STATISTICAL COMMISSION
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DEFINITIONS FOR INDUSTRIAL STATISTICS

(Memorandum prepared by the Secretary-General)
DEFINITIONS IN BASIC INDUSTRIAL STATISTICS

Memorandum by the Secretary-General

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DEFINITIONS IN BASIC INDUSTRIAL STATISTICS

Memorandum by the Secretary-General

INTRODUCTION

1. At its fifth session, the Statistical Commission made preliminary suggestions concerning the scope, coverage and classification of basic industrial statistics, and on a small number of important items of data which might be collected (E/1996/Rev.1 paras. 66 and 67). At its sixth session, the Commission adopted formal recommendations inviting countries to consider collecting and publishing a list of industrial statistics, at specified intervals of time, with specified coverage, classification, industry detail, and scope, and indicated, within the main list of statistics, a shorter priority list for countries embarking for the first time on the collection of basic industrial statistics (E/1994 para. 55). The commission adopted this approach to the establishment of international standards in this field because, owing to the differences in the methods by which countries collect such statistics, their varying problems, and the differences in their systems of basic industrial enquiries, it was recognized that it would be difficult to obtain agreement on recommendations relating to methods and systems of collection. In the discussion at the sixth session, the Commission noted that the list of statistics recommended would need to be supplemented by a set of definitions and by notes on different methods by which the data might be collected.

2. In the present paper, the items of data recommended are considered in more detail and definitions are suggested for them. The objects are to assist countries in formulating definitions for the collection of the items of data, and to attain greater international comparability in the resulting statistics. The definitions proposed are not put forward as complete working definitions since each country will need to consider its actual working definition in the light of its own conditions. However, they contain what are considered to be the essential elements of a satisfactory working definition.

3. The concepts in this field were discussed at the Second Regional Conference of European Statisticians in Geneva in September 1951, at the Second Regional Conference of Statisticians in the ECAFF area in Bangkok
in September 1952, and at an international seminar on production and price statistics in Beirut in July 1952. The results of these discussions have been drawn on in framing the suggested definitions. In addition, a number of countries with wide experience in this field have been consulted informally.

4. With regard to the methods of collecting the data, the Statistical Office has prepared a manual of which a provisional edition is now available. This edition has been drawn up to agree with the draft definitions which are submitted to the Commission in this paper, and will be revised in accordance with the action which the Commission takes on these definitions, if this is necessary.

5. This paper is divided into five sections. In Section I, proposals for adding to and deleting from the list of items of data are considered. In Section II, the principles followed in constructing the definitions are stated. In Section III, the proposed definitions are set out. In Section IV, the relationship of the proposed definitions to the International Convention relating to Economic Statistics is considered. In Section V, proposals are made relating to the action which the Statistical Commission may now wish to take. The paper is followed by three appendices. Since the definitions are so closely related to former recommendations of the Commission, these recommendations are quoted, for the convenience of members of the Commission, in appendices I and II. Explanatory notes to the proposed definitions are given in appendix III.
SECTION I

PROPOSALS FOR REVISING THE LIST OF ITEMS OF DATA

6. Two slight revisions to the list of items of data are proposed. The first is an addition in the form of an expansion of one of the items. In the existing list it is suggested that within the total of numbers engaged, separate data should be given on employers and employees, but no separate mention of unpaid family workers or of home workers is made, so that these classes were, by implication, to be omitted. At the meetings in the Middle East and in the Far East, it was agreed that unpaid family workers and home workers are of considerable importance, that they should be included in the total of numbers engaged and that separate data should be obtained. As a world standard, therefore, it is proposed that these two classes should be included in the total of numbers engaged and that in principle they - in addition to employers and employees - should be shown separately. However, in many countries they (together with employers) are of no importance, or important only in a few industries. In these countries, it would not be serious if they were not shown separately, or even omitted altogether, except for the industries where they are important; for these industries separate data would be valuable.

7. The second proposed revision relates to data on numbers engaged during several periods of the year. The present list recommends that statistics should be obtained on the different classes of persons engaged during one period in the year, and on the total numbers engaged during several periods in the year. It is now proposed that the latter item, on which data are to be collected during several periods, should refer to total numbers employed instead of total numbers engaged, since this is likely to be much easier to report.

8. Another point which has been raised is that the statistics recommended refer to establishments as distinct from enterprises, and that although for most purposes, it is statistics by establishment which are needed, nevertheless there are some purposes, such as studies of concentration of ownership and the economic efficiency of different forms of organization, for which statistics on enterprises are needed. It would be possible to sub-divide the present
list, or to add a new list, to show the statistics required from enterprises. However, since the needs for enterprise statistics are rather specialized, and since the significance of an "enterprise" varies from country to country according to the legal and economic system prevailing, the Commission may not wish to make recommendations nor to revise the list for this purpose, at the present time. The Commission may wish to include work in this field in its future programme.

9. With the exception of the items relating to establishments, the revised list of recommended items of data is a list of the statistics to be sought from establishments, not a list of the tabulations to be made of the data in the resulting publications. The Commission may also wish to include in its programme work in the field of tabulations of data.

10. The recommended list is not intended to include all the data which might be of interest. It is rather to be regarded as a suggested minimum list for countries which are moderately or well advanced in the collection of basic industrial statistics. There is of course a separate and much shorter minimum list for countries embarking for the first time on the collection of such statistics.

11. The list of items and their definitions apply only to the field of industry as defined later in this paper. This limitation is not meant to imply that countries should be discouraged from undertaking enquiries relating to a broader field. Statistics on other economic activities such as distribution, transport and services are needed for many of the same purposes as industrial statistics, and there are many practical advantages to an economic census which covers, at one enquiry, all economic activities. Concepts and definitions parallel to those contained in this paper need to be worked out for these other fields. The Commission has already adopted definitions on transport statistics, but these related to transport operations and not to input, output and structure in the economic sense. The Commission has also already included work on distribution statistics in its programme, but with second priority. The Commission may now wish (a) to raise this priority for distribution statistics and (b) to include in its programme work on concepts and definitions in other economic fields.
SECTION II

GUIDING PRINCIPLES IN CONSTRUCTING THE DEFINITIONS

12. In preparing the definitions given in the next section, the plan followed, so far as possible, has been first to define the basic concept and then to give an indication of the probable application of this concept in practice. The principles adopted were as follows:

(i) **Economic significance.** The concepts describel should be consistent with general economic usage and should provide the data needed for governmental and business decisions and for economic analysis.

(ii) **Totality of coverage.** The field covered by the statistics ("industry") should be conceived in terms of establishments rather than activities. There are advantages attaching to each of these concepts, but in practice most countries find it better to divide the industrial from the non-industrial field by distinguishing between establishments which are predominantly industrial and those which are predominantly non-industrial, rather than attempting to cover industrial activities wherever they are carried on. An establishment which conducts several activities, but which is not organized so as to form two or more reporting units (establishments for statistical purposes) should be classified wholly in or wholly out of the industrial field, and the data reported for the establishment should cover its minor activities as well as its major activities. This accords with the general principle of classifying establishments according to their major activity. It reduces the possibility of overlapping and omissions between, for example, a census of industry and a census of distribution. It also lightens the burden of reporting. However, an exception to this general rule is proposed in the case of household activities.
(iii) Physical basis. So far as possible the lines followed in drawing up the definitions are physical rather than financial or legal. Thus the unit is to be the establishment rather than the enterprise, man-hours worked are to be actual hours rather than hours paid for, output is to be measured and valued ex-factory, materials measured and valued as delivered at the factory, the coverage of stocks is to follow location and not ownership, goods merchantable by the establishment without processing are to be included. However, it is not always possible to follow these lines even in defining the basic concept; for instance, numbers engaged are to include home-workers, although they work away from the establishment. Moreover, in the practical application of the concept it is frequently necessary to rely on financial data.

(iv) Comparability. The definitions should provide measures of different characteristics which are comparable one with another. For example, man-hours should be reported for the persons making the goods and services reported as production. In general, the principles of totality of coverage and of physical basis provide such comparability. A conflict of objectives may well arise, however, for instance if the definition of one item has to be at variance with these principles. If so, it may be impossible to avoid choosing between complete comparability with less significance and incomplete comparability with greater significance. If it is not possible for such reasons to obtain complete comparability, the emphasis should be laid on securing comparability in measures relating to operatives (average number, man-hours, and earnings), value added, and the gross volume of production.

