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CLASSIFICATION BY OCCUPATIONS AND INDUSTRIES AT THE
GENERAL CENSUS **RAGNALD JÖNSBERG**

CLASSIFICATION BY OCCUPATIONS AND INDUSTRIES AT THE GENERAL CENSUS.

I. AIM OF THE PRESENT WORK.

The classification of occupations is an ever recurring problem. The question has constantly been discussed at the meetings of the International Statistical Institute. A number of statements have been made by prominent experts, and resolutions have been passed. The problem has also been treated in scientific journals mainly in Germany, and in many countries a considerable amount of work, sometimes of a fundamental character, has been devoted both to the special censuses of occupations and to the general census.

At the Northern statistical meetings¹ the classification of occupations has been a constant item on the programme. As was made clear from a report given at the meeting in Stockholm in 1920, a special attention has been given to this classification at the latest census in Norway. On the basis of the experiences obtained during the work of this census, and of the further investigations undertaken, the purpose of the present work is to elucidate the fundamental view now obtained.

The question is still far from exhausted, in spite of the numerous and valuable contributions that have been made in different countries. No theoretical solution capable of a general application has been found. Some authors maintain that the only correct way is to base the classification of occupations on the specifications of individual occupations, others that the specification of where the occupied person is attached (i. e. the nature of the industry) should be the decisive factor. At a meeting of the International Institute at Kristiania in 1899 a resolution was passed on the basis of a report by dr. Rauchberg of Prague stating *inter alia* that the principal basis of classification should be the individual occupation, not

¹ The heads of the Statistical Central Offices in Sweden, Finland, Denmark and Norway and occasionally some other statisticians from the same offices meet every second year to discuss practical and theoretical themes of common interest.

the nature of the industry. Six years later at a meeting in London in 1905 M. le Directeur Lucien March, of France, as chairman of a committee for the discussion of the classification of occupations and the enumeration of unemployed persons in connection with the general census, handed in the report of the committee. The accounts given by the various members of this international committee are very interesting. They are highly divergent and strongly marked by the principle in force at the censuses in their respective countries. Personally M. Lucien March contrary to the resolution of 1899 maintained that the necessary basis for the classification should be "en premier lieu" the nature of the industry, not the individual occupation, and this was resolved upon at a meeting on August 3rd 1905.

In the statistics of occupation of the various countries, and even within the various kinds of statistics in one and the same country, the confusion is still worse than in the theoretical discussion. The importance of the statistics of occupations, and the difficulties of finding a satisfactory classification in most countries have caused the question of the forms to be extended.

In the first instance, a separate question has been inserted concerning the trade, institution, etc., to which the person in question is attached (the occupation of the employer). This supplementary information, however, has given rise to fresh and highly varying principles of classification, so that the variations in principle between one country and another are at present greater than ever.

The main point would seem to be that as a rule there is not a sufficiently clear distinction between "general occupations" and "special occupations", either in the theoretical discussion or in the official statistics. Discussions and plans are arranged as if there existed two methods of classifying all working individuals, as if they could all be grouped either according to their individual occupations, with no regard given to where they are carried out, or according to the character of the trades to which they are attached. But as is well known this is not the case. Most occupations in reality are special occupations, in the sense that they may be classified only in one way, i. e. within the limits of one trade or industry. Such is the case, for instance, with all who are occupied in

agriculture and fisheries, with educated people in immaterial occupations, with most ordinary factory hands and many others. For all these — the main majority of all bread-winning persons — there can only be a case of more or less specification in the different tables, but not of several methods of classification, that clash in principle. The contrast between classification according to industry and classification according to individual occupation thus exists only for the general posts such as clerks, engineers etc. which occur in various classes of trades. The varying treatment of these relatively few persons in general positions gives its character to the system of classification, whilst the majority are classified uniformly in principle in all systems. Therefore we cannot accept forthwith as a natural solution of the whole problem, the comparatively new principle with two independent classifications of all people working for a livelihood viz. one according to individual occupation and another according to the nature of the trade. The question necessarily arises: When only a minority of the population may be classified in two different ways, is it then correct also to classify all the others twice, with a great sacrifice of time and money? Is the double classification really the only satisfactory system which we must all by degrees strive to obtain the means of carrying out?

This question has gained an increasing importance by the fact that a complete double classification was recommended as the best system of classification at the conference for labour statistics at Geneva last autumn 1923, in spite of the circumstance that during the discussion a considerable amount of dissens was voiced in the committee concerned.

The first clause of the resolution which was passed concerning the classification of occupations runs as follows:

"Occupied persons should be classified in the first instance according to the industry in which they are employed, and within each industry they may be further classified according to their individual occupations. When it is not possible to give this double classification in sufficient detail to show the total number of workers in each individual typical occupation, it is necessary to make a second classification of all occupied persons according to their individual occupations, so that for comparative purposes two separate classifications will be available, a. by industry and b. by individual occupation."

This resolution was not originally intended to be a directive for the census in the various countries. It is evident from the statement issued previously by the International Labour Office including reasons for the proposed resolution that the conference was invited to deal with the classification of occupations in the various kinds of social statistics in the stricter meaning of the word. When the statistical department of the I. L. O. came to the result that the trade, i. e. the sum of concerns with a homogeneous production should be the principal basis for all classification, and not the individual occupation, this is due to a great extent to the fact that the most important source of all social statistical information is the statements from employers or concerns. See the said exposition pp. 10—12. The leader of the statistical department of the I. L. O., Director Pribram, stated later on that when elaborating his proposal he had mainly the employers' statements in his mind. This fact, however, was not sufficiently obvious from the publication mentioned, where the Labour Office furtheron touched on the classification at the general censuses in the various countries, a fact which must be considered inevitable, as it is hardly possible to discuss the principles of classification without touching on the statistics which to a greater or lesser extent form the basis even for social statistics. At the very beginning of the work of the committee in question this point of view was maintained by the chairman, Director Hilton, the head of the statistical department of Ministry of Labour, London. He stated that the most important use to which classifications of industries and occupations were put was in connection with the population census. The results of the census were often the basis on which other statistics were built or to which they referred.

And immediately afterwards director Hubert of the French Statistical Bureau joined the chairman's opinion, that the Committee should concentrate its attention on devising a classification suitable for the census, without going into the question of what were the best classifications for special purposes such as unemployment, wage, and other branches of labour statistics.

As the resolution in its final wording was in the main formed by the said gentlemen, and as the double classification as a principle is employed in the both countries, England and

France, it is not a matter for wonderment that the resolution on this point was given such an incisive form. During a visit to the Central Office of Statistics in Switzerland I had the impression that the leaders there felt bound by this resolution to carry out even in future a double classification. As will be seen below Switzerland has undertaken tentatively a double classification at its latest general census.

In these circumstances it becomes of still greater importance to investigate — whether such a double classification is in reality both necessary and expeditious to fulfil the claims made upon the census returns of occupations as industrial statistics and demographic and social statistics respectively and simultaneously. But before any discussion of systems and principles a short exposition is necessary of the systems employed at the latest censuses in the most important countries. We will first mention the countries employing a double classification, then the countries with classification according to individual occupations, or to industries only etc., and will add some critical remarks where these appear to be natural.

The decisive factor in a characteristic of the systems is then the way in which the general occupations are classified: whether according to the industry, regardless of the nature of the work, or according to the nature of the work with no regard to its application, or according to both distinctions. The *general occupations* are not in name only, but in reality of an approximately similar nature wheter they are attached to one industry or to another: manufacture, trade, transports etc., whilst all other occupations, the "special" occupations, can be characterized only in connection with the branch of industry to which they belong (or as the Americans express it: within an industrial framework). Viewed exclusively from a demographical point of view the general occupations may be classified independently of the classification according to industry. They fall into two orders:

1. Occupations which according to their nature do not belong exclusively to any one definite branch of industry. Under this order would in the first instance come all clerks, then engineers and similar professionals, mechanics and stokers in factories and similar places, warehouse men, yard hands, door keepers, messengers etc.

2. Expert occupations which are often intimately attached to industries of another character. The most important classes are a. craftsmen, especially smiths, joiners and some other groups, and b. drivers and chauffeurs.

II. THE SYSTEMS OF CLASSIFICATION IN VARIOUS COUNTRIES. GREAT BRITAIN.

In the introduction to Volume X of the English census 1911 we read a few general remarks concerning the principles of classification. From these it will be seen that during the period 1851—1871 the classification in connection with the census was mainly according to industries. In 1871 an investigation proved that for a number of general occupations particularly clerks, drivers, messengers, mechanics and stokers, there were registered a great number of persons giving their individual occupation, with no reference to the industries to which they were attached. Therefore in 1881 the principle was adopted of classifying these occupations according to individual occupation, and the censuses 1881—1891—1901 yield a classification which in principle considers the individual occupation only. This classification is not very specified. In 1911 an interesting experiment was carried out; in the case of no less than 700.000 workers in selected classes, an investigation was made as to how carefully the occupation had been denoted. The occupations were selected after conferring with Home Office. The chief aim was to obtain information concerning especially dangerous occupations, in order to compile tables of mortality for the various branches of work. It was found, however, that the group of not sufficiently well-defined occupations was so large that "on the whole the attempt can only be characterized as a decided failure", and the report continues:

"As a result of the experience so gained, we have reluctantly come to the conclusion that, unless by some improved means of collecting census information the nature of the material to be tabulated can be greatly improved, any logically consistent tabulation in our census of workers by personal occupation is unattainable, and that the present system of classification partly by occupation and partly by product must be adhered to."

At the same census in 1911 a special heading was introduced on the forms, with information as to the industry to which a worker or an employee is attached. By means of the two kinds of information concerning the individual occupation and the nature of the industry, tables have been worked out which in principle are based on the individual occupation, out where the occupations to a great extent are classified according to the character of the industries. (See especially tables 1 and 3 in Vol. X.). There is here no double classification. All general occupations such as drivers, chauffeurs, messengers, watchmen, engineers, mechanics, stokers etc. have been grouped together with no regard to the industry to which they are attached. The same is the case with clerks except those attached to public administration and a few other branches e. g. banks. The same principle was followed with regard to craftsmen. All carpenters, joiners, bricklayers, painters etc. are thus classified under the building industry, all smiths under metal industry etc. But as was evident from the special investigation of occupations of the said 700.000 workers the classification of occupations was very little specified. Table I especially, with no distinction of social positions, yields very little information regarding the individual occupations. Within manufacture and trade the table gives, so to speak, exclusively a specification according to the nature of the trade or the industry. All attached to concerns of a similar character are classified together excepting the above mentioned clerks, messengers etc. who are kept completely apart from the classification according to industry or trade. That is to say, owners, a number of expert employees, foremen, all classes of workmen and apprentices are placed in one group. In table III the independent persons have been differentiated into two classes:

1. Employers and
2. Persons working on their own account, but there still is only one class for all who are working for employers, and it is impossible to regard these statements as satisfactory statistics of occupations. As moreover the statistics in accordance with their plan cannot give the number of persons attached to the various trades and industries they are in no way satisfactory. Therefore in 1921 a change of system was adopted for the purpose of obtaining something better. All connection between

classification according to industries and to individual occupation was completely abandoned and it was decided to work out two independent tables, one classifying according to individual occupations, and the other to the character of the industry or trade. During a visit to London immediately before Christmas 1924, I had an opportunity of meeting the chiefs of the English census, who declared that the additional work of the double classification was considerable, but as far as I could understand they assumed it to be necessary in order to obtain satisfactory information. Up to now there have only been published statements for some counties with regard to the occupied population, classified according to individual occupations. On request I have been kindly furnished with the plan of the other main table: the table of classification according to industry, which shows that it is intended within each of several hundreds of groups of industries, to undertake a highly specified classification with regard to occupation, with a collective class at the end (within each group of industries) for the occupations of minor importance (Appendix 1). It is pointed out, however, that the plan has not yet been finally settled, and I assume that in all probability it will be modified.¹

Therefore, I will instead keep to the Scottish census, where both sets of tables have been published. See Census of Scotland 1921, Vol. III, Tables 1—2 and 11—12.

The principle of double classification is identical with the one in England, but the number of groups of industries as well as those of occupations, are considerably less.

A direct comparison between the two tables, with classification according to industry and to occupation respectively, is made difficult. Sometimes the groups in the table of industries are more comprehensive than those of occupations, and *vice versa*.

Thus for instance about 50.000 employees are entered under the order local administration in the industrial table. In the

¹ The publication "Industry Tables" which has now appeared proves that the plan has been but insignificantly modified. Table I contains rather illustrative relative figures concerning the occupational distribution in each industrial group; it is to be noticed the overwhelming number in most industries of workers partaking in production proper. The extent of the head table, no. 2 is about 200 large pages with small print.

table of occupations the majority of these are scattered over several orders, such as schools, hospitals etc., etc., the order of local administration here embracing only 13,000 persons. The general occupations which appear in the tables of occupations, and which could not conveniently be included within the frame of industrial headings, are chiefly the following:

- Clerks
- Engineers
- Mechanics and stokers
- Electricians
- Repairers, tool makers, grinders etc.
- Warehouse men and packers
- Messengers and carriers
- Chauffeurs and drivers

and of craftsmen: smiths, plumbers, tinsmiths, sailmakers, joiners, carpenters, coopers, bricklayers, painters. Further the table of occupations specifies not a few special occupations which occur within some special industries only, most often within the metal and machinery industry and the textile industry. These occupations to my mind would have been specified to greater advantage in a table with classification according to industries.

