obtaining an acceptable international list of social status groups is very difficult and would constitute a sizeable project in itself.

The second main way in which the problem of status has come up is in connection with the major groups of *Professional, technical and related workers* and *Administrative, executive, managerial workers*. It is sometimes said that these are status and not occupational groupings. This implies that titles such as " professional worker " and " manager " are descriptive of a position in the hierarchy rather than of a kind of work or set of duties.

Most of the countries, however, have not accepted this view. Many occupational titles, to be sure, imply a status to some extent —e.g. clerical workers and sales workers (white collar group), metal trades, building trades, etc. (manual workers). The same can be said of many economic group titles—e.g. agriculture, domestic service, banking and finance. But this does not make such categories less occupational or industrial, nor does it exclude them from the occupational or industrial classifications. On the contrary it confirms the fact that they are significant occupational or industrial categories if, in addition to being separate groups from the viewpoint of the kind of work performed or kind of establishment in which employed, they are also groups that tend to have a particular position in the social structure.

Professional and technical workers, in the view of most statisticians, are separate occupationally in that they understand and apply scientific knowledge and methods, the quality of their work depends a good deal upon individual talent and effort, and they customarily plan, undertake and complete the job in hand. Managerial and administrative workers are a separate occupational group in that their work involves planning, co-ordinating, organising and supervising the work of units engaged in economic activity. They are often concerned with supervising the work of others and in choosing subordinates who have particular qualities required for the work to be performed. To say that for occupational purposes a mechanical engineer is a highly skilled mechanic or that a general manager of a firm producing chemicals is a " super chemist ", is to classify occupationally on the basis of terminology or qualifications or work done in the past.

Proprietors in Retail Trade

The allocation of proprietors of retail shops has caused more discussion and correspondence than any other issue in connection with the development of the I.S.C.O. At the Sixth International Conference of Labour Statisticians (1947) occupation was defined as " the trade, profession or type of work performed by the individual

irrespective of the branch of activity to which he is attached" and the Seventh Conference (1949) changed the last clause to read "irrespective of the branch of economic activity to which he is attached or of his industrial status" and added the following paragraph:

> Proprietors or owners who mainly perform the same work as that performed by employees in their own or in a similar enterprise should be allocated to the same group to which the employees are allocated.

These statements of objectives or purposes have subsequently been endorsed on several occasions and are now generally accepted. Difficulty has arisen on questions of fact, however, and consequently on the most effective means of attaining the desired end.

It has been said by some that the proprietor of a small retail store is mainly engaged in selling and that his success or failure depends upon his ability as a salesman; others have stressed the functions of buying and management. These and other elements must be considered, but the relative importance of each varies with the kind of merchandise handled and with the size of the establishment. In general the proprietors of small establishments are more akin to salespersons than are the proprietors of large establishments. There are, however, many establishments on the border line and no wholly satisfactory point of division between "large" and "small" establishments has been found for international purposes.

As a further complication a number of countries find it impossible to distinguish establishments in wholesale trade from those in retail trade because of the prevalence of mixed establishments. Establishments of any considerable size (including chain organisations) are usually organised as corporations, co-operatives or the like, in which no individual can be designated as proprietor.

Facing this situation, the Group of Experts convened in 1955 recommended a compromise solution in which separate unit groups would be established for *Proprietors, wholesale and retail trade* and *Directors and managers, wholesale and retail trade.* After considerable discussion the unit group for proprietors was included in Major Group IV, *Sales workers,* on the ground that the majority of proprietors of small retail stores spend much of their time behind the counter. The unit group *Directors and managers, wholesale and retail trade* is in Major Group II, *Administrative, executive, managerial workers.*

Clerical Workers

Clerical workers consist primarily of office personnel such as clerks, stenographers and office appliance operators, below the managerial or administrative level. In most countries this group is growing numerically and it is a category that is often separated for purposes of statistical analysis. The problem of distinguishing clearly between the upper levels of clerical workers and the lower administrative grades is often a difficult one, however, and for this reason the Seventh International Conference of Labour Statisticians approved a major group for *Managerial, administrative, clerical and related workers.* Although major groups are necessarily broad and heterogeneous in content this one was unusually so. It contained the managing directors of large concerns as well as office boys, and the element of common functions was not easy to find. At the same time the "related workers" included telephone and telegraph operators as well as postmen, messengers and the like.