(v) International Standardization. So far as possible, the definitions should reflect prevailing national practices.
(vi) "Reportability". For statistical undertakings as massive as a complete census, the definitions should permit relatively easy reporting. The questions should not require distinctions which are known not to be maintained in the records even of large companies. This is not intended to preclude the possibility of more complex or exacting definitions for use in small-scale surveys for special purposes.
SECTION III

PROPOSED DEFINITIONS

13. In this section, proposed definitions are given for the statistics to be collected from establishments. A definition is also attempted for the establishment itself and for industry - as for instance in the expressions "industrial sector of the economy" or "basic industrial statistics" - in order to indicate the coverage of the statistics. (The English language is confusing in its use of the term industry. In this paper "an industry" means an individual industry such as cotton weaving; "industries" is the plural; and "industry" means the whole class of industries). Definitions are not given for the items "number of establishments with different numbers of employees" and "number of establishments with different values of production" which are items from a list of tabulations of data, not of basic statistics sought, and raise no additional conceptual issues not covered in the other definitions.

14. Industry

(a) The field to be included. "Industry", as the term is used in this paper, consists of establishments principally engaged in mining, manufacturing, construction, electricity and gas, or more precisely the activities included in major groups 11 to 51 inclusive of the International Standard Industrial Classification of All Economic Activities (ISIC). The data collected on mining and construction may well be more limited than on other industries.

(b) The kinds of industrial units to be included. All forms of organization engaged in these industries should be included. This embraces establishments of all sizes and types, factories, mines, electric power plants, workshops, handicraft establishments and even household units if they produce for sale or exchange or if their main economic activity is the production of industrial commodities. The methods appropriate for covering different parts of this field, the degree of detail with which data can be obtained, and the precision of the data, are likely to vary, but in principle the coverage of the data should be the whole field.
15. **The establishment**

The establishment is the individual plant - mine, well, factory, cokery, generating station, workshop, household - in which goods and services are produced, as contrasted with the enterprise, the technical unit and the operational unit.\(^1\) The simple concept is of an industrial unit with a separate location, under a single operating control, and classifiable to a single industry. In many cases this concept fits the facts of industry reasonably well. Where it does not apply, e.g. where the products belong to more than one industry or the activities are carried on at more than one location, the criterion for separate identification is in practice the extent to which the different activities are separated from each other in different departments, as revealed by the existence of separate records or the possibility of making separate estimates. In practice, therefore, the establishment is the reporting unit which is most suitable for the collection of comparable basic industrial statistics and for their distribution by industry and by geographical area.

16. **Persons engaged**

The total number of persons who worked in or for the establishment, including working proprietors and active business partners, employees, unpaid family workers, and home workers. The figures for each of these groups should be collected separately, and the total of the four groups should be used for the purpose of classifying the establishment by size. However, in countries and in industries in which employers, unpaid family workers and home workers are unimportant, it is not serious if these classes are not shown separately, or are omitted altogether. The count should refer to the number of persons engaged at any time during a specified period of time, e.g. a pay-period, rather than on a specified day. Persons on sick leave, paid vacation and casual unpaid leave should be included, but persons on unlimited leave, on military service, on strike, and on pension should be excluded.

\(^1\) The enterprise is the commercial or legal unit and may own or control a number of establishments. The technical unit consists of the operations contributing directly to a particular product. The operational unit is based on the nature of the work done, even if such work is ancillary to the main activity of the establishment.
17. **Adults and juveniles**

No standard age is recommended for distinguishing adults from juveniles. The distinction should be made according to the existing laws and customs of each country.

18. **Employers (and self-employed)**

Working proprietors, including the self-employed, and active partners of unincorporated businesses. It does not include paid or unpaid members of the employer's household unless they participate in the direction of the business, nor does it include salaried directors and managers (these are counted as employees).

19. **Unpaid family workers**

Members of the household of the proprietor of an establishment who work without pay in the establishment "or at least one third of the normal working time. The fact that these persons receive subsistence or other benefits from the proprietor is not relevant in this connexion.

20. **Home workers**

Persons working in their own homes for an employer.

21. **Employees**

Persons engaged other than employers, unpaid family workers, and home workers including those working both directly and indirectly on the products of the establishment. Paid family workers are included.

22. (a) **Operatives**

Employees engaged on essentially manual work directly associated with the actual production of goods and services or directly auxiliary to it. It includes those engaged in fabricating, processing and assembling, extracting, constructions and activities directly auxiliary to such work; for example, messengers, stokers and cleaning personnel; working foremen and all nonsupervisory workers engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping, maintenance, repair, watchman services, testing and record-keeping in the shop, and other services closely associated with the productive operations.
(b) Administrative, technical, clerical and other employees

All employees other than operatives, including salaried managers and directors, laboratory and research workers, typists, clerks, bookkeepers, accountants, and others engaged in the office work of the establishment as a whole, administrative supervisors, foremen other than working foremen, salesmen, and delivery personnel.

23. Wages and salaries paid

All payments made in connexion with the work by the employer to the persons included in the count of employees. Payments to homeworkers should be included, but be shown separately. Payments, if any, to persons on unlimited leave, on military service and retired—should not be included. The categories of payments to be included are as follows: All cash payments, including bonuses and cost-of-living or dearness allowances; taxes and social insurance contributions and the like payable by the employed person and deducted by the employer; and payments in kind. Social insurance contributions payable by the employer and family allowances and other social security benefits should be excluded. Of the total of wages and salaries paid, separate data should be obtained on payments to operatives and payments to administrative, technical and clerical workers (as well as separate data on payments to home workers). This is not the same as separating wages from salaries; the remuneration of the operatives, whether wages or salaries, should be distinguished from the remuneration of the other employees, whether wages or salaries.

24. Man hours worked

The total number of hours actually worked by the operatives in the establishment, including waiting time, but excluding hours on sick leave or on paid vacation. Some establishments may be able to provide figures of hours actually worked from a count of them, but in most cases an estimate will have to be accepted; one method of estimating is to multiply the average number of operatives by the number of shifts worked and by the average length of the shifts. In industries and countries in which home workers are important, separate data should be obtained, if possible, on their man-hours; also, on unpaid family workers, where they are engaged essentially in manual work.
25. **Capacity of prime movers**

The effective capacity, measured in horsepower, of all prime movers installed in the establishment on a specified date, including mobile prime movers used to produce energy for purposes other than for propelling vehicles, but excluding generators and electric motors. The distinction between prime movers directly applied to machines and prime movers applied to generators should relate to the state of affairs on the date specified, but the distinction between prime movers in use and prime movers in reserve should relate to the ordinary state of affairs during the enquiry period, prime movers being classified as in use unless they are reserved for emergencies.

Unfortunately there is no objective measure of effective capacity, and any estimate is subject to a number of assumptions which are often difficult to determine. It is suggested, therefore, that in practice the figures sought should be the horsepower indicated by the manufacturer on the nameplate or otherwise, which is an objective measure, although it may be different from the effective horsepower.

26. **Capacity of electric motors**

The effective capacity, measured in horsepower, of all electric motors installed in the establishment on a specified date and used to provide power for purposes other than for propelling vehicles, excluding the capacity of electric generators. The distinction between motors using energy generated in the establishment and motors using purchased energy should relate to the ordinary state of affairs during the enquiry period.

As with prime movers, it is suggested that in practice the horsepower indicated by the manufacturer should be sought.

27. **Machinery and equipment**

No general definition can be given for a "typical piece of machinery". Enquiries are to be adapted to important and measurable kinds of equipment in particular industries.