It follows from this manner of classification that most classes of industries become larger than the corresponding classes of occupations, and that this difference becomes very marked in classes of industries which employ many craftsmen, clerks, etc. as for instance shipbuilding and insurance. On the other hand, the classes of occupations including the main crafts become larger than the corresponding classes of industry. The same may be said of the class transport by road, which in the table of occupation includes all drivers and chauffeurs. For many branches the grouping must in reality be very much the same in both tables, and yet the numbers vary. Such is the case, for instance, in agriculture, forestry, fishing, and the small classes of industry such as watchmaking and basket work. Even the numbers given for those working on their own account, vary in the two tables. No efforts can have been made to obtain connection between the two. A comparison between them is so difficult that it would appear as if the aim had been to make it quite impossible.

I believe that much would be gained by an attempt to work

the two tables into one, where all special occupations are classified once, and only the general occupations, where possible and desirable, twice: First let us say as hands at N. N. factory, and then according to the character of their work with no regard to where they are employed. Thereby inter alia the anomaly is avoided that two in reality similar groups in different tables occur under different names and with different numbers.

Even if such a system of tables will necessarily be more elaborate than either of the present two main tables, the saving of labour must be considerable. I would like to point out in this connection that in Scotland there is a specification within each group in the two systems of tables "according to position within the branch of work", under the headings:

1. Employer
2. Working on own account
3. Working for employers, and
4. Social position not stated.

Within each special position there is a specification according to age in six classes and one "age not stated". With such an arrangement of tables the double classification of all occupations must needs mean a very great addition to labour and printing. For the independants (1—2) there can be no essential difference between classification according to industry and to occupation, as the managers who are classed with employers are supposedly classed similarly in both tables. Therefore for the two first social classes there is no gain in giving a specification of age once more in the table of classification according to industry. The last social class: "Working for employers" includes in the table of industries a motley crowd of clerks and engineers, craftsmen, factory hands and building labourers, chauffeurs, gardeners etc. etc. What is gained by a specification of age for such a heterogeneous assembly is not easily understood.

SWITZERLAND.

Eidgenössische Volkszählung 1920.

As has been already stated, Switzerland has also carried out a double classification as an experiment, viz., in 1920. Up to now no collective report has been published with

analysis of methods and results¹, only tables for some cantons, which makes it difficult to grasp and discuss the plan of the two classifications.

During a visit to the Statistical Central Bureau at Berne and the Census Office at Interlaken in the autumn of last years I discussed the classification to some extent with Dr. Schwartz, the leader of the census. He also kindly let me have several forms etc. and systematic lists of industries and occupations. I am not, however, clear in my mind whether it is the technical or the economic unit which in principle is the basis of the classification according to industries. It is based on the statements on the form under the heading "Character and Firm of the business, the undertaking or the administration", and judging by the numbers given in the two tables, all persons employed in combined undertakings appear to have been classified according to the chief trade of the *firm*, and not distributed according to the different kinds of concerns. Yet gardeners, foresters, and chauffeurs etc. working for industrial concerns and the like are always classed under gardening, forestry and transport respectively, irrespective of their employers. This shows that the aim is not a classification of "firms" but a classification in respect of branches of industry.

I have studied one of the publications, that which concerns the cantons of Solothurn, Basel-Stadt and Basel-Landschaft, and have compared the two main tables. See Census of 1920 part 6, table of occupations No. 9 and table of industries No. 10. The advantage of a double classification must be, that in the table of occupations a larger number of individual occupations appear than would be possible within the frame of a classification of industries, and that in the classification of industries the branches of industry, trade, public work etc. may be specified to an extent which would be unfeasible if at the same time individual occupations were to be specified. Considered from this point of view the Swiss arrangement does not offer much, as neither of the two tables is very highly specified. I was told that the difficulties were specially great in Switzerland, because so very much labour is devoted to

¹ Has now appeared with the title: Eidgenössische Volkszählung 1920, Zweites Schlussheft: Berufsstatistik. After examining the text and tables I cannot even now admit that the strict double classification has proved successful.

classification according to nationality and homestead and because all statistics are worked out for each canton. Generally speaking the table of occupations and that of industries contain the same classes, as most of the classes in the table of occupations are also styled classes of industries: the sugar industry, the chocolate industry etc. All owners of every kind in the table of occupations are included in one class together with managing directors and similar persons, and clerks. All special occupations on the other hand have been mixed together in classes of industries with no distinction between expert employees, foremen, ordinary factory hands etc. The main table of occupations also gives at the same time a classification by age groups, whilst remarkably enough, the classification by social status is given in the table of industries only. In the latter table the following classes of wage-earners are distinguished from each other:

1. Working on own account
2. Managing directors
3. Superior technical employees
4. Other superior employees
5. Subordinate technical employees
6. Other subordinate employees
7. Labourers, assistant labourers
8. Apprentices in crafts, industry, business and offices.

Under a special heading it is stated how many of the workers for employers are members of the employers' families. It is obvious that these facts are also of great interest in connection with a classification according to occupation. In the table of occupation the following individual occupations, which are not classified according to industry, have been chiefly set apart:

Clerks, engineers and similar occupations, moulders, founders, metal drillers, tool makers, boiler smiths, fitters, mechanics and engine workers, hand compositors, machine operative compositors, a number of other craftsmen (both at factories and workshops), stokers at factories, packers, warehouse men, doorhelpers and watchmen, industrial home workers (without any specification as to the nature of the work), messengers and carriers, drivers and chauffeurs. It is inconceivable to me why it should be necessary, on account of these occupations,

to undertake two separate classifications of the total number of the wage-earning population.

In the table of occupations there is, in principle, a distinction between those who work

- a. in closed spaces
- b. partly indoors and partly out of doors
- c. out of doors
- d. below the surface of the ground.

These distinctions, however, do not appear to have been fully observed, and it would presumably be practically impossible to carry them out in a general census. Below I have placed together the number of wage-earning persons in the various main groups according to the tabel of occupations and to that of industries.

As will be seen, there is approximately the same number in agriculture. It was pointed out by the census leader that the double classification had little *raison d'être* for the occupations within agriculture and some other occupations which

SWITZERLAND. CENSUS OF THE COMMONWEALTH 1920. CANTONS SOLOTHURN, BASEL-STADT (CITY OF BÂLE), BASEL-LANDSCHAFT (DISTRICT OF BÂLE).

Table of occupations. Summary.		Table of industries. Summary.	
Total wage-earning persons	163,886	163,886	Total wage-earning persons
Agriculture and forestry	20,900	20,943	Agriculture and forestry
Fishery	17	17	Fishery
Mining, industry, construction	87,718	93,227	Mining, industry, construction
Trade	8,792	14,540	Trade
Banks, insurance etc.	3,198	3,676	Banks insurance etc.
Hotels etc., including kitchen servants etc. at institutions	6,408	5,938	Catering and lodging (not included kitchen servants etc. at institutions).
Transport	9,316	11,521	Transport
Immaterial activities	9,539	11,496	Immaterial activities
Domestic work (excepting servants)	254	1,561	Domestic work and persons giving service (incl. servants without employment).
Clerks and office workers ¹	17,133	743	Inmates of institutions
Not stated	611	224	Day labourers and miscellaneous

¹ Owners included. Office employees at law-courts, banks and insurance are distributed among the respective classes.

are classified alike in both tables, and that it was unfortunate that in the two tables varying figures were obtained, even for classes which were in reality identical. For the classes: industry, trade, banks etc., transport, and immaterial occupations the table of industries shows considerably higher figures and this is mainly due to the fact that in the table of occupations clerks have been classified apart.

In the following summary the numbers of workers in the various branches of industry have been placed side by side to the extent in which it is possible to find corresponding classes in both tables. For many classes no comparison is practicable. Even here no effect appears to have been made to render possible a comparison between the two systems of tables, and in this fact lies a great danger in the principle of double classification. If when planning the aim was kept in view of facilitating as far as possible a comparison between the two classifications a study of the fundamental principle would be made easier and the whole work would be more perfect. From the said parallels we see that some of the classes of industry occur with approximately equal figures in both tables. In the classes of industry where many drivers, craftsmen etc. are employed, the number grows much larger here than in the table of occupations. Such is the case, for instance with breweries (drivers etc.) electro-technical workers and installators (fitters etc.), gas and electrical workers (plumbers, electricians etc.). On the other hand, the tables of occupations as a matter of course has very high figures for the large classes of craftsmen, smiths, joiners, coopers etc. To a great extent the classes of industry include the same men in both tables, and the same may be said of other classes. The difference is that clerks and a few others are classified apart in the table of occupations.

On the basis of the available information, I cannot see that the new system in Switzerland offers any essential advantage in any direction, and I should be inclined to style it unsuccessful. The increase in labour caused by double classification was declared to be very great, in spite of well planned mechanical work with good machinery (Power). All statements of occupations were marked for punching by two different persons, one marking the classes of occupation and the other the classes of industry.

A COMPARISON BETWEEN THE NUMBER OF WORKERS ACCORDING TO THE TABLE OF INDIVIDUAL OCCUPATIONS AND THAT OF INDUSTRIES.

(All larger comparable industrial classes have been included.)

A. *Factory workers.*

Classes for which the table of occupations gives the lowest figures			Classes for which the table of industries gives the lowest figures		
	a	b		a	b
Coffee substitute making and distilleries	128	159	Flour mills	182	148
Breweries	130	262	Saw mills	246	169
Tobacco factories	343	351	Boxes and rougher articles of wood	124	62
Making of woven articles	658	765	Cardboard and paper articles	259	194
Brushes, articles of horn and celluloid etc.	435	480	Acids, salts, fertilizers	162	110
Lime, cement, plaster of Paris	316	435	Metal plating	109	81
Cement <i>articles</i>	253	281			
Tiles etc.	509	561			
Wood pulp and paper	1.227	1.443			
Soaps, candles etc.	151	205			
Aluminium articles	213	295			
Electric apparatus etc. and installation of power and light	1.205	1.677			
Gas works	246	366			
Electricity works	264	458			

a = According to the table of occupations: Workers who are directly occupied in the production.

b = According to the table of industries: Workers and assistants, (apprentices excepted).

B. *Craftsmen etc.*

Classes where the table of industry gives higher figures			Classes where the table of occupations gives higher figures		
	a	b		a	b
Bakers	1.125	1.248	Barbers and hairdressers	770	767
Tailors, male and female	4.851	5.003	Laundry and ironing	1.677	1.384
			Building, furniture and model joiners	2.537	1.956
			Wood turners	234	223
			Coopers	375	202
			Basket makers	214	159
			Bookbinders	355	246
			Blacksmiths	752	478
			Tinsmiths	1.113	951
			Photographers	147	121

a = According to the table of occupations: All persons occupied in the craft concerned.

b = According to the table of industries: Independent workers, assistant workers and apprentices.

THE NETHERLANDS.

At the census of 1899 and also of 1909 there was employed a combined classification according to the nature of the industry and to individual occupation, with specification of a number of individual occupations within each class of trade or industry. The tables are very extensive, and the figures given mostly rather small. In 1909 two volumes were first published according to occupations only, then a separate third volume with combined classification. I have been told that it has now been resolved to adopt the french method of classification according to industry only at every alternate quinquennial census, and with classification according to occupation at the others.

FRANCE.

At the census of occupations in connection with the general census in 1896 the classification was made according to the main work carried on within each concern, not according to individual occupation. Within each class of industry distinction was made between:

1. Directors of concerns
2. Persons working independently, and
3. Employees and labourers.

The number in the last class again is distributed between concerns of varying size (according to the total number of workers). The same principle was followed in 1901 and 1906. Then in 1911 the opposite principle of classification according to individual occupation only was adopted, and it appears that in future, at every second quinquennial census there will be employed classification according to industry, and that the individual occupations will form the basis of the other censuses (see Introduction to the census of 1911, Vol. I part 3 p. 5 et seq.). A close study of the two main tables, for 1906 with classification according to industry, and for 1911 with classification according to individual occupation, reveals no difference in principle between the two methods of classification. The chief change is that the table for 1911 is far more summary. Some occupations have been separated in 1911, thus five occupations in agriculture, spinners and weavers in the textile industry (in 1906 this industry was distributed among a number of classes of industry according to the nature of the material, and the fact hindered a corresponding distri-

bution according to occupation). Further we find some craftsmen such as carpenters, joiners, smiths and others placed separately in 1911, whilst in 1906 they disappeared in other classes. Even here it is very difficult to find the same classes again at the two censuses. For the main groups of industries there is undertaken a comparison with 1906 in the introduction to the tables of occupations in 1911. In addition an attempt has been made in 1911 by reference to the nomenclature of 1906 to maintain a connection between the two classifications. The few occupations which have been differentiated in 1911, might conceivably have been obtained without such a radical change in the very frame of classification of industries. The difference in principle is here undoubtedly greater in name than in deed, and it would have been of great advantage if the arrangement of the tables also had been somewhat more similar, only with a more specified classification of industries at one census, and a more specified classification of occupations at the other.

THE CLASSIFICATION ACCORDING TO OCCUPATIONS IN THE U. S. A.

See Census 1920, Vol. IV, Introduction p. 10 seq, and main table No. 15 p. 56 et seq.

The American classification has been called a classification of individual occupations within an industrial framework (see p. 10 bottom page). After a closer investigation of the main table it would appear as if a more correct characterization of the system would be to style it a classification solely with regard to individual occupations. No attempt is made to produce a total figure for all workers within any one branch of industry. This task is left to be carried out at the industrial census which was undertaken nearly simultaneously with the general census (towards the end of 1919) and which is published in connection with it.