Faced with this heterogenous group the Eighth International Conference of Labour Statisticians decided to remove the telephone and telegraph operators and the postmen, messengers and related workers. These classes were then included with the former major group of *Workers in operating transport occupations* which became *Workers in transport and communication occupations.* (Problems connected with *Operating transport occupations* are discussed later.)

The Group of Experts which met late in 1955 considered the major group established by the Eighth Conference. In their opinion the clerical occupations formed a significant category apart from managerial and administrative workers. Thus, the Group proposed that *Clerical workers* be established as a separate major group.

Some members favoured including telephone and telegraph operators and postmen, messengers and related workers in the new major group, but this was not done because the members of the Group of Experts were quite evenly divided on the question.

Agricultural Workers

In many parts of the world agricultural workers constitute the majority of the labour force, and they are an important element almost everywhere. From the viewpoint of statistical measurement and classification this group also presents its own particular problems which arise from two main characteristics of agricultural employment: *(a)* much of it is a family matter and the farm is both a place of business and a home; *(b)* the techniques used and the scale of operations vary greatly in different areas even for the same kind of farming.

The first of these characteristics complicates the problem of measuring the agricultural labour force. The work of family members such as wives and children, as well as the work of domestic servants, who may spend some time at farm work and some at household tasks, must be taken into account in connection with agricultural production. But how much work must such a person do on the farm to be counted as a member of the agricultural labour force? The answer suggested at the moment for unpaid family workers for international purposes is approximately one-third of the usual working time [1], but it is recognised that this is a particularly difficult problem with respect to farm families. For the domestic servants concerned it would be necessary, as for others with dual activity, to determine the principal one. In order to simplify international comparisons it is sometimes suggested that unpaid family workers on farms be shown separately and that domestic servants in farm households be shown as a separate occupational group. The basic problem is, however, one of setting appropriate standards in each case and then of making an effective enumeration. The number of domestic servants in farm households in countries where this is important can be obtained through analysis by occupation of the industry group, *Domestic service,* for households designated as farms. It is not wise at the international level to complicate the occupational classification unduly because of problems that are basically enumerative, particularly in view of the fact that such problems occur in one country or another at almost every point in the classification.

[1] See *Application of International Standards to Census Data on the Economically Active Population,* op. cit., p. 7. This rule was also accepted by the Eighth International Conference of Labour Statisticians.

The second characteristic has to do with the techniques used and the scale of operations. While the use of agricultural machinery is spreading and there has been rapid progress in recent years in improving old machines and developing new ones, mechanisation has not been applied in agriculture generally to the same extent as, for example, in manufacturing and transportation. Consequently the effects of mechanisation in changing the kinds of jobs being done and in standardising the types of operations carried out have been experienced only to a relatively limited extent in agriculture. Moreover the impact of machine methods has been very unevenly felt; some areas are highly mechanised for almost all types of farming, while other areas with as diverse kinds of agriculture use virtually the same techniques as were employed hundreds of years ago. Thus it has not been possible to propose detailed categories of farm workers that would find general acceptance.

It is sometimes suggested as an alternative that farmers and farm workers should be shown separately in the occupational classification for farms of different size groups, because the techniques used (i.e., organisation of the work) and consequently the kind of work done tend to differ with the size of the operation. In a particular area (a country or group of adjacent countries) there is no doubt that certain kinds of agricultural operations tend to be small scale (e.g. dairy farms, apiaries, poultry farms) while others tend to be large (e.g. grain farms, sheep ranches, cattle ranches), and that the kind of work done depends to a considerable extent upon the type of farm. Such a distinction can be made, if required, in the country or countries concerned.

This does not provide a satisfactory solution internationally, however, because in different parts of the world the typical scale of operation varies considerably even for a particular kind of farm. The degree of mechanisation and division of labour, and the extent to which services such as pruning, spraying, soil preparation, transport, grading and marketing, are provided by specialists differ greatly among areas for the same kind of farming. In addition the legal and institutional bases of land tenure depend upon historical and cultural factors that vary widely in different parts of the world. This affects the relationship between employer and employee, land owner and land cultivator, and often influences the techniques of production and marketing in agriculture. Thus it has not been possible to establish appropriate size-groups for purposes of improving the international comparability of agricultural occupations. When the question of establishing such size-groups was referred to countries for comment in 1955, the majority of those replying rejected such a plan as impracticable or misleading.