28. **Gross investment in fixed assets during the year**

All acquisitions, whether obtained from other enterprises or produced by the establishment's employees for its own use, of physical assets which are expected to have a productive life of more than one year (land, buildings,
plant, machinery, equipment and vehicles), both new and secondhand, and including major alterations. Titles to wealth are excluded. Acquisitions from other establishments should be valued at the full cost incurred, i.e. at the delivered price plus the cost of installation, including any necessary fees and taxes, and they should be recorded as gross investment only on their completion and delivery to the control of the establishment. However, for fixed assets produced by the establishment for its own use, the cost of all work put in place during the year should be included, whether they are completed or not. There may be particular difficulties in obtaining data on the value of structures erected by the establishment for its own use.

In practice, the figures which respondents with developed accounting systems are likely to return relate to the expenditures charged to the establishment's fixed assets account, and a number of conceptual difficulties can be sidestepped by requesting these figures, although the data are likely to depart, by understatement, from the concept defined above. In many instances, however, such data may not be available, since capital accounting is not universally employed, and even where it is used, it is frequently kept on an enterprise rather than on an establishment basis. In requesting data on gross investment in fixed assets, therefore, it is necessary to provide a detailed definition of the items of expenditure to be included as well as the basis for their valuation, for the guidance of establishments without capital accounts.

29. New fixed assets

Fixed assets which have not before been used in the country, including all imported fixed assets whether new or used.

30. Secondhand fixed assets

Fixed assets other than new, i.e. all fixed assets previously used in the country, including reconditioned plant and equipment and buildings which have undergone major alterations.

31. Sales of fixed assets

All disposals of fixed assets, except those newly produced for sale, regardless of their condition, at the prices received ex-factory.
32. **Value of stocks**

Inventories of the raw materials, semi-finished products (other than uncompleted fixed assets being made for the establishments own use) and finished products held at the beginning and at the end of the period, valued as if sold at the ex-factory prices current at those times, with excise taxes subtracted and subsidies added, or (if no price can be determined) at the cost of labour and materials, with an allowance for overheads. If possible, separate data should be collected on the value of stock of raw materials, semi-finished products (work in progress) and finished products.

The coverage should follow location, i.e. stocks owned by the respondent but not held at the establishment should be excluded, and stocks held at the establishment but owned by others should be included, in order to obtain the appropriate figures for adjusting shipments to production and receipts to consumption.

In practice, it is likely that the only figures which can be collected will be the value of stocks as entered in the establishment's books, both the basis and the coverage of which will vary from firm to firm.

33. **Gross output**

All goods produced and services rendered to others by the establishment. In addition to finished products made for other establishments, whether part of the same enterprise or not, it includes work done on materials owned by others, installation or repair work for others, goods sold without processing by the establishment, capital goods produced for the establishment's own use, and the net addition to inventories of finished goods and semi-finished goods during the period (including work put in place on goods which have not been completed at the end of the period). Work put in place on uncompleted fixed assets being made for the establishment's own use is not included in calculating the net addition to inventories of semi-finished goods. Disposals of by-products and waste products are also included.

These different types of output should be valued so far as possible at the current ex-factory prices, with excise taxes subtracted and subsidies on production (though not on sales) added. Finished products delivered and waste
and by-products sold should be valued at these prices (unless delivery is made by the establishment's own labour) and not of any rebates or discounts allowed. Finished products put into stock should be valued at ex-factory prices at the end of the period adjusted for excise taxes or subsidies. Work done for others should be valued at the payment received also adjusted for any excise taxes or subsidies. Goods shipped to other establishments of the same enterprise, capital goods made for own use, and work in progress (i.e. semi-finished goods) should be valued as if produced for sale, or, if no price can be estimated, at the cost of labour and materials, preferably with an allowance for factory overheads.

In practice it may be difficult to get figures on production of finished goods and it may be necessary to collect figures on shipments, from which data on production can be deduced by adjusting for changes in stocks of finished goods. It may be difficult also to get figures on shipments at an ex-factory valuation, and it may be necessary to collect the figures at invoiced values, with separate figures on transport payments made.

The value of stocks of finished goods and of semi-finished goods, will probably have to be measured at the valuation put on such stocks for accounting purposes, at the beginning and end of the period; and changes in this value will have to be taken on the difference between the accounting valuations, although this difference may contain an element due to price changes.

Data on the production of important individual commodities, in quantity and value terms, should also be collected. No definition is given for important commodities.

It may be particularly difficult to obtain satisfactory data on the value of structures erected for the establishment's own use.

34. Materials consumed

The raw and semi-finished materials physically incorporated in the product, if obtained from other establishments, together with auxiliary materials such as lubricants, chemicals and packaging materials, fuel, water and electricity used. Office supplies, materials for repair and maintenance, and tools and parts should also be included. Goods sold without processing by the establishment should also be included, and if possible shown separately.
All materials should be valued at the prices delivered at the factory, excluding rebates and subsidies, which are current at the time when the materials are consumed; in practice, at the price actually paid for them. In some circumstances satisfactory data on materials consumed are likely to be obtained by a direct question; in other circumstances it is better to seek data on materials received and adjust by stock changes. There are advantages to the adoption of a single rule for the whole of a country's enquiries however.

To arrive at net output from gross output, the cost of work done on contract for the establishment by other establishments should also be deducted. In addition to figures on the total cost of materials, etc. used, separate figures should be obtained on the quantities and values of important individual materials, fuels and energy used (or purchased).

35. **Value added**

The value of gross output less the value of materials consumed and the cost of work given out to other industrial establishments. In practice, it is likely to be calculated by substituting value of shipments for value of production (and adjusting by changes in stocks of semi-finished and finished goods) and possibly by substituting materials received for materials consumed (with adjustment for stocks of materials).
SECTION IV
RELATION TO THE INTERNATIONAL CONVENTION RELATING TO ECONOMIC STATISTICS (1928)

36. There are two relevant parts of the International Convention; Article 2, paragraph V, and Article 6 together with Annex IV.

37. In Article 2 (V), parties to the Convention undertake to compile and publish statistical surveys of industry at regular intervals and if possible at least once in every ten years, including at least all establishments of any considerable importance. Such surveys shall show, inter alia, (a) the number of persons of each sex, and so far as possible according to their employment and distinguishing adults from young persons, the age at which the distinction is made being stated; (b) if possible, an estimate of the number of persons employed in establishments not included in the surveys; (c) the nominal capacity of prime movers installed distinguishing if possible between steam engines, internal combustion engines and hydraulic engines, and the nominal capacity of the electric motors installed indicating whether the electric energy is generated in the establishment or elsewhere; in each category equipment normally in use should, if possible, be shown separately from equipment idle or in reserve.

38. In Article 6, the parties express general acceptance of the principles underlying a model scheme of census of industrial production set out in Annex IV.

39. Article 2 (V) therefore is a firm undertaking to compile and publish a limited range of statistics. A considerably wider range of statistics is suggested in Annex IV, but the governing Article 6 constitutes only general acceptance of a set of principles, which does not commit the parties on particular details and which they are not bound to put into effect.

40. The list of items of data and the definitions thereof now submitted for consideration by the Statistical Commission appear to be consistent with the provisions of Article 2 (V) of the Convention, although the range of data now recommended is much wider. The compulsory items of Article 2 (V) (number of persons of each sex, nominal capacity of prime movers and nominal capacity of electric motors indicating whether the electric energy is generated in the establishment or elsewhere) are contained in the list of items of data, and the divisions suggested in the Article are all contained in the list or suggested in
the explanatory notes. Parties to the Convention who adopt the Commission's recommendations would, inter alia, be discharging their obligations under Article 2 (V) therefore.

41. The Commission's recommendations differ from Article 6 and Annex IV of the Convention, however, in two ways. First, the approach to the problem is different; the Commission recommends a list of items of data which countries should make available, the methods of collection being left to the country, while the Convention refers to one method of collecting the data, namely the method of census. Second, the Commission's list of items is longer than the list of items included in the Convention's model scheme, notably by the inclusion of items relating to investment, and differs from it in detail. Neither the Commission's recommendations, nor Article 6 with Annex IV of the Convention are mandatory, of course.