It appears from the report that the detailed classification of 1910, which would be considered in the way of an experiment, has been trenchantly limited. More especially, a simplification has been obtained by including in one class several different occupations within the same industry, especially the semi-skilled operatives. Sometimes these semi-skilled workers are included in one class with the labourers, especially in the group "extraction of minerals".

The wage-earning population is divided into 9 main groups:

- I. Agriculture and forestry.
- II. Extraction of minerals.
- III. Manufacturing and mechanical industries.
- IV. Transport.
- V. Business.
- VI. Public administration (not included elsewhere).
- VII. Professional service.
- VIII. Hotels etc. and personal service.
- IX. Office work (including messenger boys etc.).

Within group III there is here also essentially a classification according to industries, not according to occupations, but exclusively of that main part of the employees whose occupation may be characterized by the nature of the industry to which they are attached, that is to say, in the first instance common labourers. All office employees, messengers, etc., are thus included in one main group. All engineers are included in the group of "professional service" with no regard to their place of employment (factories, railways etc. etc.). Also motorcar chauffeurs and drivers with a few exceptions come under the group of "transport". With regard to craftsmen and other skilled workers, such as electricians, factory mechanics, etc. the same principle has been followed. Thus all carpenters have been included in one industrial class regardless of the fact that they are attached to a number of branches of mechanical and other industries: mining, railways etc. The general occupations are thus classified according to the nature of the work regardless of the place of employment. They are either held quite outside the industrial classes (office employees etc.) or they are included in the class of industry where they occur most often (artisans etc.). By this means of procedure there is obtained a very clearly defined classification of occupations with no superfluity of classes, and all double classification is avoided. (I should like to point out, however, that for foreigners at least the alphabetical arrangement of occupations within the main groups is not very fortunate. A well arranged systematical arrangement would be infinitely preferable).

Much is gained both in the compilation and in the use of the tables by this single system of occupational groups. Its one great disadvantage is the fact that the informa-

tion regarding occupations is rendered useless qua industrial statistics and therefore it rests on a necessary presupposition, viz., that the number of workers within the various branches of industry is procured by other means, i. e. by a general census of industries. If the general census is at the same time to show the distribution of the population according to industries and to occupations a more complicated method of grouping cannot be avoided.

SWEDEN.

At the swedish census the principle of classification is that of individual occupation, not of industry. This is seen inter alia from a statement in Vol. III of the census of 1900, introduction p. XXXVI.

"A special difficulty is offered by the cases where the training of a person belongs to another class of wage-earning than his employment, for instance, a joiner who is employed at a mechanical workshop. In such case the training for an occupation has been the decisive fact." It is evident, however, that the aim has been, not only to classify according to individual occupation, but at the same time to provide a classification by industries. Thus smiths at mills are classified as mill workers, not as smiths. Office workers and engineers are not classified exclusively according to their individual occupation, but they are divided into separate classes for each main group of industry (but not for the subgroups). On the other hand engine-men and stokers have not been specified by industries. Drivers and chauffeurs are all gathered under "Transport", and are not divided according to the industries of their employers. Probably the Swedish classification is influenced by special difficulties in the manner of taking census, as it is mainly based on the clergymen's registers, and not on a direct census. We have here a practical and very mixed system.

According to information obtained later on from the director of the statistical central bureau and the head of the census in Sweden, at the census of 1921 there was obtained by means of additional and test statements a better fundamental material than before for a determination of the occupations. The statements of income and capital according to taxation assessment have been worked out in connection with the general

census, and especially for this reason, the former system of classification according to occupation has been completely abandoned, and the main importance is attached to the branch of industry to which each worker is attached. With regard to this we read in a statement received from the chief of the census.

At the present census a change has taken place in the principle of classification of the population by occupation. Formerly in Sweden the individual training for work was, generally speaking, the main principle of classification. This principle has now been somewhat abandoned at this last census as the elaboration of income and capital statements in combination with the classification by occupations *considered to necessitate an adoption of the branch of industry as the deciding factor for classification*. This must not be mistaken for the concern or the firm. For instance the great Swedish works often comprise several different branches of industry, such as mining, iron works, mechanical workshops, saw-mills, wood-pulp-mills, paper-mills, corn-mills, agriculture and forestry.

The employees at such works are not then classified under the main activity of the same, but each under the branch at which he works. If the opposite way was adopted and all workers of one concern were set apart, no certain information would be obtained for any branch of industry, and also it would often be difficult to distinguish the various concerns.

At the census of earlier years in Sweden a joiner was classified as a "joiner" regardless of the industry in which he was employed. Now he may be classified for instance as corn-mill hand, iron-work hand, ship-building hand or carpenter, according to whether he is at work at a corn-mill, an iron-work, a ship-building yard or a house building. The personal training for a certain craft is then no longer discernible in the classification. For reasons of finance the central bureau has not undertaken any differentiating of the most common crafts within each branch of work, as for instance smiths, joiners, bricklayers, painters, shoemakers, tailors, in order to obtain thereby a possibility of finding, by addition, the total number of persons trained for the respective crafts. Within the manufacturing and mechanical groups, however, the occupations have been stated separately for office employees, engineers and foremen. Engine men and stokers were

at the last census placed in one group for all industries, but have now been included with the workers within the branch of industry of the concern in which they are employed. Drivers and chauffeurs were formerly all included in the transport group, but now go with the other workers within the branch to which they are attached. The same is the case, for instance, with warehouse men, carriers, watchmen, doorhelpers and char-women."

CLASSIFICATION OF OCCUPATIONS IN AUSTRIA.

The Austrian classification has in principle remained unchanged since 1890. The classification professes to be one of occupation, but in reality there is here, as in the case of the German wage-earning census, nothing but a classification of industries with a schematic division within each class according to social position. At the Austrian census the social classes do not vary from one branch of industry to another as in the German census. The social stages are the following:

1. Working on own account.
2. Farmers and tenants.
3. Employees of all kinds.
4. Workmen.
5. Apprentices.
6. Day labourers.
7. Working family members.

Further, servants etc. are given in a class apart, and kept separate from workers. It is not evident from the introduction which principle has been made the basis for classification, but all probability indicates that it corresponds approximately to the German principle, where craftsmen, in principle, are classified according to the nature of their work, not according to the nature of the concern in which they are employed, whilst this is just the case on the contrary with all general occupations: office workers, drivers etc.

DENMARK.

The principle of the Danish classification is not quite evident from the various introductions. But it can hardly be doubted that the aim has been a classification in principle according to industry, since in 1901 a heading was added for information concerning the employer for all who work for

employers. Engineers and clerks are classified according to industry, also engine-men, stokers and electricians as far as the nature of the employing concern is stated. That is to say special classes of engine men etc. are not given. Drivers and chauffeurs also appear to be distributed according to the occupation of their employers, and are not included in the class titled "General transport by land". The principle of classification according to industry appears to have been carried out also for craftsmen working outside their craft, inasmuch as not only their occupation is stated, but also information regarding their employers. Concerning the most important class of factory craftsmen, viz. smiths, it is thus stated in the introduction to the census of 1901, part II p. 42x: — "When the number of smiths is also lower in 1901 than in 1890, the reason for this may be assumed to be found in the more exact definition of occupation in 1901 having caused a displacement between the said craft and "manufacture of machinery and iron founding", which class has a figure in 1901 double that of 1890. Otherwise it may be assumed for the latter branch of industry — as for the majority of manufacturing industries and crafts employing unskilled labour to any great extent — that the often considerable increase in the figures from 1890 to 1901 is to a great extent based on the formal factor touched upon in the above, that in 1901 the information was more detailed than at the previous census."

The Danish classification may then be characterized as purely one of industry. Within each class of industry there is a distinction between:

1. Employers
2. Employees
3. Labourers.

It is mentioned in the above that the census of 1921 in Sweden radically abandoned the former principle of classification in favour of one according to the branch of industry. The new system which was adopted in Denmark at the census of 1921 denotes an equally strong rupture with the old principle. Here then the opposite development has occurred. The systems of 1901—1911—1916 in reality gave but very little information concerning occupations, but a logical division of the population according to branches of work. The new grouping gives the number of clerks, engine men and stokers,

chauffeurs etc. (i. e. the general occupations) only for each main class of industry, not for each minor division. All craftsmen in the new system are grouped according to their craft (for instance all smiths together) regardless of where they are employed. Thus all obtainment of information from the census with regard to the number of persons occupied in any one branch of work has been quite abandoned. The aim is now exclusively, as stated in the instruction for compiling the census, to characterize everyone's personal occupation as closely as possible."

Mr. Nybølle of the Danish department of statistics has been kind enough to send us a statement elucidating the new principle of classification, and a critical review of the present statement, from which I beg to quote the following:

"... The principle underlying the Danish classification by wage-earning is in the main that of classification by occupations. Yet there exist a reminiscence from the classification by industries of former censuses inasmuch as some of the general occupations are found in several main classes of wage-earning. For instance, office workers under industry, under trade, and under professional service. The same is the case with messengers, drivers, chauffeurs, and whatever in each group is found under the heading 'Miscellaneous assistant workers'. The purpose of this is a comparison with earlier census results.

Apart from this and a few other unimportant cases of inconsistency, at least as regards crafts and industries, the classification is pronouncedly a classification according to occupations. Even with the assistance obtained from the heading concerning the employer on the census forms for all 'not working on own account', it would scarcely be possible, considering the manner in which the census is carried out in Denmark, to tabulate otherwise than purely formally according to 1. industry, and then 2. within each industry according to occupations, and to distinguish between 'special' and 'general' occupations. For this purpose the main part of the informations obtained are not sufficiently precise.

This fact would presumably be a sufficient co-reason for a *complete* change adopting the new system. The chief reason, however, was the point of view (at the time apparently unanimously adopted) that the classification according to indu-

stries was a matter for an industrial census, that according to occupations resorting under the general census. During the compilation of the census of 1921 this point of view was emphatically pointed out, and at the occasional discussions arising during the progress of the work, this point of view (although more theoretically) was put forward in a most incisive form.

Apart from the anomalies mentioned, there cannot be said to be any direct contrast between the final result of the Danish points of view of 1921 and those forwarded by Mr. Jönsberg. — The latter only goes farther in principle, farther than the Danish census has dared to go for fear of the lack of sufficient information for the step to be taken in full — at least not at the first trial. Both principles will as the final result give a complete classification of occupations, and Mr. J's proposal even something more.

The valuation of this proposal therefore from the point of view of Danish experience is quite dependent on the possibility of obtaining the necessary information — that is to say we are theoretically in concordance."

FINLAND.

In part II of the Finnish census of 1910 we find in the first chapter of the introduction a statement elucidating the classification of occupations. It appears that the aim has been a pure classification according to industries. Thus the fact is mentioned that since 1900 the essential difference between industry and handicraft has been dispensed with, craftsmen being classified under their respective class of industry. The census of 1910 in many respects was more specified than that of 1900, but the principle of classification was apparently unchanged. The general census of Finland not being nominative, the clergyman of each parish compiling the primary tables on the basis of the census registers, there are in this country special difficulties connected with an increase of the number of the industrial groups, or with the introduction of quite rational methods of classification. We quote:

"The same occupation may appear simultaneously in several of the fourteen main groups. By classification the chief decisive factor has been the branch of industry within which the individual occupation takes place. Thus for instance engine

men and stokers appear within most branches of industry proper, within transport etc. The same is the case with e. g. clerks, which occur within most main groups. Even an occupation like that of a joiner which essentially belongs to the wood industry, also occurs within the metal industry (model makers) and other branches. *The character of the concern employing the person in question has been the main principle of classification.* Exceptions in this respect have only been made in the case of such occupations as cannot be considered any part of the industry to which the concerns employing the persons in question belong. For instance skilled workers within the building industry, such as bricklayers, carpenters etc. are generally classified under the said industry, even when the concern employing them belongs to another branch of industry. If the activity of a concern falls within two branches of industry, the persons employed by the same have been distributed between the two branches according to their individual occupations. Workmen in the workshop at a business concern, which both sells machinery and keeps up a repair workshop for machinery, have then been classified under 'industry and handicraft' whilst shop assistants employed by the same concern have been included in the 'trade' group. Those among the employees of such a composite concern who have to do with both branches of activity such as managers and clerks have been included in the group which after investigation proved to be the chief one for them. These principles have even been applied to concerns the activity of which include various suborders within one and the same branch of industry."

BELGIUM.

At the Belgian census of occupations in 1896 exact information was obtained with regard to the occupation of every individual, but this information was never made use of. See the statement made by Armand Julin at the meeting of the International Statistical Institute in London 1905. Bulletin of the institute, tome XVII, 287 seq. The classification is therefore purely according to industry, and the same principle has been followed at every census. Within each group of industry distinction is made between:

1. Masters (mâîtres)
2. Employees (employés)
3. Labourers (ouvriers).

The technical unit is made the basis of the classification of industries, not the economic unit. At the census of 1896, 73.030 concerns and parts of concerns were registered, each part of any concern with a separate production being differentiated as a unit. These units have been classified according to the number of workers employed, then the parts of concerns belonging to one firm have been gathered into units again, and the 73.030 different concerns are worked out to correspond to 65.929 firms. It is evident that the largest concerns include the greatest number of various productions. See also a lecture given by Lucien March concerning the census of occupations in Germany, France, Belgium and U. S. A. at the meeting of the International Institute in Berlin 1903.