Workers in Operating Transport Occupations

A major group with the above heading was recommended by the Seventh International Conference of Labour Statisticians. It was clearly the intent at that time to restrict the group to workers of the transport type (excluding waiters, wireless operators, craftsmen and the like), whose jobs entailed actual travel as a member of the crew of a vehicle, vessel or other means of transport. The Eighth Conference, however, provisionally changed the scope of this major group in two important respects, *(a)* by including certain communications workers, as explained above (p. 65), and *(b)* by dropping the word " operating " from the title and thus extending the scope of the group to include such special

transport-type occupations as inspectors and traffic controllers, as well as operators of specialised transport facilities such as locksmen and lighthouse keepers. As a result the major group became more heterogeneous from the viewpoint of working environment but resembled more closely the groups found in many national classifications.

The Group of Experts convened in 1955 did not record any opinion on the second extension mentioned above ; from their discussions it can be inferred that the members considered this point to be of relatively minor importance because it affected few workers. Furthermore, from the viewpoint of working environment a division between workers travelling on means of transport and closely associated workers on platforms, docks, signal towers and the like, may be justified, but the division is less meaningful if the criterion of the transferability of workers is applied.

Regarding the first point, as has been noted, opinion was evenly divided and no change was recommended.

Craftsmen, Production Process Workers and Labourers

It is in this group that mass-production methods have had the most profound effects on occupations that are traditionally regarded as highly skilled crafts. Often individuals tending machines and taking part in the production of articles that were once made by skilled craftsmen use the occupational title of the craft (as, for example, bindery workers, who are called bookbinders, or machine operatives in a furniture factory, who are called cabinet makers). This practice is now quite prevalent, but the extent to which it has affected different countries and different crafts varies considerably. On one point, however, there is agreement on the part of all those who work with occupational classifications : that it is becoming increasingly difficult to distinguish craft and production process workers on the basis of skill and that classifications which attempt to establish such categories will have a large, heterogeneous remainder which must be handled otherwise than on an occupational basis.

This being the case in individual countries, it is clear that internationally the situation is even more complicated. Skill is relative ; there are neither units of skill nor an internationally acceptable definition of skill against which an individual's abilities or the requirements of a job can be measured ; hence it is impossible to be certain how the criterion of skill would be applied internationally. No attempt has been made, therefore, to base the categories in the I.S.C.O. upon skill, although it is inevitably taken into account as one of the principal factors making certain kinds of jobs distinctive and therefore capable of being shown as a separate class.

In the absence of skill as a basic criterion for the subdivision of this large group it would be convenient, if possible, to use some other single characteristic. The group is composed of " production " workers, such as artisans, craftsmen and machine operators, and it includes well known categories such as the metal trades, building trades and printing trades. These three familiar groupings, however, illustrate one of the main problems. It is advisable, where possible, to use traditional groups, because they are widely known and data on them are often used. But each of the three examples mentioned is based upon a different concept —the first on material used, the second on working environment, and the third on a common product (which implies a relationship based

upon successive stages in a particular production process). It would be possible to apply any one of these criteria to obtain some significant groupings, but the majority of workers in the major group would, in each case, fall into a large " residual " category. In practice, however, the criterion of working environment results, at this level, in few significant groups and can be disregarded. This leaves " material worked upon " and " common product " ; and, in fact, the two have been applied together in the I.S.C.O., resulting in a " mixed principle " classification of this major group.

Minor groups such as *Leather cutters, lasters and sewers* ; *Carpenters, joiners, cabinet makers, coopers and related workers* ; and *Toolmakers, machinists, plumbers, welders, platers and related workers* are based upon material worked upon. When the material worked is similar, the tools used, techniques applied, machinery employed and the general body of knowledge necessary to do the job tend to have elements of similarity. Such considerations lead to the delineation of these groups as homogeneous occupational categories. On the other hand, such groups as *Spinners, weavers, knitters, dyers and related workers* ; *Tailors, cutters, furriers and related workers* ; *Potters, kilnmen and ovenmen, ceramic* ; and *Chemical and related workers* are based upon similarity of product and common production processes. In these cases also, the tools and machinery used, the techniques applied and the body of knowledge required to do the jobs in each group are related. So the basic factors leading to the isolation of the groups are very much the same as for those related through the material used. But by using the two sets of criteria interchangeably many more significant homogeneous categories can be isolated than with either of them alone, and data having more general utility are provided.