42. Participation in the International Convention therefore seems to present no barrier to countries who wish to adopt the Statistical Commission's recommendations in this field. The new recommendations are consistent with Article 2 (V), while parties to the Convention are not committed on the details of Annex IV nor indeed bound to put into effect even in outline the model scheme of census described therein.
SECTION V
PROPOSED ACTION BY THE STATISTICAL COMMISSION

43. The Statistical Commission is invited
(a) to approve the slight revisions to the list of items of data recommended to countries which are proposed in Section I of this paper,
(b) to approve the definitions of the revised list of items of data proposed in Section III,
(c) to request the Secretary-General to study the problems relating to tabulations of data in basic industrial statistics and to statistics of enterprises and to make recommendations in these fields,
(d) to request the Secretary-General to raise the priority accorded to his work on censuses of distribution,
(e) to request the Secretary-General also to study the problems relating to items of data, concepts and definitions in other economic fields and to make recommendations,
(f) to propose that the Economic and Social Council adopt the following resolutions:

(1) The Economic and Social Council

Taking note that the Statistical Commission at its sixth and seventh sessions has invited countries to consider collecting and publishing a list of basic industrial statistics at specified intervals of time, and has adopted recommendations concerning the definitions, coverage and degree of detail of these statistics

Taking note that the Secretary-General has prepared a manual on methods of collecting basic industrial statistics

Urges Governments at present collecting and publishing basic industrial statistics to review their publications in the light of the recommendations of the Statistical Commission so as to improve the international comparability of their statistics

Urges other Governments to undertake the collection and publication of basic industrial statistics in accordance with the Statistical Commission's recommendations.
(2) The Economic and Social Council

Draws to the attention of states parties to the International Convention relating to Economic Statistics (1928) the opinion of the Secretary-General expressed in E/CN.3/155, that participation in the Convention presents no barrier to the adoption of the recommendations on basic industrial statistics made by the Statistical Commission at its sixth and seventh sessions, since the recommendations are compatible with the provisions of Article 2 (V), of the Convention while Article 6 and Annex IV do not commit the parties to put into effect the general procedures described therein, nor bind them on particular details.
APPENDIX I

Extract from the report of the Statistical Commission, Sixth Session

Paragraph 55. The Statistical Commission

(a) Requests the Secretary-General to invite countries:

(i) To consider collecting (by means of an exhaustive or a sample enquiry, or a combination of enquiries, or the adaptation of data already collected for other purposes, or by a combination of methods), and publishing, statistics or reliable estimate for the items listed in Appendix II at the intervals specified therein;

(ii) To consider adopting, as the field covered by the data, the activities of mining, manufacturing, construction, electricity and gas; that is, the activities included in major groups 11 to 51 inclusive of the International Standard Industrial Classification of all Economic Activities, and classifying the data according to that Classification, or one which can be converted into that Classification;

(iii) To consider distinguishing, under each item listed in Appendix II, industries at the group (3-digit) level of the Classification, unless production in a group is negligible, and within this framework distinguishing further industrial sub-divisions according to national requirements;

(iv) To consider adopting the principle that the scope of the data compiled at intervals of not more than ten years should extend over the whole industrial field - that is, should include all forms of production within the categories of (ii) above, though the methods of collection may vary for different forms of production, different industries and different countries;

(v) To consider collecting (by one or a combination of the methods mentioned in recommendation (i)), and publishing, data recommended for intervals of not less than ten years, in respect of the year 1952 or a proximate year.
(b) **Requests** the Secretary-General to draw the attention of Governments which are embarking on the collection of basic industrial statistics to the value of collecting comprehensive statistics, even on a limited basis such as that given by the items starred in Appendix II, namely, number of establishments, numbers engaged, total wages and salaries paid and value of sales.

(c) **Requests** the Secretary-General to continue the study of existing practices and concepts in the field of basic industrial statistics in consultation with national statistical offices, and to report thereon to the Commission at its next session.
### APPENDIX II

**BASIC INDUSTRIAL STATISTICS RECOMMENDED TO COUNTRIES**

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<th>At least once every 10 years (every industry)</th>
<th>Every year (important industries)</th>
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#### A. Establishment data
1. Number of establishments.
   *a. Total number, distinguishing
   b. Numbers with different numbers of employees
   c. Numbers with different values of production

#### B. Labour and wages
1. Employment.
   a. Numbers engaged during a specified period
      *i. Total
      ii. Men, women, boys and girls
      iii. Employers and employees
      iv. Among employees (a) operatives (b) administrative, technical and clerical workers
   b. Total engaged during several specified periods in the year

#### 2. Wages and salaries paid.
   *a. Total wages and salaries paid to employees, distinguishing
      i. operatives
      ii. administrative, technical and clerical workers
   a. Total wages and salaries paid to employees

#### 3. Man-hours worked.
   a. Total man-hours worked

#### C. Capital and investment
1. Power equipment.
   a. Capacity of prime movers distinguishing
      i. those directly applied to machines from those applied to generators
      ii. those in use from those in reserve
   b. Capacity of electric motors, distinguishing
      i. those using energy generated in the establishment from those using purchased energy
   a. Total man-hours worked
## APPENDIX II
(continued)

<table>
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<th>At least once every 10 years (every industry)</th>
<th>Every year (important industries)</th>
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<td>2. Machinery.</td>
<td>a. Number and capacity of typical pieces of machinery (where appropriate)</td>
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<td>3. Current investment in fixed assets.</td>
<td>a. Gross investment in fixed assets during the year, distinguishing i. new ii. second-hand</td>
<td>a. Gross investment in fixed assets during the year, distinguishing i. new ii. second-hand</td>
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<td>b. Value of sales of fixed capital assets</td>
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<td>4. Stocks.</td>
<td>a. Value of stocks at beginning and end of year, distinguishing i. raw materials ii. semi-finished products (work in progress) iii. finished products</td>
<td>a. Value of stocks at beginning and end of year, distinguishing i. raw materials ii. semi-finished products (work in progress) iii. finished products</td>
</tr>
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### D. Output, materials, net output.

1. Output.  
   a. Total value of products made or sold and work done  
   b. Quantities and values of important products made or sold

2. Materials used.
   a. Total cost of materials, fuels and energy used or purchased and of work given out  
   b. Quantities and values of important materials, fuels and energy used or purchased

3. Value added.  
   Dla-D2a adjusted if necessary by changes in value of stocks of materials and products
APPENDIX III

EXPLANATORY NOTES TO THE PROPOSED DEFINITIONS
(Paragraph numbers correspond to those)
(  of items in Section III,  )

14. Industry
(a) The field to be included. Substantially all basic industrial enquiries include manufacturing and mining establishments. Electricity and gas raise certain conceptual difficulties, since some of the activities included under these headings are non-industrial; for instance, the distribution networks which in practice cannot be separated from production. Nevertheless, the production end is normally very important in the total, and is so similar to the processes of extraction and manufacture that the whole of the activities are recommended for inclusion. Construction is a more difficult case. The difficulty is practical, arising from the fact that the problems of collecting data from this industry are particularly troublesome. Certain items of data can be collected more easily than others however; e.g., numbers engaged, wages and salaries paid, gross value of output and materials used; and for this reason, and because of the economic importance of the industry, its inclusion is recommended.

As stated above (Section I), the limitation of the concept of industry to this field is not meant to imply that countries should be discouraged from undertaking enquiries relating to a broader field.

(b) The kinds of industrial unit to be included. In different countries, industry is organized in different ways. For international comparability, the concept of industry has to be wide, and in principle to cover all establishments principally engaged in mining, manufacturing, construction, electricity and gas. If it were limited, for instance, to "factory production", two difficulties would arise. First, the concept of factory production, as opposed to handicraft production and other types of non-factory production, varies considerably from country to country, and in some countries is not based
on economic factors. Second, the exclusion of non-factory production (even if a standard definition could be reached) would have different quantitative significance for different countries.