ITALY.

Census of 1911.

According to the main table, table 6 in part 4, the classification in Italy is in principle one according to industry. Within each group of industry, there is a very summary distinction according to social standing, and these social classes vary in the various main groups. Within the industrial group distinction is made in the main table between the three following social positions:

1. Independent employers, managers etc. and craftsmen working on own account (padroni, administratori, direttori, artigiani indipendenti).
2. Clerks etc. (impegiati).
3. Technical employees and workmen, all classes (capi tecnici, operai, braccianti, facchini).

RUSSIA.

Census of 1897.

From the nomenclature and the main tables the classification appears to have been in principle one according to industry. Craftsmen, clerks etc. are classified according to the nature of the industry. For engineers and technical workers on the other hand the total is given under "Science, scholarship and art" and all drivers appear to be included under "Transport" with a special order of "Drivers at factories".

AUSTRALIA.

Commonwealth 1911.

In the introduction to the chapter on occupations it is stated that the classification deviates considerably from the English one, and that it is proposed to take up the question of classification for a revision at the next census in 1921. The summary statements which are as yet available correspond with the earlier classifications and it is not therefore evident whether the trenchant rearrangement planned has been carried out. In 1911 there was in principle a classification according to industry. Within each class a distinction was made between:

1. Employers
2. Working on own account
3. Assisting (not receiving wages)
4. In receipt of wages or salary.

Clerks, craftsmen, engine and machinery men, stokers etc. are classified according to the nature of the concern in which they are employed. On the other hand all engineers appear to be included under "Professional service", and chauffeurs and drivers under "Transport".

CANADA.

1911.

The classification is pronouncedly a mixed system. Craftsmen are classed after their individual occupation, engineers and other technical employees the same. Drivers in business are given in a special order under "Trade", private coachmen, grooms and private chauffeurs are found under "Personal and domestic service", other chauffeurs and coachmen appear to be classified according to occupation under "Transport". On the other hand clerks, engine men and stokers are classified according to the industrial class of the concern where they are employed.

This rather inconsistent system is said to have been thoroughly revised at the latest census.

GERMAN CENSUS OF OCCUPATIONS IN 1907 AND PREVIOUSLY.

The fundamental principle for the classification at the latest census is mentioned especially in Stat. des D. R. Vol. 211. A critical review is given by Dr. Rudolph Meerwarth in "Einleitung in die Wirtschaftsstatistik", Chapter II. In the chief volume of the census, No. 202, there is pointed out, as

at the previous censuses of occupations, the difference in principle between the census of occupation and the census of industry. In 1907 this was said in the following words — "Vorbemerkungen zu dem Tabellenwerke" the said volume p. 1.: "For the classification of the statements of occupations the determinative characteristic *is the special nature of the individual occupation, not the nature of the industry to which it is attached.* This classification after each person's individual occupation or skill is the fundamental principle of a census of occupation as opposite to a census of industry. In the first, a joiner in a machinery factory, for instance, is classed under the occupation of "joiner", whilst in a census of industry he is considered as worker at a factory of machinery." If the detailed tables or even the skeleton of the classification is investigated, however, the latter being found in Stat. des D. R. Vol. 211, preliminary remarks to sections 3 and 4, it will be seen that just the joiners or rather the craftsmen form an exception. All others, even in the census of occupations, are classified according to the nature of the concern where they work, and not to the nature of their individual work. The reason why the nature of the skill has not been used as the basis of classification is given in the same volume, Introduction p. 1 seq.: "There are three main reasons: 1. The identical designation for an individual occupation very often has a widely varying meaning for different concerns, for larger or smaller concerns of the same character, for the various parts of the country etc. 2. The designation of the individual occupation changes as the processes of labour change, as the specialisation develops etc. Therefore it would be impossible to keep up any continuity from one census to the next, if the designation of occupations were used as a basis. The character of the activity of any concern gives a more fixed point of departure and does not change so widely from time to time. 3. The chief reason, however, is the fact that too many insufficient designations of occupation are given, as for instance assistant workman, machinery man, etc. besides a larger number who only state themselves to be workmen at such or such concern."

For these reasons "the statistics of occupations have not as their basis the character of the individual work — Art der Tätigkeit —, but the nature of the branch of industry — die Arbeitszweige" (see p. 9).

All persons are thus in principle classified according to the branch of industry to which they belong, not for the purpose of establishing a concordance with the statistics of industries, but because an investigation of the question proved that such a basis was the only possible one, even for a classification of occupations. The number of groups of industries is 218. It is not therefore feasible within each group to give a specified division according to occupations. A schematic arrangement into some few classes must suffice (see Preliminary remarks to vol. 211, section 4). These classes vary from one main group to another. Thus for agriculture there are 6 classes, for industrial concerns 10 classes etc. A number of important general occupations, for which there exist adequate designations disappear in this way, and no other way out was found to disengage these occupations than by including them in a special table with no very detailed specification according to branch of industry. Such a special table from the latest German census of occupations is found in volume 203, table 7, and it includes especially: engineers, foremen, draughtsmen, director managers etc., commercial travellers, various office workers, engine men, stokers, drivers and coachmen, gardeners, cooks, doorkeepers, lift men, domestic servants and messengers. These occupations again are classified according to the main group of industry in which they are employed, but not by the classes in which the main group are subdivided. As will be seen, the list of general occupations does not include craftsmen. As mentioned above, the craftsmen thus form the one great exception to the main rule: A classification in principle according to the character of the industry. Regarding this there is a statement in Stat. des D. R. Vol. 211 p. 10, (here given somewhat abbreviated): "The statistics of occupations thus include within each class of wage earning all wage earners who are either occupied in the very technical process, or in the business activity connected therewith, but yet do not give the industry. *In principle these statistics classify the occupations of handicraft not according to the industry in which they are employed but according to the character of the work.* Smiths, joiners etc. are classified under the headings smithing, joining etc., regardless whether they are employed in breweries, glass works or any other industry. Only when such craftsmen are no longer employed as such, but as part wor-

kers in a related branch of industry as e. g. machinery smiths in mechanical works, carriage smiths in carriage factories, in these cases only the industry is the decisive factor. That is to say, in the latter cases the class of occupation is identical with the class of industry, in the other cases it is not so."

I have rendered the statement concerning craftsmen so much in full because it is precisely the classification of craftsmen that is the great difficulty in a rational classification of occupations.

HUNGARY,

It would appear as if no essential change has been made in the classification since 1890. At that time a complete change of principles was undertaken, see statement by dr. Anton Wiznecker in the Introduction to Part II of the Hungarian census of 1890.

It is seen from this that formerly only one question concerning wage-earning was included in the census forms, and that on principle the wage-earners were classified according to their individual occupation. In 1890 for the first time the nature of the employing concern was gone into, and the chief importance was attached to obtaining the total number of persons attached to the various branches of industries, both the bread winners and the family members etc. supported by them. At the same time secondary occupations were drawn to the fore, and the question of a classification according to the nature of the individual work has completely been overshadowed. Within each group of work distinction is made between the following social grades:

1. Working on own account
2. Managers and employees
3. Engineers
4. Chemists
5. Mechanics
6. Working family members
7. Assistent workers
8. Apprentices
9. Workers under 16 years of age
10. Workers above 16 years of age
11. Day labourers
12. Servants.

As in France, the elaborate work is here undertaken of collecting together all persons connected with one industry, and thereby utilizing the forms of the general census for a census of industries, with a classification of the various concerns according to their size etc. Great importance is attached to obtaining exact information regarding the industry to which each wage-earner is attached, and it will readily be understood that the compilation of the census must require a specially long period in Hungary, when we learn that all information is worked out for each municipality, and that the revision is very minute. At the census of 1890 more than 300,000 forms were sent back for correction.

It is evident that a consistent classification according to industry is undertaken. All persons who in one capacity or another are attached to an activity of a certain nature are classified together regardless of the nature of their individual work. A quite interesting attempt has been made, however, to tabulate the information concerning all skilled workers who occur within the various industries. In the census of 1890, 83 such individual occupations were differentiated. In 1900 the corresponding table was considerably reduced, embracing only 51 occupations — see census of 1900, vol. 5, table 7. It is stated in the summary for the census of 1900, see vol. 10 pp. 221x—22x that the informations concerning the individual occupation were very incomplete. Therefore the results of this special table have not been analysed. It is of considerable interest to note that in 1890 as well as in 1900 only a few classes of skilled workers occur to any considerable extent outside their own branch of industry, mostly craftsmen. Of these first and foremost smiths in large numbers, then joiners, coopers and bricklayers.

NORWAY.

The classification of the latest Norwegian census is seen from vol. IX, 1920, table 2. The chief change from the former censuses is the adoption of a systematical division of industries according to groups of concerns.

The principal basis for the classifications must be declared to be the branch of work in which the person in question is employed (industry or branch of industry, not individual occupation), but several exceptions are made. Thus drivers

and chauffeurs appear under transport, with a specification of the chief groups of work where they are employed: industrial concerns, transport business etc. Also all workers in gardens, charwomen, and a number of occupations which rarely occur outside their own branch are classed by their special occupations not regarding where they are employed. (Compare the treatment of factory gardeners, chauffeurs and others at the classification of industries in Switzerland).

These exceptions are partly considered as correct in principle (see the final part of the present work), and at the same time meant a considerable relief in the work of tabulation.

As at the German census of occupations a special table was compiled for the general occupations, with the aim of obtaining by means of this and the main table both a classification with regard to industries and one regarding the occupations. See vol. IX p. 161 seq. The compilation of such a classification would be too unwieldy if all occupations which occur outside their own branch of industry without exception had to be included. Chiefly for this reason, all craftsmen attached to non-industrial concerns e. g. public institutions, transport, business etc. were classed according to occupation, not to the character of the concerns where they were employed. The same principle has been followed for such craftsmen workers who are rarely employed except by master craftsmen of their own guild. Only those craftsmen who proved to be employed often at factories etc. are in the main table classified under the concern in which they were employed, and for these an extra classification was made according to occupation, so that the total number of these craft workers, regardless of their place of employment, may be seen from the said additional table. These craftsmen are smiths, joiners, carpenters, painters and plumbers. The additional table further include the following general occupations: office employees (divided into 5 orders), engineers and the like, electricians, engine men and stokers at industrial plants.

It would have been a great advantage in the compilation and utilization of the table if the general occupations had been somewhat more definitely made to stand apart in the main table, so that the specification in the additional table might have been clearer. Thus the specification of the independent craftsmen with greater advantage might have been

given within the frame of the groups of industries in the main table, than unconnected with the classification of industries.

The specification of office employees according to their grades was not successful; neither was the specification of the occupation of "stokers" at factories, as it was difficult to define this occupation clearly.

The Norwegian system must be characterized as a classification according to occupations in an industrial frame with a special statement concerning the most important general occupations, independent of the classification according to industries.

I will finally attempt to give a schematic summary of the various countries arranged according to their principles of classification.

A. TWO CLASSIFICATIONS.

Two completely independent classifications (according to industries and according to occupations) at the same census:

England and Wales

Scotland

Switzerland.

The same principle — but classification by industry and by occupation at every alternate 5 yearly census respectively:

The Netherlands

France.

B. ONE CLASSIFICATION.

In principle according to individual occupations with various modifications:

U. S. A.

Sweden (change of principle in 1920. See above).

Austria.

In principle according to branch of industry (character of employing concern or occupation of employer) but with various modifications:

Denmark (change of principle in 1921. See above).

Finland

Belgium

Italy

Russia

Australia.

An exceedingly mixed system:

Canada.

C. TWO CLASSIFICATIONS FOR GENERAL OCCUPATIONS,
ONE FOR OTHERS.

Classification in principle according to individual occupation, but the principle is carried out almost exclusively for factory craftsmen occupied as repairers etc. Factory craftsmen taking part in production proper are classified according to industry. The special table for general occupations does not include factory craftsmen at all.

Germany. (Census of occupation).

Classification in principle according to the character of the employing concern. Numbers of the most important general skilled occupations in a special table:

Hungary (the additional table includes only skilled workers employed by concerns of a different nature than their work).

Norway.

In this arrangement of the countries the greatest importance has been attached to the manner in which the general occupations, more especially those of factory craftsmen and office workers are classified — either according to individual occupation or to the nature of the concern employing them.

Even within the groups in this summary there are however wide divergencies of a fundamental character. It is chiefly the treatment of general occupations that differentiates the systems, but the divergencies are still so great that it is rather useless to pass resolutions at international meetings concerning a uniform classification according to industry, social position etc. before a satisfactory main principle for the classification has been agreed upon. This cannot come to pass except through careful investigation and discussion beforehand, if any proposal of such a principle is to be of any value. Otherwise only a superficial agreement is gained, and classes will be compared which are dissimilar in all but their names. The fact that these divergencies in principle have not been more obvious at the conferences, is presumably in the first instance due to the circumstance that the persons with general occupations only form a minority of the population. For all other occupations, the "special" occupations, there exists in principle only one manner of classification.

III. CRITICAL SURVEY.

The bare task of characterizing the principles of classification in foreign countries is sometimes difficult enough, as the method is not always sufficiently evident from introductions and tables, so that misinterpretations are apt to arise. Still more difficult, however, is the task of giving an objective, weighty and valuable critical survey of the systems of classification adopted by foreign countries. This fact was most clearly seen from the enquête concerning the principles of classification made for the meeting in London 1905 of the International Statistical Institute. When reading these statements the objection constantly rises in the mind of the reader: "Here the author is only considering the circumstances in his own country, from a general point of view such and such opinions have little value." It need hardly be stated that also the present author cannot hope to avoid the same mistake. What may appear self-evident in Norway may be wrong for the Netherlands or Hungary. Circumstances differ so very widely in the various countries. I will here only point out some of the considerations which must necessarily influence the choice of a method for classification.