To bring out unit (i.e. three-digit) groups within these minor groups presents other problems. In some cases it is possible to designate particular trades that are well known and widely distributed (e.g. *Carpenters, Millers,* or *Bakers*) ; in other cases operators of particular types of equipment can be separated (e.g. *Woodworking machine operators* ; *Stationary enginemen, crane drivers and riggers* ; or *Warehouse and related materials-handling equipment operators*) ; other groups bring together a more miscellaneous category of " makers " of something (e.g. *Shoemakers and repairers, factory* ; *Dairy workers* ; or *Rubber products makers*). Thus, each minor group has been handled to some extent as a separate case and the identifiable elements within it delineated by the application of the most effective criterion. In such cases theoretical principles of classification are applied in the light of problems connected with the collection of data in an attempt to isolate as many useful categories as possible. The result is inevitably less detailed and less precise for an international classification than for the most advanced national systems.

Service Workers

The common factor in this major group is the performance of service for other people. The service workers included here are distinguished from certain categories of the *Professional, technical and related workers* (e.g. lawyers, physicians, teachers) on the basis of level of education and training. In general this major group corresponds with such groups in many national classifications and no problems have been encountered with the major group as a whole. Similarly, many of the minor and unit groups included are commonly found in national classifications.

Certain problems have been encountered, however, and a brief summary of them may be of interest. The group of " protective service workers " including policemen, fire fighters, guards and the like is difficult to delineate precisely for international comparisons. In some countries, for example, it is not possible to distinguish customs examiners at border points from members of police forces ; in other cases it is difficult to establish the border line between police forces and armed forces ; again, it is sometimes difficult to distinguish fire fighters from members of the armed forces. The question of the armed forces in connection with the I.S.C.O. is considered later, but it should be noted here that *(a)* members of the armed forces as such are allocated to a separate group, and *(b)* persons who are not strictly members of the armed forces of a country are classed according to the type of work done and not according to the branch of government service or other branch of industry in which they work.

Until the meeting of the Eighth International Conference of Labour Statisticians late in 1954 *Actors, musicians and related workers* and *Athletes, sportsmen and related workers* were included in the major group for *Professional, technical and related workers,* but the Conference transferred them to the major group for *Service workers.* The transfer was made by the Conference because, in its view, the kind of work done by the majority of persons included in these categories is of a routine nature and could not be designated as creative artistic functions or as the performance of services requiring an exceptionally high level of education and training. Thus the workers included in these minor groups were considered as performing " recreational service " rather than " professional service " functions.

When the classification provisionally adopted by the Eighth Conference was circulated to countries for their comments a number of the countries that replied took a definite stand with regard to the Conference's action in this matter, but the majority did not comment on the question (of thirty countries that sent comments five were opposed to the transfer made by the Conference and one was in favour). The Group of Experts that met late in 1955 to consider the Eighth Conference's recommendations in the light of the countries' comments and to advise the Office in the further development of the I.S.C.O. discussed the problem of actors and musicians and athletes and sportsmen at some length. The Group felt that the case of *Actors, musicians and related workers* and that of *Athletes, sportsmen and related workers* should be considered separately.

Although it might be argued that the majority of actors, musicians, dancers and the like do not possess a high level of training or perform at the highest artistic level, the Group concluded that the kind of work performed was more akin to that of *Professional, technical and related workers* than that of *Service workers.* This was based upon the conception that the work performed is of an individual nature and its quality depends largely upon individual talent. Many of these workers do work of high artistic quality. Thus, the Group of Experts recommended that *Actors, musicians and related workers* be transferred back to the major group *Professional, technical and related workers.*

In the case of *Athletes, sportsmen and related workers* the Group of Experts, after much discussion, came to the same conclusion as the Eighth Conference. It was felt that in most countries athletes performing for a fee are engaged in recreational service activities rather than the type included in the *Professional, technical and related workers*

group. The majority of such individuals operate as members of a team where the effect of individual talent may be of less consequence than with actors and similar workers.