The question arises whether the scope of this broad concept should be limited to production for sale, i.e. whether "household" production for direct personal or family consumption should be excluded. This limitation would accord with conditions in industrially advanced countries, where production of industrial goods for direct consumption is unimportant. However, it is unsuitable in many areas of the world, where such production may be very important. This question is considered in paper E/CN.3/156, in which it is concluded that conceptually, the following household activities should be included in industrial statistics: (1) the production of industrial commodities for sale or exchange by any household, (2) the total production of an industrial commodity, whether for sale or exchange or for the household's own use, by households whose major activity consists of producing the commodity, but that the production of industrial commodities for their own use by households not specializing in the production of an industrial commodity should be excluded. It is also concluded in that paper that it may be practicable to obtain data on the output of these commodities and an indication of the labour devoted to them, but it is very unlikely that the full range of industrial statistics can be collected even by statistical sampling. This treatment of household activities is an exception to the general principle that definitions of coverage, whether of an industry, a sector of economic activity, or industry as a whole, should be in terms of establishments and not of activities, and it is paradoxical that this exception should have to be made in a field where it is specially difficult to obtain detailed data on activities. It would be possible to argue that the treatment suggested is no exception, on the ground that the industrial activities of a household constitute a separate establishment, distinct from the household's other economic activities, but this seems to be pushing the notion of an establishment too far.

Of course, it is not envisaged that the data from the broad field defined above will necessarily be obtained by means of detailed returns from every establishment. The smaller establishments may be covered by means of a sample
enquiry or a simpler questionnaire than for large establishments, or they may be covered by estimates based on administrative data, e.g. social security, tax or licensing returns. A flexible approach to the problem of collecting basic industrial statistics is recommended, in which different parts of the field are tackled by different means, and data obtained in differing degrees of detail, and with differing degrees of precision. Whatever methods are adopted for a particular part of the field, however, they should make it possible to provide estimates which in principle relate to the whole of that part of the field, even if such estimates can only be given within a range of error. For example, if small establishments and industrial household activities are covered by means of a sample enquiry, some data should be obtained which will enable reliable estimates to be made for the universe of small establishments and industrial households. In this sense, the coverage of the data should be the whole field of industrial establishments.

If, as a practical method, countries omit certain sectors from their regular enquiries as unimportant, it is recommended that occasional checks should be made on the size of the sector omitted. Information on the extent of under-coverage and the means of ascertaining it should be published along with the data.

Even though all establishments whose major activity is industrial are included, all production of commodities that result from industrial activity, associated employment, wage and salary payments, and industrial costs are not covered. This is due to the fact that establishments which fall outside the coverage of the basic enquiries because of the nature of their principal activity may engage in industrial production as a minor activity; for instance, a retail shoe shop which incidentally makes shoes to order. In the same way, establishments which fall within the coverage of the basic enquiries may engage in activities that are not included in mining, manufacturing, construction, and the production of gas and electricity, and the employment, industrial costs and results associated with such activities would be included in the statistics; for example, a cotton weaver who also merchants cotton yarn.
15. The establishment

The definition is formal and conceals a great number of practical difficulties. What is required is a reporting unit which coincides with the unit of management and which provides data which can be classified by industry and geographical area. If all plants were characterized by a single location, control and industry, there would be no difficulty. Many plants in many countries have these characteristics, but the notion fails to apply in a significant number of cases where the facts of industrial organization are more complex.

It does not seem possible to construct a definition that is both precise and applicable operationally. National definitions commonly rely on examples rather than precise formulation to indicate the essential notion. The most that can be done at the international level is to describe the chief exceptions to the simple concept which are likely to be found in practice, and to suggest standard methods of treating them. The question is important, since the definition, or convention, adopted affects all the statistics collected as well as the count of establishments.

(a) The most important and troublesome problem is that many units with a single control and location produce more than one group of products or engage in more than one type of activity, and that the different kinds of output straddle the lines of industrial classification. One solution is to treat the unit as a single establishment with a mixed business and classify the whole unit according to the principal product or group of products. In other cases, however, the facilities producing the different kinds of products (i.e. the different technical units) are sufficiently distinguishable to be treated as separate establishments. As stated above, it is proposed that only in the case of household activities should an attempt be made to split an establishment. The criterion adopted in practice to determine whether such a unit shall be treated as a single establishment with mixed business or as more than one establishment, is the existence of separate records of the willingness of the respondent to make separate estimates. Though this criterion is somewhat arbitrary, it is not wholly unrelated to the facts of the situation. If
separate records exist, the different activities are generally separated from each other into departments for which separate management decisions are generally made. This question is important for small establishments as well as large ones, since many small establishments carry out commercial as well as industrial activities.

(b) A second exception arises when a single activity is carried on under a single control, but at more than one site; examples occur in mining and especially in construction. Ideally, separate statistics should be obtained from each site in order to preserve the geographical significance of the data, but this is likely to be impracticable in certain types of industrial activities. The appropriate unit in this case is the smallest geographical grouping of sites for which statistics are available.

(c) Another exception worth noting is the auxiliary unit, which is a separate unit producing goods or services of a different kind from those of the main establishment, but exclusively or largely for the use of that establishment. Examples are electric power plants, warehouses, foundries, garages and central administrative offices. This is a difficult problem. The solution tentatively proposed is that where the auxiliary unit is situated geographically in the same area as the main establishment, it should be counted as part of the establishment for statistical purposes. Where the auxiliary unit is geographically separate, it should be counted as a separate establishment and, in accordance with the recommendations of the International Standard Industrial Classification of All Economic Activities, it should be classified industrially according to the activity of the establishment which it serves. There appears to be need for further study of this problem, however, and the Statistical Commission may wish to add it to its future programme of work.

From the treatment suggested for these types of establishment, it will be seen that in practice the criterion of what is a separate establishment is likely to be the existence of separate records, or the possibility of making separate estimates, and that the establishment is, therefore, basically a reporting unit. It is, nevertheless, important to hold to the idea of the establishment, and in applying it, to bear in mind that the object is to produce a picture of the national production which is adequate, both for industries and regions.
The number of persons engaged is believed to be the best measure for distinguishing plants of different sizes and especially changes in the size of these plants, since, as compared to money values, it is not subject to price fluctuations.

* * * * * * * * *

The definitions in paragraphs 16 to 22 (b) relate to the number of persons engaged, with various divisions and sub-divisions of the total. Since some of the items are defined by reference to others, and since several points apply to all of these items, they are considered together in these notes.

16 - 22 (b) persons engaged

The concept is of the number of persons engaged, as distinct from those employed. In many countries the number of employers, unpaid family workers, and home workers is unimportant, and the essential statistics relate to employees. In other countries, however, particularly those with large numbers of small establishments, handicrafts, etc., the omission of employers, unpaid family workers, and home workers from industrial statistics would be serious. It is recommended, therefore, that in principle the measurement of an establishment's personnel should include employers, unpaid family workers, and home workers, as well as employees. In highly industrialized countries, however, the omission of these groups from the labour count would not be very serious, though it would be valuable to obtain supplementary information on these classes in industries where they are important.

The inclusion of employers in numbers engaged is not meant to bring in inactive partners or stockholders. The item is limited to working proprietors and active partners. Directors and managers are not included if they receive a salary, since they are regarded as employees. There may be some difficulty on distinguishing between business partners and unpaid family workers, especially in small establishments, where members of the family may work not for regular pay but simply share in the "profits", possibly in kind. It is suggested that the principle of distinction between the two classes should be whether or not the persons in question participate in the management of the business.
Unpaid family workers are related to the household of the proprietor rather than to his family, in order to include apprentices who live with the family and work in the business without pay. The proportion one-third of the normal working time has been suggested to accord with a recommendation of the Population Commission on the treatment of unpaid family workers at censuses of population.

The number of home workers engaged is a figure of limited value. Added together for all establishments it may involve duplication, since a home worker may work for more than one employer. More important, however, is the fact that home workers may work varying hours, some full time, some part time. The wages paid to home workers are likely to be a better measure of their importance than the number employed, and countries where home working is important may wish to compute, from the data on wages paid, a theoretical number of "full time equivalent" home workers.

Employers, unpaid family workers, and home workers, having been defined, employees are conceived as all other persons engaged.

Divergencies of practice arise over the treatment of "non-productive" and subsidiary activities of an establishment. Sales and distribution workers and construction workers are excluded altogether from some industrial enquiries. In accordance with the principle of totality, however, it is important to include all these classes of workers in addition to those working directly on the product of the establishment, though for several purposes, e.g. productivity studies, it is valuable to obtain separate data about them.