In the countries where a census is taken every five years there is a way out by undertaking classification according to industry only at one census, and according to occupation only at the next — as in the Netherlands and France. It is my decided opinion that the method cannot be advantageous even for these countries. At any rate it is out of the question for countries with a census every ten years only.

In U. S. A. they have the very advantageous arrangement, which was also recommended by the International Institute in 1899, of a census of industry apart, but almost coinciding with, the general census. It is true that these censuses of industry are not complete, and do not embrace the entire wage-earning part of the population. Yet it is a necessary presupposition for a system of classification like the American that what is needed for the statistics of industry is obtained from the industrial census, so that at the general census classification may be undertaken solely with a view to demographic and social purposes. This is out of the question in those countries where no industrial census is taken side by side with the general census.

Is the geographical specification to play a large or a small part in the compilation of the main tables — that is to say in most detailed tables of occupations? If you have no detailed geographical specification in the main tables, it need hardly be pointed out that a more satisfactory system of classification is made possible, than if the opposite is the case. In Hungary all tables are elaborated for each municipality, and in France and the Netherlands rather small geographical units are also considered. Under such circumstances the Hollerith-machines etc. are useless, as the quantities are too small. In Hungary individual cards are employed at the census, and no machinery. When the details are worked out separately for each locality in this manner, any increase in the number of classes and still more an increase in the number of combinations causes a considerable increase of labour. In France and the Netherlands Lucien March's "classicompteur" is employed. It is well adapted for small quantities and a limited number of facts which are summed up simultaneously, and the bureaus of both countries find the system advantageous. But this method of working does not allow of any considerable number of combinations. This elaboration for small local units explanates the fact that both countries have adopted the classification according to industry and according to occupations alternately at the censuses, a system of tables with more combinations being difficult to employ in connection with this method of compilation.

The method of census taking is also of the greatest importance in the choice of a principle for classification. Where all forms are filled in by census takers a far more detailed specification is possible than when the forms are filled in by the population itself. It is also of very great importance how the expenses of the census are arranged in the various countries, whether the work is carried out gratis by the local boards, or whether the expences are paid by a central institution. Closely connected with this consideration is the question of how far revision and supplementing of defective information may be undertaken.

The presupposition for the critical survey given below is that the information concerning wage-earning secured by the census shall serve two main purposes, both the elucidation of the importance and development of the various industries,

and also form the basis for mortality tables and other demographical and social purposes. — In other words, both a classification according to industries and one according to occupations is required. Further, I take for granted that the forms, at least to a certain degree, are filled in by the population itself, and that both the time and the finances at disposal are limited. Then both the revision, compilation of tables and printing, if possible, must be reduced. The question then grows to be, not so much whether the various systems are correct in principle and consistently carried out, but equally much whether they fulfil the essential demands made on information concerning wage-earning with the least possible cost. Also it is presumed that the most detailed tables are not elaborated in geographical details, at least not for every unit of locality.

From these presuppositions I believe being right in maintaining that the new system with two completely independent classifications of the total wage-earning population is to be rejected, whether they are carried out at one and the same census as in England, Scotland and Switzerland, or at alternate censuses as in France and the Netherlands.

In the discussion of the different classifications a criticism has already been touched upon. In the following general discussion of the double classification I will chiefly confine my remarks to the systems adopted by Switzerland, England and Scotland at the last census.

Both in Switzerland and England I had the impression that the double classification was regarded as an experiment, its advantages and defects being observed. Among the drawbacks the fact comes first that it requires much money and much time. The undertaking of a double classification at the same census with a very large material is practically impossible except with electric machinery, and the greater part of the occupations must then be marked out on the primary forms before they can be transmitted to punching cards. As it has been proved to be impossible for one brain to keep in mind two independent systems of classification, the primary forms must first be treated by one employee, who marks the classes of industry, and then by another who marks the occupations. Added to this comes the double labour of punching the occupational statements on the cards. Finally the complete double sorting by the machine and the labour of double ta-

bulation demand much time, so that all in all a considerable prolongation of the work and increase in the cost must be considered as an unavoidable part of double classification.

As has been mentioned the census leaders in Switzerland hesitated over the fact that a great part of the population was classified alike in both tables: the table of industries and the table of occupations. Here we have the chief objection to the system, viz. that only a part of the wage-earning population can be classified in two ways. It would therefore appear reasonable first to try whether we cannot proceed as far or perhaps farther by a double classification of those persons only whose occupations are general and may therefore be classified in two ways, while all the special occupations are classified only once. In the theoretical discussion concerning the classification of occupations, the fact crops up again and again that only the general occupations lend themselves to classification both according to their place of employment and their individual work, whilst the total wage-earning population cannot be thus doubly placed. This is also evident from the double sets of tables published for Switzerland, England and Scotland.

For Norway a summary has been compiled of the general occupations according to the latest census. We could not differentiate all general occupations, for instance not porters, messengers and warehousemen, but we have the most important. See Appendix 2. Of general occupations which in fact belong to no branch of industry, there are office employees, engineers and similar orders, engine men and stokers. They amount to 60.000 persons, of which 53.000 are office employees. Of workmen who are often at work outside their own trade we have separated out craftsmen, electricians, chauffeurs and drivers. Altogether these number 75.000, of which nearly one third, viz. 22.000 are occupied outside their own special trade. It should be noted however, that the specification has differentiated according to industry only the five most important orders of factory craftsmen, but other skilled craftsmen occupied outside their own trade may hardly be supposed to be of any great numerical importance in comparison with these five orders. In all we have about 83.000 persons who at the census of 1920 were occupied outside their own trade, or about 7 % of all wage-earners. At least 9/10 of

wage-earning persons in Norway cannot be classified according to individual occupation independently of their class of industry. This fact does not exclude another, viz. that within the large classes of industry, e. g. the metal industry or the textile industry, it is possible to specify a few occupations (such as iron turners, or weavers) who may occur in several branches of the same industry. In this limited meaning of the word such occupations become "general occupations", but that kind of double classification may be adopted to greater advantage within the frame of a classification according to industries. Two complete, independent classifications of all wage-earners in Norway, first according to branch of industry and then according to individual occupation would therefore be nothing but a self-deception, — and to a greater or lesser extent it is nothing else in other countries.

In the "Einleitung in die Wirtschaftsstatistik" Rudolf Meerwarth has called our attention to the same phenomenon in the latest german census of industries and occupations. He compares a number of corresponding groups in the census of industries and in the census of occupations showing the contents of the classes to be very nearly identical, and that therefore the solemn statement in the introduction to the "Census of occupations" that the classification is based on the individual occupation, and essentially different from the classification of industries is highly fictitious. It is chiefly a part of the factory craftsmen who at the census of occupations are classified according to their individual work, all others being classified according to exactly the same principle as at the census of industries, because in reality their occupation cannot be characterized except in connection with some class of industry or trade. In Switzerland as well as in England and Scotland, there have been established an unnecessary number of deviations in the two systems of tables, even for classes that are in fact identical. It is therefore rather difficult to decide to what extent there is a real double classification, and in how many cases this latter is only apparent. Office employees, factory craftsmen, drivers and chauffeurs form the great majority of general occupations. Therefore mostly the groups with many office employees such as trade proper, insurance, public administration etc. and industries employing many craftsmen and ordinary transport by land differ in

the tables of industries and the table of occupations. For other groups e. g. agriculture, fishing, navigation, hotel trade and so forth, a double classification has little meaning (see the said summary for Norway, section II). Farmers, farm hands, fishermen, sailors and waiters are classified according to exactly the same principle in a table of industries and in one of occupations, i. e. first according to their class of industry or trade and within this class according to social standing. It is of great interest to note that it is only the manufacturing industry which employ many kinds of employees, that lend themselves to a special classification according to their individual occupations, such as factory craftsmen, stokers, electricians, engineers and others. In the other trades there are not many other general occupations than office employees and some drivers and chauffeurs (see section III of the said appendix).

But even if a large part of the classes are identical in the two systems, the figures will always vary when such an extensive material is sorted and tabulated twice over. Therefore care is taken to avoid employing exactly the same classes in both systems. Of course it would also be too expensive to give all specifications twice. The consequence is that a direct comparison between the classes of occupation and the classes of industry in the tables is practically excluded. This is not the smallest drawback to the whole system. In the tables published from Switzerland and Scotland nothing is done to obtain a comparison, and the classes constantly overlap. It may be asked: Is this of any importance? Yes indeed it is. It is a fiction that certain purposes demand a classification according to industry only, and others one according to occupations. This is best seen in the concrete facts of the case. Supposing that the ship-building industry were to be described on the basis of the figures of the census, with regard to its relative importance in society, its development etc. This is purely a purpose of industrial statistical character, which in consequence would demand a classification according to industry. But it would soon become evident that it would be far from sufficient for the purpose mentioned to learn only the total number of persons attached to the industry, at the best classified into "employers, employees and workers". It is desirable also to know what kind of employees and wor-

kers are employed by the industry. Does it employ skilled work or rather more ordinary assistant hands, transport workers etc.? Have any changes in these facts been caused by changes in methods of production? Then there is the question of the recruiting of the industry, whether there are many apprentices and young workmen as compared with older, married people etc. None of these questions, however, are answered by a table with an exclusive classification according to branch of industry. An enquirer has to revert to the table of occupations, only this latter has been deliberately so arranged that it is impossible to find there the personnel of the same industry. The lack of connection between the two tables is equally unfortunate in another aspect. Supposing that a description of the craft of joinery is desired, it is then highly unsatisfactory to have only one set of information in the census concerning all joinery workers. In practically all respects the difference between the factory joiners in a large industrial concern and the journeyman under a master joiner is so great that these two main orders at least ought to be kept apart. In many countries such as England, Germany, Austria there is in the official statistics not even a distinction in principle between factory craftsmen and other skilled workmen at factories. If only one classification may be carried out it may perhaps be more correct to class the joiners at a shipbuilding yard with "workers in the shipbuilding industry" than with "joiners". Even the training of the two orders of craftsmen is most often quite different. In Norway it is thus said that model joiners etc. and more important orders of factory craftsmen are most commonly trained at the works. They have never been craftsmen in the ordinary sense of the word. Apart from the ordinary craftsmen at the big factories such as repairers of machines, buildings etc., the work of the factory craftsmen will be far more onesided than the work of a journeyman at the workshop of a master craftsman. — Not least by the analysis of the tables it is irritating and unsatisfactory to find that the figures concerning occupations, classified according to age and such like, cannot be compared with the information given in the main table with the classification by industries. The closer the relationship between the classification according to occupation and that according to industry, the more advantageous

in all respects. Judged from this point of view the complete double classification is the worst possible arrangement.

If at least much was gained with regard to specification in both directions by a double classification, something might be said in its favour, but such is not the case to any perceptible extent, at least not judging by the swiss and scotch tables. Both tables of occupations and of industries have evidently been reduced as far as possible, presumably because the labour has proved too great, and the fact has naturally made a comparison still more difficult.

The main reason for the failure of the double classification is, as has been pointed out, one of principle. Most occupations do not lend themselves to a classification except in an industrial frame, in their case it is a loss only and no advantage to classify them once more in a special table of occupations with no connection with the industrial classification.

But besides this, it is in the nature of the material that a detailed classification, either according to occupation or according to branches of industry cannot take us very far forwards, even though finances allow of elaboration in great detail. A minimum of two questions concerning wage-earning is necessary on the forms for all wage-earning persons: one for designating the individual occupation, and one for describing the place of employment. But it is a great mistake to conclude from this that on the basis of these two kinds of information two detailed and independent systems of classification must be placed side by side, supplementing each other. The two questions are both necessary if factory hands etc. are to be satisfactorily classified at all in one single system, as amongst others Mr. Lucien March so decisively points out in the above mentioned committee's statement of 1905. If we had to do with a small census material, and if we could afford a detailed revision and supplementing of the forms with the aid of experienced census takers, test information from employers, etc. the case would be quite different. Then any desirable details might be supplied both with regard to classification by industry and by occupation, and it might prove advantageous to compile separate main tables for each of the two classifications in order to facilitate a general view of them. But as is well known, these presuppositions do not exist in the case of ordinary general censuses, where, for financial

reasons, what is second best has to suffice. An instance from the latest Norwegian census: It would have been of great interest if in the case of one of our largest industrial branches, viz. that of engine factories and similar concerns, we might have obtained a detailed specification both regarding the various orders of work (shipbuilding yards, machine shops, stove foundries etc.) and the different kinds of skilled workmen (plate workers, iron turners, moulders etc.), but we had to do without in both respects. Shipbuilding yards, machine workshops and iron foundries etc. are so often carried on in combination with each other that it proved impossible to classify the employees according to the branches of industry. To a great extent the information obtained simply ran: Workmen at N. N. iron work, with no information either of the class of industry or of the individual occupation. The information regarding the latter was on the whole still less satisfactory than that concerning the class of industry but all the same hundreds of forms were handed in with more or less exact definitions of individual occupations, such as mechanic, iron turner, without any information concerning the employer. The specification might probably have been improved if all defective statements had been sent back for supplementary information. This was not done, however, and would hardly have been justifiable from a financial point of view, because we have other statistics for the greater part of this industry, giving more specifications in both directions than are possibly obtainable by a general census, however hard we work at it. It is chiefly out of regard to the manufacturing industries that a double classification is undertaken, but it is impossible at a general census to make a consistent classification of all industrial workers according to branch of industry, and at the same time furnish complete information regarding individual occupations. For this we must ask for information from the various works.