Armed Forces

According to the currently accepted international definitions [1] members of the armed forces are included in the economically active population and therefore are covered by the occupational classification. It is usually the civilian labour force, however, that is used in economic analyses in the field of occupational distribution, and for this reason alone it is desirable to classify members of the armed forces in a separate group in the international classification. Many countries have such a separate group (or groups) in their national classifications, while others classify some or all members of the forces by individual occupation. Some of the countries which classify members of the forces by occupation prefer to allocate them according to the work they are performing in the forces while others classify according to the individual's usual civilian employment. In any case it is necessary to classify some members of the forces in a separate group because their functions are different from any civilian employment. Neither of these methods of classifying members of the armed services in individual occupations is satisfactory for international purposes, however, because of the variation in the conditions of enlistment and service in different countries.

No attempt has been made to design the I.S.C.O. for the purpose of classifying armed service personnel, although many occupations found in civilian life exist also in the services, e.g. physician, accountant, barber, cook, electrician, aviator. It cannot be assumed, however, that these jobs are carried on in the same way or involve the same processes in the armed services as in civilian life or that the skills learned in the services qualify an individual for the corresponding civilian job. Nor can it be assumed that upon leaving the armed forces an individual will resume his customary former civilian employment (if, indeed, he has had any experience in a civilian job). Thus the most satisfactory solution internationally is a separate group in the classification.

The provision of a separate group for the armed forces, however, brings up the problem of defining the scope of the group. This question is not one involving principles of occupational classification as such and therefore the Group of Experts did not deal with it. The problem of finding internationally acceptable limits for the armed services group is complicated by the variety of practices among countries regarding recruitment and conditions of service. Members of a country's permanent forces and those enlisted for a term of years clearly fall within the scope of an " armed forces " group. In some countries, however, almost all males except the very young and the very old are members of the armed forces and are on active service for a few weeks each year. Just as clearly, it would not serve the purposes for which statistics are usually required to class such individuals in any but the civilian jobs from which they are temporarily absent. Thus it is necessary to establish some dividing line for international purposes and to class as members of the armed forces those whose terms of enlistment exceed the limit set.

[1] *Application of International Standards to Census Data on the Economically Active Population*, op. cit., especially pp. 10, 27, and 55.

It is only in statistical surveys such as population censuses, which cover the whole population, that this problem arises, because as a general rule surveys with less universal coverage do not include members of the forces. Work is now proceeding in a number of international organisations on the establishment of uniform definitions and practices for the population censuses to take place in or around 1960. Thus, the problem of providing a uniform definition of " armed services " is being further studied.

Persons Looking for Work for the First Time

Only brief mention need be made of this group. At no time has there been any serious question of the principle that in the I.S.C.O. individuals are classified according to the work actually performed in their usual, present or most recent job. Some countries include in their count of the economically active population persons looking for work at the time of the census or other investigation, but who have never worked. Such individuals may have training which fits them for a particular job and may therefore be classified occupationally by an employment office or similar operational agency. For census and other statistical purposes, however, it seems improper to include them under any specific occupational group on the basis of their training and they cannot be so classified on the basis of their work experience since they have never worked. In the I.S.C.O., therefore, a special group is reserved for those who are counted as economically active because they are seeking their first jobs.

Other Categories

For data obtained from census and similar statistical surveys provision should be made in the classification for some special categories such as persons with diplomatic or similar status residing in a country, those reporting no occupation but considered economically active, those providing a vague or unclassifiable occupation, and members of groups living outside the socio-economic structure of the country (such as some indigenous groups). All of these and any others required can be made minor groups of a final major group which would also have a minor group for the armed services.

Application of the Classification

When the structure of the classification of occupations is settled, certain questions of its application will remain. Strictly speaking such problems are separate from those concerned with the classification structure, but they have been mentioned frequently in countries' comments on the problems of the I.S.C.O. The two main questions of this kind are concerned with *(a)* whether the individual should be classified according to the nature of his present activity or on some other basis ; and *(b)* how persons with dual activity should be classified.

The first question has more than one facet. It is clear from the present discussion that, in cases where an individual has training that fits him for a job other than the one he holds, he is nevertheless classified according to the type of work he is doing. Thus a physician who is employed as an administrator in a public health service is classified as a

government official and not as a physician.[1] Such a decision on the application of the classification does not change its structure, since in any case a category is provided for *Physicians* and one for *Administrative officials, government*, but it does affect the nature of the data secured when the classification is used.