In nearly all industrial enquiries the statistics on employees are sub-divided, a broad distinction being drawn between the manual and the non-manual workers. Although the distinction is based on the nature of the work, a confusing variety of terms is used, e.g., wage-earners and salaried employees. The division into operatives and administrative, technical and clerical workers more clearly indicates the significance of the classification than most terms used and accords with the procedure of the great majority of countries. However, as machines become more complex and more automatic, and the work of tending them becomes less a matter of operation than a matter of
control, it is likely to become more difficult to draw this distinction. Also, the distinction is likely to depend in practice on the usages and regulations of a country, which will not be the same as those of other countries, and the resulting data is unlikely to be strictly comparable from country to country.

It should be noted that since the term employees as here defined excludes home workers and unpaid family workers, so does the term operatives. In industries in which home workers or unpaid family workers are important, it would be necessary to take account of such workers in making comparisons with output.

Another possible subdivision of employees is according to function; thus, as mentioned above, there is great value in obtaining separate data on a departmental or operational criterion, e.g., on construction workers and distribution workers, in order to be able to make more accurate comparisons with the statistics of output.

The time reference for the count of numbers engaged must also be considered. Since the data will most readily be secured from payrolls, it is recommended that the figure should refer to the numbers engaged at any time during a specified period, e.g. a pay period rather than at a point of time. The Statistical Commission has recommended that the detailed analysis of numbers engaged should be collected for one period, but that in addition, in order to obtain an indication of the seasonality of the industry, statistics of the total employed, though not of the different kinds of employees, should be collected for several separate periods in the year. (The Commission's suggestion actually related to the total engaged, but as mentioned in Section 1 above, it is proposed that this should be altered to the total employed).

Figures for each of the twelve months are desirable, but except for highly seasonal industries, figures for the four quarters provide satisfactory results, provided that other data are available periodically to ensure that the four-quarter average continues to be representative of the year. It may be possible also to obtain a figure of the average numbers employed during the fifty-two weeks, and this is of course a better check on the representativeness of the detailed figures on different classes of employees, even than twelve-monthly figures. However, this single average figure throws no light on the seasonal movement of the industry, for which it is necessary to have figures for separate periods.
23. **Wages and salaries paid.**

   It is clearly advantageous that the coverage of the wages and salaries paid should be the same as that of the employees to whom they are paid, and this is true of the separate classes of employees as well as the total. The recommendation, therefore, is not to separate wages from salaries, because wages are not the same as the remuneration of operatives (for example, weekly paid clerks earn wages, but are not operatives); but to separate the payments made to operatives from the payments made to administrative, technical and clerical workers. Payments to directing and managing personnel may create a problem, though most countries include the remuneration of such persons. If data on the remuneration of proprietors and active partners are obtained, they should be tabulated separately.

   The definition of the types of payment to be included follows the categories specified in the ILO Convention No. 63. The inclusion of payments in kind will probably require a special estimate to be made by the respondent, since these payments are unlikely to be recorded in the wages books. Such payments should be valued at market price, since this is the amount the employee would have to spend to obtain the goods if the employer had paid cash instead of kind. (It should be noted though, that, for the establishment, valuation at cost of production would probably be easier for the respondent to return). Payment in kind should include the provision of free accommodation. Because of the difficulties arising, and because of the interest in the item itself in some regions, it is recommended that so far as possible separate data should be obtained on payments in kind.

24. **Man-hours worked**

   In most countries at present collecting man-hour data, home workers and unpaid family workers are unimportant and the data relate to employees only (in the sense used in the paper excluding home workers and unpaid family workers); moreover, within this class the data are limited to operatives, because of the greater difficulty of obtaining data on hours worked by administrative, technical and clerical workers. Following this practice, the proposed definition is limited to operatives, although it is recognized
that statistics on administrative, technical and clerical workers are also valuable and should be collected if possible. Mention is also made of the value of collecting data on hours worked by home workers and by unpaid family workers where these classes are important.

As an alternative to data on man-hours worked, it may be more practicable in some countries, especially where home workers and unpaid family workers are important, to collect data on man-days worked.

Hours worked rather than hours paid are recommended, although they are more difficult to obtain, on the ground that the data are more nearly comparable with production and more significant for productivity studies.

25 and 26. **Power equipment**

Statistics on power equipment can be used as a general indication of the degree of mechanization and as a broad measure, in physical terms, of the relative amount of capital engaged. For both purposes, however, and especially for the latter, the indication provided is very general indeed. The relative importance of power equipment, and the intensity with which such equipment is used vary considerably from one industry to another. The capacity of such equipment may therefore bear relatively little relation to either the degree of mechanization or total capital resources.

To measure the capacity of power equipment it is necessary to combine the capacity of prime movers and of electric motors. However, a simple addition of the two totals involves duplication because some of the electric motors are likely to be run by energy provided by generators driven by some of the prime movers. A total can be made, without duplication, by adding to the total capacity of the prime movers the capacity of electric motors driven by purchased energy. Another method of reaching an unduplicated total is to add to the total capacity of the electric motors the capacity of prime movers directly applied to machines. The two measures yield similar but not identical results. The recommendations that data should be obtained on prime movers directly applied to machines separately from prime movers applied to generators, and on electric motors using energy generated in the establishment separately from motors using purchased energy, make it possible to compute both these measures.
The term "prime mover" excludes electric motors, although it has sometimes been used to include them. In the suggested definition they are excluded. The number of units, as well as the power rating of these units, has often been collected. It is recommended that data concerning the number of motors in use be dropped, because counting together motors rating a few watts and motors rating several hundred kilowatts yields a figure hard to interpret.

Among prime movers separate data should be collected if possible on (a) steam engines and turbines, (b) internal combustion engines and turbines, and (c) water wheels or turbines, as recommended in the International Convention relating to Economic Statistics.

The figures for prime movers held in reserve or as "stand by" are less significant than the totals for all prime movers, since respondents put various interpretations on the term "stand by".

The collection of separate data on motors using energy generated in the establishment and on those using purchased energy may be difficult because a motor may be successively using both forms of energy.

27. Machinery and equipment

The types of machinery installed in industrial establishments are too diverse for uniform classification in all countries. However, it is hoped to develop, over a period of years, lists of the types and classifications of equipment for which countries have had successful experience in collecting data. For a few of the more important and standardized types of equipment, it may be possible to develop uniform international standards of measurement of capacity. Thus, loading equipment is a major item in the mining industries, as well as in some manufacturing operations. Experience has shown that it is possible to obtain data by type of equipment, such as power shovels, drag-line excavators, and scraper loaders; also classified by kind of power used and by size of dipper. Among metal-fabricating operations, it has been possible to obtain data on foundries, by type of metal processed; on forgings, by method of operation and on such facilities as boring, drilling, gear-cutting, grinding, milling and welding operations. For paper and board machines, data have been obtained by method of operation (cylinder, fourdrinier, and forming machines), and by type of product (newsprint, coarse paper, bending board, etc.). For
looms, data have been obtained by material to be processed (wool, silk, etc.), and by type of loom.

The measurements chosen must be meaningful and capable of precise definition, as well as easy to collect.

28. Gross investment in fixed assets during the year

For analytical purposes, data on gross and net investment in fixed assets are both important, but since it is very difficult to obtain meaningful figures on capital consumption, consideration is limited to gross investment. This item refers to fixed assets only, as distinct from investment in stocks and work in progress on the one hand (which is treated separately below), and investments in non-physical assets, such as shares and titles to wealth on the other hand.

Fixed capital assets consist of all physical assets with an anticipated economic life of more than one year. These include land, plants, buildings and other structures, machinery and equipment, including transportation equipment.

Land is included because although its purchase is not investment from the viewpoint of the economy as a whole, it is investment from the viewpoint of the establishment and the industry, and data on this point is necessary for a picture of investment by industry.

Buildings and structures include plants, office and other commercial buildings and structures such as roads, docks, tracks, fences, blast furnaces, brick kilns, petroleum refineries, shipways, etc., together with integral parts of these structures, such as elevators, heating and ventilating equipment. Investment in buildings and structures also includes expenditures for clearing and preparing construction sites, such as grading, landscaping and the removal or demolition of old structures.