Let the general census yield as much as is possible in other directions, where the information obtained is sufficient. It is not suited to give minute specifications with regard to the wage-earning population divided both according to industries and to individual occupations. That is the work of the statistics of trade and industry, and it cannot be too strongly recommended that a census of industries should be

undertaken at about the same time as the general census, as is done in America, and as has been recommended by the International Statistical Institute. In particular the information obtained by a general census, concerning the population working in industry proper and in agriculture would presumably gain much in value by a similar arrangement.

Judging from experience in Norway and from information found in foreign statistics and expositions, it is hardly to be expected that at the general censuses exact information concerning the occupations of the industrial workers will be obtainable. Perhaps we may reckon on success in the case of factory craftsmen and isolated classes of skilled workmen, chiefly those with a special training, but not with regard to the majority of ordinary factory hands.

As far as I know there exists but little material for elucidating the division of factory hands according to their individual work. An extensive investigation undertaken by "Verein für Socialpolitik" in Germany 1910 and subsequent years should be mentioned in this connection. Approximately after the same plan a detailed investigation of working conditions, the recruiting of labour etc. was undertaken for a number of industries. In most of these investigations workmen at the concerns examined were divided into occupational classes. An attempt was made to distinguish between

1. Skilled workmen (gelernte)
2. Half skilled workmen (angelernte)
3. Unskilled hands (ungelernte)

but these suborders overlap. Skilled workmen correspond to factory craftsmen and other skilled workers with a rather long period of apprenticeship. The second denomination is for those who have no definite period of apprenticeship, but who perform work for which a shorter or longer period of practice is required before they can do it satisfactorily. When the work is quite simple it is "unskilled".

In Appendix 3 we give a summary of the divisions of the workmen according to these investigations. What is of interest in connection with our theme is the fact that the three suborders vary in different industries. In the mechanical industry for instance there is a large percentage of craftsmen and similar skilled factory workers, whereas e. g. the shoe-making industry hardly employs skilled workmen at all. (See

Rudolf Meerwarth: Einleitung pp. 54—55.) The main features of these circumstances appear to be fairly alike within the same industries in the various countries. On p. 63 Meerwarth presumes that "skilled workmen" will have a pronounced professional feeling ("Berufsbewusstsein"), the halfskilled only to some extent, and the unskilled none at all. From the point of view of a general census this should be of importance in so far that it makes possible the separating of the skilled workmen in all industries where they play any considerable part. Per se offers by far the specification of these occupations greatest interest, at all events from an industrial point of view. It is not advisable to specify the great bulk of half skilled and unskilled labourers according to occupation at a general census. They should be classified according to the nature of their employing concern under the collective heading "workers".

From the norwegian census of factories in 1909 we have quite good information with regard to skilled work within manufacturing industry. See Appendix 4, where male and female workers are classified in orders of individual occupation. From these statements it is also evident that great differences exist between the classes of industry. Factory craftsmen constitute about 15 per cent of all male workmen, but in printers' shops and in ordinary wood work factories they constitute the main bulk of workers (Ordinary wood work factories in the table are found under the heading "Others"), and in ship building yards craftsmen constitute 20 per cent. The order "General production workers" constitutes more than half of the male workmen, day labourers, warehouse-men and yardhands only a little over one sixth. But within certain classes such as carbide factories, paper and wood pulp mills, saw mills and planning works there are nearly as many day labourers as production workmen. At large saw mills the day labourers are even in the majority, and from such unskilled labourers the only information to be expected is: "labourer at N. N. works". They fall into two suborders, being either assistant labourers at the production proper (strikers, bumpers etc.), presumably to some extent classified under "general production labourer", or they are out of door workers of various kinds, such as plank carriers, dock labourers etc. The other groups of workmen; engine men, electricians, sto-

kers, repairers, watchmen, packing workers, drivers, chauffeurs etc. play a numerically small part in proportion to the three groups mentioned, and they occur with highly varying figures in the individual groups. Among women, the great majority are classified as "general production workers". In some groups there are an especially large number of day workers (e. g. in match factories), and in a number of groups there is no question of any other class than packers, charwomen etc., because the women here do not take any part at all in the production properly speaking. Apart from the textile industry and a few other "female" industries a specification of female factory hands according to individual occupation will presumably be out of the question.

The decisive factor from the point of view of a general census, as need hardly be stated, is: how exact is the information obtained for the various classes of workmen. In order to obtain a glimpse of this beyond the impression received during the manipulation of the material, a special inquiry of individual occupations has been undertaken for 4.000 male factory workers according to the census of 1920. See Appendix 5. Factory craftsmen have been kept quite apart. The others have been classified into three groups according to the exactitude of the information given:

1. No designation.
2. Indications.
3. Full particulars.

By "indications" we mean statements such as woodpulp worker, match worker etc. There is in such designation an indication that they are production workers (i. e. they are assumed to take part in the manufacturing process and are probably not yard hands, stokers etc.), but such information cannot be used for a classification according to individual work. A little less than half of the four thousand workmen had given full particulars. As will be clear from the above, not much is demanded to make "full particulars", just a little more than "indications". The percentage of full particulars is conspicuously low in the shoemaking industry, as was to be expected. In the industry of mechanical works and the textile industry full particulars were obtained for very nearly 60 per cent of the total number of men, but these figures should not, of course, be regarded as represen-

tative of the industries. The selection was too limited and too haphazard for such a conclusion, see inter alia the various figures for percentage of skilled work occupations within the various industries. With regard to division according to the fullness of the information given, there is a fair concordance between the various townships included in the investigation. A more complete investigation might possibly yield somewhat higher figures, and possibly also a somewhat lower percentage of full particulars, at any rate more than 50 per cent should not be counted upon, it being always safer to reckon with too low figures than with too high ones. Probability and experience would suggest that besides the factory craftsmen, special workers such as electricians, repairers, stokers and motor drivers would be the ones to possess professional pride and therefore to put down their special occupations on the census forms. Uncertainty in grouping the occupations would therefore mostly occur in cases of general production workers, and also of all unskilled workers, yard hands and warehouse men etc. Now it is just the production workers whom we desire to classify according to their occupation, but I believe that for practical reasons we shall be able to differentiate relatively few groups besides factory craftsmen and a few special occupations which have been fixed in the general mind and which are therefore most often employed as "titles" such as iron founders, weavers.

We have also collected material regarding all kinds of workers within the chief industries in Norway, through the industrial associations in question, with a minute division according to occupation. To some extent the classification clashes with the one employed at the census (thus factory craftsmen are often classed with other skilled workers). It will be evident to anyone who has ever done any practical census work, that a specification of occupations in the direction adopted by the concerns themselves, and which is of interest to them, is impossible to obtain by means of a general census. Thus a special classification of occupations at the census, independent of the classification of industries, for the benefit of the industrial concerns will probably always prove a failure.

As has been mentioned already, it is not possible at a general census to produce a highly detailed and also satisfactory

division into branches of industry (I here speak of manufacturing industry only, as being the class which causes the greatest difficulty at the classification). First it must be assumed that information will not be obtained with regard to place of employment in the case of a number of general occupations and for various kinds of casual labourers, partly because of defective filling up of the form — which might be remedied by means of an expensive revision — and partly because full particulars cannot be obtained at all. It should also be mentioned that the classification according to industries at a general census is highly influenced by the period of census taking and that therefore it does not give a correct expression of the relative importance of the various industries. In some industrial groupes the figures are too high, in others they nearly disappear, because the period of work is at another season.

The chief source of mistakes for a classification according to industries at a general census, however, is the combined undertakings. There is an impression that in the great industrial countries a combination of several industrial concerns under the same firm plays a great and increasing part. In Germany this side of the classification problem has been treated very intensively, viz., how to handle the combined concerns at a census of industries and occupations. In the book by Meerwarth mentioned above, the combined concerns are pointed out as the chief stumbling block to a satisfactory classification. He mentions a tendency towards vertical and horizontal combination of industries. By vertical combination he means that one concern includes others or establishes new ones embracing production of the same character, but at an earlier or later stage of the process of production, that is to say, for instance, a combination of mining and smelting works with rolling mills and machinery factory. By horizontal combination he means a firm which produces one kind of articles originally, and then extends its activities to include other articles of a similar but not identical character, at the same stage of production. As an example Meerwarth mentions: A factory for tool making machines combined with others producing agricultural machinery, typewriters etc. Simultaneously with this tendency towards combination and centralization there is the well known ten-

dency towards specialization, when one single undertaking concentrates its activities on one special kind of machines, of parts of machines, of one special kind of paper etc. This also adds to the difficulties of establishing a correct and satisfactory classification, at least at a general census.

As will be discussed later, there is no other way of procedure at a general census, when classifying the personnel of combined industrial concerns, than to distribute them among the various industries in so far as this is feasible. When one and the same firm within the same locality carries on several industrial activities, there is nothing else to do but to classify according to occupation and distribute the personnel among as many industries as there are different concerns combined. This is generally acknowledged and carried into practice in most countries, thus also at the classification according to *industries* at the latest english census. (It needs hardly be pointed out that the method is always adopted for the special tables of *occupations*, in England, Switzerland and elsewhere.) Assuming that the information obtained is satisfactory, a large part of the personnel at the combined concerns may be distributed among groups of industries in this way, but there will necessarily remain a few for whom such distribution cannot be used. This is the case especially with the directing administrative personnel, the office employees and the subordinate general personnel, such as casual labourers, messengers, doorkeepers etc. No method of census however satisfactory can wholly abolish this source of error, which in most countries will probably increase rather than diminish.

The common principle with regard to this general personnel is to classify them according to the chief activity carried on by the employing firm. There is scarcely any better way of procedure, for it is impossible to any great extent to operate at a general census with combined classes of industries, and a distribution of the general personnel according to the various branches of industry is possible only on a basis of information obtained direct from the firms in question. Only for the combination of industries occurring most commonly it has proved to be useful to employ combined classes of industry (e. g. woolspinning and weaving mills). This is also done to a great extent in all countries.

An attempt has been made to form an estimate of how many of the Norwegian employees and workers are employed in combined undertakings, but we have too little material for a satisfactory survey. The information combined in Appendix 6 is based on a list of names of the larger combined concerns, that was transcribed from the "Trade Calendar" during the preparatory work for the latest census. For each of these firms according to special information obtained, the chief activity or industry was underlined, as a future aid to classifying the employees and workmen who do not state to which part of the whole concern they are attached. Exactly the same method was adopted in England. As will be seen, 809 such combined concerns were singled out. A number of rather small undertakings have not been included, e. g. saw mills and grain mills, country shops and fish oil cookeries etc., the criterion was the statements of incomes in the calendar. Our list, therefore, cannot in any way be said to be complete, and can only give a certain impression that these combined concerns form a very great hindrance to a correct classification according to industry, and that they play their greatest part in certain branches of industry such as the saw mill industry and the paper industry. (See last part of the Appendix).

The more detailed the classification, the greater importance this source of error assumes, and all the more trouble is created thereby. A double set of tables with classification according to industry and according to occupation constitutes a temptation towards a highly detailed specification in both directions, and such is just the purpose of this system. But if great detail is aimed at, it is unavoidable in most countries that the information obtained will not be sufficiently exact in either direction.

More especially, a detailed classification of industries should be avoided, because then each class will often include but very few works. The error here may grow to be considerable, especially so when a relatively important number of these works are carried on in combination with others, and experts who have quite another kind of intimate knowledge of their own branch of industry than the census employees, will soon detect the error. Such mistakes easily undermine all trust in the census statistics of industries and occupations.

For all the reasons given above, I believe that I am justified in maintaining that the new principle of double classification should be rejected. The way out by means of two independent classifications appears at first alluring and simple, and it offers undoubtable advantages. It gives more than a single table compiled according to either of the two principles. At the same time the system is relatively easy to start and practice, and the tables are clear and formally very readable (no combinations). But the method is too plain and at the same time too expensive.

From the discussion in the above it will also be evident that one single system of classification is not satisfactory either. The American census tables with classification according to individual occupation and no specification of branches of industry, it needs hardly be stated, are quite unsatisfactory as statistics of industries. In most countries the information concerning wage-earning has not only to serve purposes of demography and social questions, but also those of economy and statistics of industries. A pure classification according to individual occupation is thus quite unsatisfactory.

A classification purely according to industries is no whit better. The information obtained from such a classification is not useful as a basis for tables of mortality etc., when there is no specification in the case of the more important groups of general occupations, such as clerks, engineers, engine men, drivers, chauffeurs etc. Nor is it in any way satisfactory that the total number of smiths, joiners, etc. is not obtained, as the factory craftsmen completely disappear amongst the factory hands. Even worse is the fact that not even the statements concerning the great remainder of the wage-earners: the "special" workers and employees in factories etc. are much worth for demographic and social purposes, when all kinds of wage-earners from the same concern are mixed together. Within each class of industry we shall get conglomerate groups embracing a variety of occupations, as in the Italian statistics, and such information does not suffice.