Another aspect of this question is encountered in relation to the choice between current job and usual job. This is often decided in choosing the desired definition of the "economically active population". In some cases, however, both facts are collected and one must be chosen as the primary activity. Definitional questions of this kind have little to do with problems of occupational classification as such but must be decided in each country on the basis of the kind of data found to be most generally useful. No preference has been expressed on this point by international agencies in establishing international standards for census data.

The second question deals with the situation in which an individual is engaged, during the reference period of the survey, in more than one activity. Each person is classified to only one occupation and for this purpose the principal occupation must be determined. If the reference period is short (say one day or one week) the majority of cases encountered are those in which the person engages in more than one activity on a continuing basis. For example, a professional engineer may teach in a university and also be retained as a consultant by one or more principals; or an office clerk may work in the evenings as a musician. When the reference period is longer (say six months or a year) many of the cases encountered will be those where the individual shifts his activity on a pattern which may be seasonal or otherwise (it is assumed that in any case where a person has changed his activity because of a change in job which is expected to continue, he will report only the latest activity). Although other kinds of dual activity (or multiple activity) will be encountered the above examples serve to illustrate the nature of the problem.

To determine the principal activity in such cases it is necessary to have rules establishing a system of priorities. The simplest method is to choose either earnings or time spent as the criterion, and to classify accordingly. Thus a person having more than one activity would be allocated either to the one from which he derives most income or the one on which he spends the most time. It is known that almost all countries use one or other of the above criteria and that they are rather evenly divided in their preference. If neither of the criteria discussed is available, however, some other method must be used, such as asking the respondent to indicate the occupation connected with the activity he considers to be his principal one. Such solutions, however, are not conducive to international comparability and are therefore to be discouraged.

Future Development of the I.S.C.O.

Occupational group headings alone are not sufficient to ensure the maximum possible international comparability in reporting data. The headings must be defined so that the content of each is clearly shown. When the I.S.C.O. was circulated to the countries for comment

[1] This point is discussed here purely from the statistical point of view. Obviously in such operations as registration for employment an applicant can be registered simultaneously in more than one occupation.

the class headings were supplemented by notes indicating the principal items included in each case. Such notes are helpful in obtaining general comments and suggestions, but they do not have the precision or completeness required for application of the classification in practice. Precise definitions are therefore being drafted. The I.L.O. will be prepared to give guidance to individual countries in relating their national occupational titles to the international definitions in terms of a national occupational index; this assistance will be in the form of advice in respect of specific cases in which interpretation and conversion are difficult.

The I.S.C.O. is also being extended beyond the three-digit unit groups now being made ready for presentation to the Ninth International Conference of Labour Statisticians and, when completed, will provide a detailed five-digit classification of specific occupations. This extension, together with the appropriate definitions, is being carried out by the International Labour Office. It is not intended to seek international agreement regarding the several thousand detailed categories to be established, nor to recommend use of the classification in international comparisons for statistical purposes beyond the unit group level.

While the major objective in the development of the first three digits of the classification has been to obtain the best possible classification for statistical use at the international level, the extension to the fifth digit is directed more particularly to the non-statistical applications of occupational classification [1], and will make available for the first time a single multi-purpose classification of broad usefulness. The widespread use of the International Classification of Occupations for Migration and Employment Placement (I.C.O.M.E.P.) in migration programmes, employment services and related operations has convincingly demonstrated the value of international guidance in occupational classification at the " job " level. Full advantage is being taken of past experience with the I.C.O.M.E.P. in the extension of the I.S.C.O., the elaboration of which provides definitions of individual occupations and represents a significant step forward in the programme that began with the development of the I.C.O.M.E.P.

It is recognised that countries which already have one or more satisfactory classifications need not depend upon the I.S.C.O. for internal use but may arrange, for purposes of international comparison, for the greatest possible convertibility of their classification into the I.S.C.O. categories through the first three digits. Countries which do not have occupational classifications or which consider their present classifications to be unsatisfactory may find it desirable to adopt the I.S.C.O. in its entirety, subject to such modifications as are needed to adapt it to national conditions.

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[1] This dual approach has been possible without significant sacrifice since international statistical comparisons beyond the third digit are rarely feasible, while for most operational uses interest attaches to classification at the detailed " job " level.