Machinery and equipment includes all durable industrial and office equipment, furniture and transportation equipment, such as automobiles, trucks, bullock-carts, locomotives, railway rolling stock, aircraft and ships.

Gross investment includes the purchase of new and used capital assets, as well as the cost of capital assets produced by the establishment's own employees for its own use. It also includes the cost of major alterations or renovations which extend the normal economic life or raise the productivity
of the physical capital assets. Expenditures for maintenance and repairs including the replacement of durable parts are excluded unless they extend the normal life of the physical asset.

The limitation to assets expected to have a productive life of more than one year is included in the definition because it is necessary to have a criterion for separating materials, supplies, tools, etc., from capital assets. In practice, this limitation would be difficult to apply with great exactitude, but exactitude is not needed. One year is suggested because it is the accounting period.

Second-hand as well as new assets are included because, although their acquisition is not an act of investment from the viewpoint of the economy as a whole (unless purchased abroad), it is investment from the viewpoint of the purchasing establishment, and the data are necessary for a proper picture of investment by different industries. (For the same purpose, separate data on sales of second-hand assets, recommended below, are also necessary).

- It is proposed to exclude the rental of fixed assets, since their use does not require capital expenditure. It may be desirable, however, to collect separate data on rented assets for those industries which normally acquire a substantial proportion of the assets used by this means.

With regard to the timing of the investment, it is proposed to measure acquisitions from others on their completion and delivery to the control of the purchasing establishment. This is for a practical reason, to avoid duplication in the measurement of uncompleted capital goods. Such goods (a half-finished generator, for example) will be included as work in progress by the manufacturer. If allowance is made for them by the purchaser also - for example, by including progress payments he has made against them - there will be duplication. Another point against progress payments is that they may bear only a remote relationship to the cost of the work done, and an estimate by the manufacturer is likely to be much closer.

The valuation of purchased assets should be at the full investment cost, as stated in the definitions, which means the manufacturers' ex-factory cost, plus delivery charges, plus customs and other taxes (if any), minus subsidies (if any), plus installation costs, plus fees to architects, engineers, lawyers,
etc. Financing costs such as bankers' or underwriters' commissions and fees incurred in floating any necessary loans should not be included however.

A complication arises in the case of the valuation of assets made by the establishment's labour force for its own use. Logically, these should be valued as if bought on the market, but it is likely to be difficult in practice to get even an estimate of this price, and they are usually valued at the cost of materials and labour, preferably with an allowance for overheads. It may also prove to be more difficult to get data on the value of structures than of machines and equipment (see para 19 below).

Assets being made by the establishment's labour force for its own use, and uncompleted at the end of the period, should be included in the establishment's gross investment during the period (unlike unfinished purchased assets), and should be valued at the cost of the materials and labour so far put in place. If an asset is under construction at the beginning of the enquiry period and is still uncompleted at the end of the period, the value of the investment during the period is the difference between the cost of the work in place at the beginning and at the end of the period.

Conceptually, all acquisitions of fixed assets should be included, irrespective of the manner of accounting for their acquisition in the establishment's books, whether capitalized and authorized through depreciation allowances or charged to current business expense; and they should be treated as suggested in the paragraphs above. In practice, the only data likely to be forthcoming from establishments with developed accounting systems are the expenditures charged by establishments to their fixed assets accounts, and it is at least simpler to ask for the data in these terms. It should be noted, however, that these expenditures are likely to be less than the expenditures according to the concept defined above, because many companies do not capitalize major alterations or installation costs, and draw the line between capital assets and supplies for current use higher than required for the concept that is at an expected life of two years or more. The adoption of this practice would, therefore, tend to result in some understatement of gross investment.

In countries where capital accounting is not well developed however, it will not be sufficient to ask for expenditures charged to the capital account,
and in these cases it will be necessary to provide a definition of the items to be included and the basis of their valuation.

29 and 30. New and secondhand fixed assets

As explained above, this distinction is necessary in order to be able to estimate total investment in the economy (for which purpose transfers of used assets are irrelevant) and investment by separate industries (for which inter-industry transfers of used assets are relevant).

31. Sales of fixed assets

Sales of fixed assets include all disposals of used fixed assets by the establishment during the enquiry period, whether for re-use, reconditioning or scrap. Sales should be valued at the actual receipts, and as acquisitions are measured at factory, it is proposed that sales should be measured ex factory. The actual receipts may differ from the depreciated book value, so that the establishment may record a capital gain or loss on the transaction.

32. Value of stocks

The valuation of stocks is difficult and expensive, and establishments cannot reasonably be asked to make a special valuation for the statistician. In practice, therefore, it will be necessary to accept the figures entered in the establishment's books. Unfortunately, different concerns use different methods of valuing their stocks, such as cost, market, last-in-first-out, first-in-last-out. Furthermore, different commodities are valued by different methods at a single establishment at one time. The coverage may also vary from firm to firm. It will be impossible, therefore, to attach a precise meaning to the total value, at any point of time, of stocks held by many establishments. However, the error in measuring changes during the year by the difference between the two stock figures may not be large, unless prices have changed very considerably, or unless many establishments have changed their method of valuation during the year.

Investment in stocks of raw materials, semi-finished goods (work in progress) and finished goods during the period is measured by the difference between the value of the stocks at the beginning and at the end of the period. Semi-finished goods for this purpose excludes uncompleted fixed assets being made for the establishment's own use, work on which is counted as investment in fixed assets.
With regard to the collection of separate data on raw materials, semi-finished products and finished products, the value of data on finished products is that, in seeking data on output, it may be more practicable to ask for deliveries than production, and adjust the figures by changes in stocks of finished products. This point is discussed below. It may also be more practicable to obtain data on materials used by seeking materials received, and adjusting by changes in stocks of such materials. If so, it is necessary to obtain separate data on raw material stocks. However, some establishments do not maintain a separate record for inventories of raw materials as distinct from work in process, and there is considerable variation among those that do in the dividing line between the two categories. It may not be possible therefore to obtain data on work in progress as a separate category. Also, even where separate figures on finished products and on raw materials can be secured, they may not be entirely suitable for adjusting the figures of output and materials because the coverage of stocks in the establishment's books may not correspond to physical location at the establishment.

An exception to the rule that coverage should follow location and not ownership is suggested for materials sent by one establishment to other establishments for processing on contract; such materials should be included by the owning establishment.

An indication of the relationship between the stock figures desired and the book figures available may be obtained by means of a sample enquiry into this question.

33. Gross output.

For some purposes data are required on the total output of all establishments, in all its forms, which can only be measured by value. For other purposes, data are required on specific commodities, mostly by quantity, but value figures are also important. The three kinds of data are recommended therefore.

The aggregate of the value of gross output figures for industry groups and for all manufacturing industries includes large amounts of duplication because the products of some industries are used as materials by others. With some exceptions this duplication is not important within individual
industries. It arises significantly, however, from the addition of the value of gross output figures for industries representing successive stages in the production of a finished manufactured product.

Although figures are required on production of finished products it is likely that in practice many respondents will return figures of shipments or deliveries, since these may be more readily available, especially for minor products and therefore for all products. More confidence is likely to be felt that the meaning of the figures is known if shipments are sought therefore. Figures on production of finished products can then be obtained by adjusting the shipment figures by data on stocks of finished goods. However, the value figures may be defective if calculated in this way, as the stocks of finished goods may well be valued at a figure below the price at which they are sold (adjusted for excise taxes and subsidies). Another alternative way of measuring the value of finished goods produced therefore is to re-value figures on the production of important individual commodities (which are more likely to be available than on minor commodities) by the unit values of deliveries of the same commodities; this method is more laborious however.

A further difficulty may arise in using figures of shipments that establishments often value such figures on a delivered basis, while the figures required are ex-factory (except where delivery is made by the establishment's own employees). If figures of shipments are sought therefore, it is suggested that they be at invoiced values, and that separate figures be obtained on transport payments made. In addition to production of finished goods, the other elements mentioned in the definition enter into the establishment's gross output during the period.