IV. PROPOSAL.

Criticism is rather easy, whilst the task of creating something better is always difficult. Most expert statisticians will, I presume, agree with me that neither a double classification nor an one-sided classification according to occupa-

tions or to industries only, can be the system of the future. There is then nothing else left but to try to find the mixed system of classification which will best satisfy the demands from each side. This point of view is in fact really the point at issue of the classification as practiced in most countries, and it was the only one until about thirty years ago. The earlier classification in the various countries, however, was based on the assumption that a classification according to the occupation of the employer, and according to individual occupation, would be the same in most cases of wage-earners to a far greater extent than is the case at present. The rapid development of modern industry on a large scale, however, took away the basis for such assumption, and in an increasing number of countries it was found desirable to introduce on the census forms a separate question concerning the occupation of the employer. This new information was often followed by radical modernizing changes in the classification system (e. g. in England and Switzerland). If when preparing for the census it had fully been borne in mind that only a minority of the wage-earning population may be classified in two different ways on the basis of the material obtained, hardly any country would presumably have undertaken a complete double classification. As neither the numerous and sometimes contradictory resolutions of the Institut International de Statistique, nor the resolution passed at the Conference of Labour Statistics at Geneva last autumn have solved the problem for us, we will attempt the exacting task of giving another contribution from a Norwegian and as far as possible at the same time a general point of view, towards the solution of the problem of classification.

We maintain as a fundamental principle the desirability of one table of occupations within the framework of classification according to industries. For most occupations the classification according to industry is the chief thing, as these can only be characterized by the nature of the undertaking (or institution) to which they are attached. But within each class of industry there should be a specification as detailed as possible, of the individual occupations. With that the great majority of wage-earners would be classified, including all who practically occur in one branch of industry only, e. g. farmers, agriculture labourers, fishermen, ordinary factory

hands, shop assistants, sailors, professionals etc. etc. These are in principle classified alike in all the classification systems of the world. It is also rather easy to classify in a satisfactory way those general occupations which are so important that we may classify them separately within each industrial group. It is proposed to classify clerks and engineers this way. The total number of office employees and engineers would then be obtainable by simply adding up the numbers given in each class of industry.

A full specification of all the more important occupations within each single branch of industry, as was attempted in the Netherlands in 1899 and in 1909, and was planned at the latest census in England and Wales¹, however, is practically unfeasible, especially so in the case of factory craftsmen and similar skilled workers in industrial concerns. It is therefore proposed to class these skilled workers collectively under one heading in each industry. It needs not be pointed out that such a system would allow specification of the various groups of skilled workers within the most important branches of industry if circumstances allow. Only the *minimum demand for a satisfactory classification must be that the clerks, engineers, electricians, joiners etc. in the classes of industries in the main table are not intermingled with the ordinary workers so that they may be out-differentiated and stated apart in an additional table.* This latter would be compiled partly by direct addition of the suborders in the main table, (e. g. engineers and clerks), partly by a further specification of suborders, the specification of which in each branch of industry would have been too lengthy (e. g. factory craftsmen). A schematic summary of such a main table with a supplement for the general occupations has been given in Appendix 7. The main principle is the same as the one followed at the latest German census of occupations 1907 with the difference that the factory craftsmen are there treated as "special" occupations and not stated apart (see above chapter II), here they are treated as "general" occupations. On the other hand there are other workers, such as gardeners, who are here proposed to be classified always in their respective occupational classes (e. g. gardening), whilst in the German census of occupations these were considered ge-

¹ In the projected main table with classification by industries — see above chapter II.

neral occupations, and were first classified according to the industrial group of their employers and then in the additional table according to their own occupation. The advantage of an arrangement in principle like the one proposed should be obvious. There is a minimum of the laborious and very expensive double classification, and yet this main table with its appendix concerning the general occupations gives you what may be demanded from a general census as to classification of the wage-earners by industries and occupations. The main table alone gives the classification by industries as much specialised as the material allows, and as can be afforded. Most classes in this main table, the classes of "special" occupations, are at the same time classes of occupations, and accordingly the figures with regard to these classes are directly made use of for a classification according to age, or for any other classification with a demographical or social purpose. For the general occupations only, which should be consistently published apart within each industrial class in the main table, the figures of the additional table would be used. By such proceedings an easily noted connection between the different tables would be established. The table of individual occupations with specification by age groups may easily be made more summary than the main table, but the two classifications do not overlap in an irritating way, and this advantage cannot be valued too highly. It cannot be emphasized strongly enough that the general occupations, which are specified in the additional table, must be kept distinct from the others (viz. the special occupations) in the main table. This arrangement will so far facilitate the compilation of the tables and also their analysis and further use, that it will more than counteract possible economy in printing, obtained by making several classes into one in the main table. Per se it is evidently of minor interest to specify for smaller classes of industry: foremen and craftsmen labourers, as is proposed in the appendix, and the two orders might well be made one. The main point is that the order of "other workers" is pure. Assuming that foremen in industrial works are considered an order of occupation apart and also all craftsmen (according to handicraft), it will be solely the "other workers" who at a classification according to age etc. must be tabulated according to their branch of industry. For various reasons it is then desirable

to find "pure" statements with regard to the same "other workers" under each branch of industry in the main table.

The most important point in a mixed system is the treatment of the general occupations i. e. those which occur in several groups of industries of a quite different nature. (As has been stated already it is readily feasible to specify, within the framework of a classification according to industries in the main table, occupations which occur in a few mutually related groups of industries e. g. weavers in the cotton and the woollen industry etc. It would be confusing and misleading to treat such occupations as general occupations in the ordinary sense of the word, and to specify them in the additional table without connection with their respective industries). As it is here proposed to classify all general occupations in two ways contrary to all other occupations, the utility of the proposal will depend on a not too large number of general occupations. With a very large number the system will necessarily be labourious and expensive, the tables extensive and unpractical.

The question of general occupations, however, is most closely connected with a still more important problem, viz. the correct and exact definition of the term "working concern" from the point of view of the statistics of occupations. In undertakings where all workers carry on one and the same industry, the question is plain enough, and such cases are still the most common. But as have been mentioned in the above, in our own time combined works play a large and as it would appear, increasingly important part. From a purely theoretical point of view I need hardly state that it is not impossible to treat even a combined concern as a unit in the census, and to arrange all persons attached to the same firm in one and the same branch of industry. But it is obvious that it is out of question to arrange special combined groups for all possible combinations. This can only be done in cases of commonly occurring combinations of related industries or trades. In those cases it may be both practically advantageous and theoretically justifiable to form one combined group of the various industries. In all other cases there is no alternative, if the firm is adhered to as the unit of classification, than the method adopted among other places in France, viz. a classification according to the main branch of industry carried on

by a combined working concern, ignoring secondary industries altogether, as if all the employees and the workmen employed by the firm carried on one and the same main industry. It is conceivable why this alternative was chosen in France where such great importance is attached to obtaining the total number of employees and workmen employed by each concern. For this purpose the "communes" will even exchange original census forms in cases where a firm employs workers from neighbouring communes. In this way statistics are obtained with regard to the various firms (the financial units), classified according to their main industry, but no statistics of industries. An example will best show how the system works. Let us imagine a fairly important norwegian tradesman at some centre of fisheries and communications. His main trade is shop keeping. To his shop there belongs some sort of farm, and he also caters for and puts up travellers. He carries on fishing on his own account with two or three boats, he also dries the fish and exports it. He owns a motor-boat or two, which in summer carry passengers along established routes, and finally he has one or two minor industrial branches, say a fish-guano factory and a corn-mill. For all these various branches of work he employs paid assistants, and all these people in classification "according to the main industry or trade of the whole undertaking" would be classified under storekeeping. It will be easily seen that such a method of classification has its *raison d'être* only for a census of the various firms with their total numbers of employees. If every wage-earning person is classified according to the chief occupation of the employer, irrespective of whether the wage-earner himself is occupied in agriculture, shipping or manufacture etc., then the information obtained is of little value for a classification of industries, and we gain no reliable facts for any branch of industry.

I have already mentioned that in Norway we cannot, after our experience, succeed in collecting information concerning all persons employed by one firm by means of a general census of the population. Even if we did succeed it would be too expensive considering the results. The basis of such a statement of the total number of persons employed by the firms, would of a necessity be the names of the firms, but by this means no real knowledge could possibly be garnered

with regard to the question how all wage-earners are distributed among the various groups of employers. More especially, the large share companies are often the owners of a number of concerns under various firm names, to say nothing of other companies controlled but not owned completely. The highly intricate task of distributing wage-earners according to employers among state, municipalities, larger or lesser share companies etc. can scarcely be solved by a general census of the population. Such a census should first and foremost give a classification according to branches of wage-earning, irrespective of the owners of the working concerns. If at the same time it is possible to differentiate for example those publicly employed, this consideration should in any case be secondary, the classification according to industries being the primary object. Thus in the instance given above: the farm hands should be classified under agriculture, the fishermen under fisheries, the factory workers under manufacture, and the crew of the motor-boats under seafaring, in spite of the fact that all these activities were carried on by one tradesman.

It appears to be generally acknowledged that at a general census of occupations the classification, in principle, must be one according to branches of work, so that the personnel of a combined concern must be distributed among purely fictive "technical units" according to the industry which they carry on. At the conference of labour statistics at Geneva last year an unanimous statement was passed in this respect, that is to say with agreement also from the representatives of France and Hungary (with a system of classification of firms similar to the french). The statement is found in clause 5 of the resolution: "In classifying manufacturing industries the establishment considered as a technical unit should be taken as a basis."

The classification of the personnel of one and the same firm according to "technical units" to a great extent must be based upon the information concerning the individual occupations. This fact is *inter alia* acknowledged in the working instruction for the English table of classification according to industries at the latest census (see clause 10): "Persons employed in factories or works which carry on more than one industry, none of which can be considered as subsidiary to the others, are to

be coded industrially to the section to which their occupation would belong."

"Subsidiary industries" would presumably mean in the first instance repairing workshops etc., and it would presumably in all countries be considered natural to classify in principle repair workers and tool makers at a factory with the employing works. The aspect differs somewhat in the case of very large workshops in separate buildings e. g. railway workshops. Their workers would be best classified under "Engineering", not under "Transport" etc. In Norway at least such classification was found most expedient at the latest census, and there was no great difficulty in making exceptions from the rule in the cases of a small number of larger, subsidiary repair workshops. A frequently occurring subsidiary industry is the manufacturing of packing of all kinds: tins, barrels, wooden cases, cardboard boxes etc. From an industrial point of view it would seem the most correct procedure to group together all persons occupied in the making of packings, tins, etc., irrespective of the fact that some factories at least in name are independent, selling their produce to sweet factories etc., whilst others are directly owned by the factory which uses the packing material. In this case it will prove impossible to distinguish between small and large workshops for packing articles, they are found in all sizes, subsidiary and independent. If it be decided that the making of cardboard boxes etc. shall be reckoned as a special industry, the makers of such boxes at other factories must consistently be classified under "the industry of paper and cardboard articles", even when the factory in question employs only one box maker. The same point of view must be kept with regard to all other combinations of various industries. When several industries are carried on in mutual combination, the personnel as far as possible should be distributed among the branches of industry according to their respective occupations, no matter whether each branch of industry constitutes a concern in the general meaning of the term, or whether one person only carries on that industry and accordingly constitutes a separate technical unit. If for instance a distinction is desired between trade and craft, the workmen at a somewhat large goldsmith's workshop may not be classified with the shop girls at the jewelry shop which is connected

with the workshop. But the same principle must be maintained in the case of a goldsmith with one worker and one girl in the shop. The journeyman must be classified under handicraft, the girl under trade.

It is the industries we desire to elucidate, irrespective of who carries them on. Each person whose occupation falls within a branch of industry different from his employer's, e. g. the forester employed by a sawmill owner, is classified even in the industrial table according to his personal work (under forestry) and not according to his employer's (saw mill industry).

It is thus evident that "special" occupations in principle can only appear in one branch of industry, the forester always under forestry, the sailor under shipping, irrespective of who owns the forest or the vessels. There remain then as general occupations only the assistant employees, trained or untrained, mentioned at the end of Section I: office employees, engineers, engine-men, warehouse-men, messengers etc., those who from the very nature of their work do not belong to any special industry, and these occupations demand a more detailed discussion.

First come the occupations of trained experts: managers working for employers, office employees, engineers and machinists.¹ There exist no industries of "office work" etc. corresponding to these occupations.

In the statistics of industries the office employees etc. needs must be distributed among the trades and industries where they are employed. In some of these, such as insurance work, they constitute so to speak the whole personnel.

But for demographical and social purposes the total sum of these office employees etc. is also required, irrespective of their place of employment. This end is gained in the system of classification here proposed, where e. g. the office employees are given separately under each class of industry and their total sum in the appendix.

A further specification e. g. of office employees, is inadvisable if the financial conditions of the census are not unusually favourable. Previous to the latest census in Norway

¹ Not engineers at sea. These must be considered special occupations that can never be properly characterized except in connection with the class of navigation.

the Bureau received a request from "Underordnede Handelsstands Forbund" (Association of Subordinate Office and Trade employees) to undertake a specification of clerks etc. according to occupation. At the final arrangement of the forms this desire was taken into account, and we had expert assistance in fixing the following main groups of positions;

1. Chiefs of offices, departments etc.
2. Head clerks, bookkeepers, cashiers etc.
3. Common clerks, stenographers etc.
4. Apprentices.

The attempt however was rather unsuccessful, and I will not recommend a repetition. The classification to a great extent had to be made according to estimate (on the basis of information regarding sex and age). I would propose therefore that the specification of office employees should be limited to sex and age, even though it need hardly be stated that such a specification is not fully satisfactory. It is besides of the greatest practical importance to limit the number of orders in general occupations to the strictly necessary, because each additional order of these general occupations which occur in practically all branches of work, creates a considerable addition in the census labour.