Goods which are uncompleted at the end of the period present particular difficulties. If no account is taken of them until they are completed and the whole value then counted, a distorted view is obtained of the timing of the work done. This is especially the case in the construction of such items as ships and buildings. It is difficult to place an estimate on the value of work done on an uncompleted product. One possibility is to estimate the proportion of the work which has been completed and apply this proportion to the estimated market value of the complete product when it is finished. This
is hazardous, however, and the more usual method is to value the labour and materials already put in; if an allowance is made for factory overheads also, this estimate may well be satisfactory.

The same problem—that no real price exists—is encountered when establishments make capital goods for their own use, or transfer goods at cost or at an arbitrary figure to other establishments of the same enterprise. If possible, these should be valued as if produced for sale; otherwise at the cost of labour and materials incurred with an allowance for overheads.

Under the heading of capital goods made for own use, satisfactory statistics can probably be obtained for machinery and equipment and for the cost of materials consumed in such production, which is necessary in order to compile figures of net output (see below). It may be more difficult, however, for new structures built for own use. It may be difficult to obtain figures on the cost of materials consumed in the construction, since such materials may be charged to capital account. To attempt to collect them would greatly complicate what is already a difficult item to report, and it may be impossible to obtain direct figures on the value of new structures. If data are collected on the employees working on these structures, however, their earnings will give an approximation to the value of the net output on such structures.

In addition to making goods, establishments may carry out services for other establishments and for consumers, and these services are part of its output. In addition to such services as repair work, concerns perform work on materials supplied them by others. This is particularly common in some industries, e.g., the textile and clothing industry in some countries. The "gross output" in the case of services is, of course, the value of the work done, and is measured by the payment received.

The inclusion of goods sold without processing, and which are therefore only merchanted, follows from the principle of "totality of coverage". If the merchating activities of the establishment are not so clearly separately organized that they can be treated as a separate establishment for statistical purposes, it is better to include them in the output of the establishment than to exclude them. If they are excluded they may well escape the statistical
net altogether because it is not easy to pick them up at a census of
distribution. However, the inclusion involves including the staff engaged in
merchandising and distorts such relationships as net output and never available
per head. Data on goods sold without processing should therefore be obtained
separately, at least on the output side and preferably on the labour and materials
side too.

Although no definition is offered of important commodities on which
separate data (including quantities produced) should be collected, it may be
noted that there is a great advantage in selecting commodities and defining
them so that they are comparable with important commodities in the foreign
trade statistics. Production and trade in these commodities can then be
compared.

34. Materials consumed

In an enquiry which embraces the whole economy, including goods-producing
industries and services, it would be necessary, in order to arrive at an
unduplicated figure of value added, to deduct from the gross value of the output
of each establishment the cost of all payments made to other establishments,
including payments for services as well as goods. Similarly in an enquiry
limited to the goods-producing sector of the economy (agriculture, mining,
manufacturing, etc.) an unduplicated figure of value added could be obtained by
deducting from the gross output of each establishment the value of the goods
(and services, if any) obtained from other establishments included in the scope
of the enquiry. Value added in this case is less of a net concept than in
the first case because it includes the value of the services used in producing
the goods, but not deducted because the service sector of the economy is outside
the scope of the enquiry. A more net unduplicated figure could be obtained by
deducting the cost of these services also. In an enquiry limited to the
industrial sector an unduplicated figure of value added would be obtained by
deducting from the gross output of each establishment the value of the goods
(and services, if any) obtained from other establishments in the enquiry, i.e.
other industrial establishments; however, although still unduplicated, it
would be even less net than in the second case, because in addition to the
contribution of the service sector of the economy, it would include the cost
of the agricultural products used as raw materials. In practice, the deductions normally made in industrial inquiries relate to the contribution of other goods-producing establishments, i.e. other industrial establishments and agriculture, but do not include the cost of business services. The figure resulting is an unduplicated figure of value added in the industrial sector therefore, and a relatively net one, but it is not the contribution of that sector to gross national product because, although it does not include the cost of any agricultural products, it does include the cost of business services (insurance, advertising, etc.) used in the production of the goods but supplied from outside the establishments covered in the enquiry.

Absence of duplication therefore is not the same thing as netness of measurement, except in the case of an enquiry embracing the whole economy. It may be desirable as an ultimate objective to obtain data on all payments to other establishments, so that the net figure resulting corresponds to the contribution of the establishment to gross national product, but for most countries this is hardly practicable at present. For the time being therefore, it appears to be more profitable to recommend standardization of the normal practice, which is, broadly speaking, to deduct the cost of materials acquired from other establishments. The definition therefore is confined to materials and does not include the cost of business services, apart from the cost of work done on materials supplied by the establishment by other industrial establishments.

What should be subtracted from the gross output depends in part on what is included in the gross output. Since capital goods made by the establishment for its own use are included in gross output, the materials for such capital goods should be included under materials deducted. If it is not possible to include structures made for own use in output, the materials for such structure should not be included in the deductions. In that case the materials and supplies to be deducted could be defined as materials charged to current account, and the materials used for building structures reported as a capital expenditure. Since goods sold without processing are included in output, they should be included in the deductions, and if possible be segregated from other materials.
In the section dealing with output, it was pointed out that although a measure of production was sought, it would generally be more feasible for the establishment to supply data on shipments, which could then be adjusted to production by changes in stocks of finished goods. In the same way, in dealing with materials, it may be preferable to ask for materials received, and adjust the figure by changes in stocks of materials rather than to ask for materials consumed. However, this is doubtful; there is reason to believe that good records are ordinarily kept on major materials and components, at least by large concerns, and that a direct question on materials consumed is more likely to be successful than a direct question on products made. However, it is likely that many small concerns can provide more accurate statistics on materials purchased, or materials received, than on materials consumed. Furthermore, large concerns also have better records on purchases than on use of miscellaneous supplies. Different countries are likely to choose different methods of obtaining data on materials consumed therefore. It may be noted however that if establishments are offered the alternative of reporting either consumption or receipts, the work of processing the data is greatly complicated.

However, it should be noted that if materials consumed are in part estimated from a change in stocks, the problem of capital gains and losses which was encountered on the output side does not arise, since materials are normally valued at the same figure for purchases and consumption.

The inclusion of materials for repair and maintenance follows the recommendation made in the output section that repair, maintenance and minor alterations should be counted on current and not capital account.

Materials processed on contract for other establishments should not be included.

In valuing materials consumed, taxes should be included and subsidies excluded, i.e. the respondent should report the price le pays: this is obviously more practicable than the alternative of excluding the taxes and including subsidies, which the respondent would not be in a position to report.
35. **Value added**

As stated above, the figure estimated in the way defined is larger than the contribution of the establishment to gross national product because it is not practicable at present to make a general international recommendation that data should be collected at industrial censuses on the components of value added. So long as they publish figures on value added as defined, however, countries should be encouraged also to collect figures on its components, so that they can compile a more net figure of value added as well. Figures on some or all of these components might be collected at a sample enquiry.

Included in these components, in addition to business services, is the depreciation on the establishment's capital assets. For many purposes, it would be valuable to obtain data on this item, but as mentioned under para. 28, it is difficult to get meaningful figures.

It may be noted that value added can be measured at "market price" (with excise taxes included and subsidies excluded) or at "factor cost" (with excise taxes excluded and subsidies included). For most purposes factor cost is needed. However, for greater reliability in collection, a number of countries request data on gross output at "market price", and separate data on the excise taxes included and the subsidies excluded. This is desirable, as it enables both values to be calculated.

As stated above, statistics on materials used can only be obtained at "market price".
DEFINITIONS FOR INDUSTRIAL STATISTICS

Section IV, Paragraph 36, first sentence: Read: "There are three relevant parts of the International Convention: article 1, paragraph I; article 2, paragraph V; and article 6 together with annex IV."

Paragraph 37, first sentence: Read: "In accordance with article 1 (I) and article 2 (V), parties to the Convention undertake to compile and publish"

Paragraph 39, first sentence: Delete the word "firm".

Paragraph 41: Delete the last sentence, beginning with the word "Neither".

Paragraph 42, last sentence: Read: "The new recommendations are consistent with article 2 (V), while parties to the Convention are not committed on the details of annex IV and would therefore seem to be legally free to follow the Commission's recommendations with respect to the subjects covered by that annex."