Approximately for the same reasons, it is proposed to collect the trained technical employees in each branch of industry into one order (see Appendix 7, main table and supplement No. II).

The other class of general occupations comprises the non-trained workers, whose work is approximately the same in all working concerns. In this class there are warehouse-men, messengers, carriers, clearing workers, ordinary day labourers, doorkeepers, watchmen, etc. For practical reasons it is proposed not to specify these according to individual occupations, but to include them with the skilled workers under each class of industry. Judging from our experiences it would hardly be feasible to obtain, by a general census, detailed information with regard to these occupations with no training. In most industries they play a subordinate part in proportion to productive workers proper, who at any rate should be classified according to the working concern, and they can hardly be separated from them in a satisfactory manner. (See previous chapter, section concerning occupations of factory workers.)

Nor do I believe that the unskilled assistants at the engines, such as coal heavers, stokers, oilers, crane men etc. may be successfully described in the forms, and it is therefore proposed to classify these too with the production workers within each industry.

The distinction between skilled workers and assistant workers which was attempted at the last German census of occupations, and which is practiced in U. S. A. (where the forms are filled up by census takers), I believe impossible to maintain by a general census. The attempt at the last German census of occupations has been characterized by several authors as unsuccessful. (See for instance Meerwarth: Einleitung p. 84.)

The principle of classification according to industry (as a technical unit) as opposed to that according to the firm should also be adhered to in the case of chauffeurs and drivers employed by all kinds of concerns. They should be classified under transport, preferably with a specification of the main orders of employers: factories, shops etc. But, at least considering the conditions in Norway, it would be correct to make exceptions for drivers at farms and in forestry, whose work takes the character of these industries. They should therefore be classified among other farm hands and forest workers respectively. Most drivers carry out work which in principle is the same as that of a carter or a cabdriver, even if they are employed direct by factories or shops etc. If we wish to elucidate the importance of the transport in its relation to manufacture and trade, it cannot be correct to classify the transport section of a large industrial concern as industrial labour, whilst carters who drive for various factories are classed under transport. All drivers and chauffeurs therefore should be considered as "special occupations", either in the class of ordinary transport overland, or in forestry etc. The same point of view may be argued in the case of the large group of washer-women and charwomen. They should all be classified under the branch of work of "Washing and charing", both those who work for several employers and those working for a single great firm or institution.

According to the above, general occupations would be reduced to the trained employees included in the four groups mentioned before, viz.:

1. Managers working for employers
2. Office employees
3. Trained technical employees (constructors, chemists etc.)
4. Machinists in factories etc. (viz. trained technical employees of second order).

If all difficulties were removed by specifying these four occupations under each branch of industry with totals of them in an additional table, there would scarcely remain any dissens in principle with regard to the problem of classification.

One very important problem, however, remains to be discussed. That is the classification of factory craftsmen. There are two kinds of them: *the assistant craftsmen* employed in repairing machinery, buildings etc. and the *production craftsmen* who take part in the production proper and who are increasingly difficult to distinguish from the other skilled factory workers with no craft training. As mentioned above in chapter II the last German census of occupations tried consistently to distinguish between the two orders of factory craftsmen. The assistant craftsmen were classed, according to their occupation, with the journeymen working for master craftsmen. The production craftsmen on the other hand were classed with other skilled workers at the same factory. See Stat. des D. R., Volume 211, p. 10, where the classification of craftsmen is explained as follows:

"The classification according to occupations does not in principle place the craftsmen with their employing concern, but with their branch of work. Smiths, model joiners, tool makers, coopers, glaziers, painters etc. are arranged under the headings joining, toll-making etc. irrespective of their place of employment, whether that be a brewery, a glasswork or any other establishment. Only when craftsmen of this class no longer work as such, but are employed as part workers in a related branch of industry, e. g. as machine-smiths in a machinery factory, as bicycle smiths in a bicycle factory, as carriage builders in a carriage factory, then the industry of the employing factory is the decisive factor. That is to say, that in the latter case occupation and industry are identical, but not in the former case, because in the former case the craftsmen is employed as such in all the kind of work included in his craft, e. g. the bricklayer in a large machine building

factory or the decorator at some cable works employing hundreds of employees and thousands of hands".

The reasoning is sound enough, only the distinction between production craftsmen and assistant craftsmen cannot be maintained and has been declared to be unsuccessful by several critics. Neither is the system satisfactory even if it might be carried out. We ought to know the total number of journeymen joiners, journeymen painters etc., even including those taking part in the production proper of factories. But from the point of view of industrial statistics, it is unreasonable to classify e. g. all journeymen joiners under the order of joining, because the latter would then have much too high figures, and the factory craftsmen play so great a part in several classes of industry (e. g. ship building and machine making) that we cannot avoid including them. In a previous section the fact has been pointed out that the conditions of work for a factory craftsman, frequently even his training and individual work, differ widely from that of an ordinary journeyman craftsman, so that even from the point of view of classifying according to occupation it is incorrect to class the two together. It sometimes occurs — presumably not so unfrequently — that the fully trained craftsman goes into a factory as an ordinary skilled worker, but continues to style himself a craftsman. This is said to be the case of not a few shoemakers employed in shoe factories, where the production does not allow of any practising of the handicraft of shoemaking in the ordinary sense of the term. It need scarcely be pointed out that to reckon them statistically among the journeymen shoemakers and not to include them among the other shoe factory hands who do exactly the same work, would be highly misleading.

I therefore see no other way out of our dilemma than to include all factory craftsmen under one heading of "craftsmen and the like" in each industrial class. (See Appendix 7, main table). Afterwards they must be specified according to individual occupation (see supplement 1) and finally added up together with craftsmen workers of the same craft (supplement 2). On the other hand it is not proposed, for practical reasons, to extend the double system of classification to the relatively few journeymen craftsmen who are employed in other than industrial concerns: shops, public institutions etc.

It is proposed to classify these in their order of occupation as ordinary journeymen craftsmen, preferably differentiated into one group apart from the ordinary journeymen working for master craftsmen.

A minimum of two groups of workers is then proposed within each class of manufacturing industry, viz.:

1. Craftsmen etc. and
2. Other workers,

and for practical reasons the class of craftsmen is made to include also the electricians and machinists. A class which is very closely allied to that of machinists, viz. repairers, ought also to be classified in this first group. There is, however, a certain difficulty in differentiating the repairers as a separate occupation, when they do not call themselves craftsmen (especially smiths), because they occur under many denominations of occupations, and are in several industries difficult to keep apart from ordinary skilled workmen.

Thus a double classification is proposed for the group of "craftsmen etc. at industrial concerns", but only for this one group which is clearly defined in the main table.

I have no doubt that the system here proposed has many defects, and that is not the least reason why I consider criticism and discussion to be of great value. But I believe myself justified in maintaining that the fundamental idea of the present work is right.

This fundamental idea is that an industrial classification only or a classification according to occupation only do not suffice, whilst at the same time a double classification of the whole wage-earning population is not recommendable.

Further

that one main table should be compiled where the branch of industry to which a person belongs, not his or her individual occupation, is the basis of the classification.

that in this main table a clear distinction should be maintained between "special" and "general" occupations,

that the former can only be classified according to occupation within their branch of industry,

that the latter should first be classified under each branch of industry in the main table, but that they afterwards should be specified according to individual occupation in a supplementary table.

I have no doubt that evolution will proceed in this direction sooner or later, and that such a main table with occupational classes in an industrial framework and with a supplementary table for general occupations, will be cheaper to compile than two separate sets of tables, and at the same time more valuable in every respect.

With the wide divergences at present prevailing, especially with regard to classification of the general occupations, international comparisons of the statements regarding wage-earning obtained by the censuses are rather doubtful. It might give a positive result if expert statisticians in the various countries would take up the very fundamental principles of classification for a discussion in their professional periodicals. After such a discussion I can imagine that a direct cooperation of an international and not too numerous committee might prove fruitful, both for the solution of difficult theoretical questions and for a mapping out of a way towards greater uniformity in the systems of classification of the various countries.

The problem of how to classify the adult population according to industries and occupations is not yet ripe for treatment at any large international conference.

RAGNVALD JÖNSBERG.

FROM THE XIII NORTHERN STATISTICAL CONFERENCE AT
OSLO¹.

Mr. *Jönsberg*, Norway, opened the discussion by summing up his foregoing report.

Mr. *Widell*, Director of the Swedish Statistical Office had pleasure stating that the classification of occupations in the Swedish census of 1920, so to speak section by section, had been carried out according to the principle of Mr. *Jönsberg's* proposal. Certain hindrances, however, bar the way towards the degree of elaboration desirable. In Sweden there is thus the demand for detailed information for each county. This fact makes a too detailed classification impossible. Thus it has not been possible to make a distinction between craftsmen workers and other workers in manufacturing industry and on some points other lines have been followed than those indicated in Mr. *Jönsberg's* proposal. Drivers and chauffeurs are thus

¹ Partakers: Denmark, Finland, Norway and Sweden.

included among other workers at the same concern, not classified under transport. The house cleaning staffs at hotels and hospitals etc. have been included among the rest of workers at these concerns, the others, except those belonging to the special group of wage-earning comprising laundry and ironing etc., have been classified under domestic work.

Mr. *Jensen*, Head of the Statistical Department of Denmark, pointed out that the problem taken up for investigation by Mr. Jönsberg was an exceedingly difficult one, probably the most difficult in all the statistics of population, — and also perhaps the most important. Again and again attempts had been made to find a rational solution of the problem of classifying the population according to their occupations, and again and again it had happened that just when the solution appeared to be in sight, practical hindrances had intervened and forced the seekers to resignation.

He understood that such was also Mr. Jönsberg's experience, and he begged to be allowed to say that the respect which the latter had awakened in him by the fearlessness, the energy and the thoroughness with which he had carried out his investigation, was in no wise lessened by the fact that Mr. Jönsberg finally had to resign himself to taking up a compromise which in reality only satisfies him to a certain extent.

The ideal, naturally, would be if every person possessing an occupation could be adjusted into the statistical frame in a manner, which allowed both the personal occupation and the character of the undertaking or the concern by which he was employed to be taken into consideration. The reason for the enforced abandonment with regard to the realisation of this ideal when working out the censuses, was not only the fact that the census — when not accompanied by a simultaneous industrial census — as a rule would be unable to yield the exact information necessary for a thorough double classification. But the resignation was also due to the fact that a double classification, when carried out to the very core, is such an enormous labour requiring both time and money, that something less must needs suffice.

Finally, he personally considered the fact of essential importance that a thorough double classification would be unreasonable, partly because it would be of no practical interest

worth mentioning, and partly because for certain groups of the population it would be more or less a fiction, an artificial construction with no corresponding reality in life.

In his memorandum, Mr. Jönsberg submits a proposal, of which the fundamental idea is that a thorough double classification according to industry and to occupation cannot be carried out in practice, and as a one-sided classification according to either principle is not satisfactory, a mixed procedure should be chosen. This fundamental idea is so elaborated by Mr. Jönsberg, that the principle of classification in the main table is the employing concern. Within each group of concerns there is then established a well defined distinction between persons with "special" occupations, and those having "general" occupations. The former are classified according to occupation within the group of concerns, the latter to some extent are only given by a collective figure. But besides the main table, Mr. Jönsberg demands a supplementary table, in which the persons in general occupations are classified according to their individual work, with no regard to the character of their employing concern.

Mr. Jensen found this solution attractive in principle — provided of course that the census material could be produced in a quality which allowed the proposal to be carried out in a satisfactory way.

Mr. Jönsberg would appear, however, to have chiefly borne in mind the group of manufacturing industry and handicraft. The possibility was not excluded, however, that the same procedure or one similar to it might be carried out in the case of agriculture and forestry, and also in the groups of trade and shipping. According to Danish experiences nothing would, formally, prevent such a course, but Mr. Jensen doubted whether the quality of the material would be sufficiently satisfactory to pay for the labour spent.

In this connection Mr. Jensen gave a brief statement of the principles on which was based the classification of occupations, at the Danish census of 1921. See above pp. 21—24.

Generally speaking, he could not say that there was any direct contrast between the *final conclusions* of Mr. Jönsberg's proposal and of the Danish system of 1921. The former proceeds farther than the Danish census has dared to go at one step. Both systems will give as a final result a complete

distribution according to individual occupations, and Mr. Jönsberg's proposal will give something more.

Mr. Jensen further stated that there is one difficult point which played a great part in the Danish classification, and which would become still more important if Mr. Jönsberg's proposal was carried out. He had in mind the distinction between industrial and trading concerns. As the increasing concentration contributes to an increasing infiltration of trade and industry, this problem grows more and more difficult. The way out possible at a census, viz. dividing a combined concern into several, — which is often possible, but not always — the speaker considered no rational solution of the problem, only a narrow escape, which would mean that the "concerns" operated with, were parts of concerns only. Often the existence of the problem would be forgotten, because it might disappear. In Mr. Jönsberg's memorandum this point was touched upon in connection with drivers and chauffeurs. Mr. Jensen maintained that the problem in reality is a very extensive one, and would point out as an example only the seamstresses at a great confection shop, which latter in its essential character was a trading concern.

Mr. *Kovero*, Director of the Finnish statistical central office, mentioned the general trend of the census statements in Finland. As the censuses there are not yet nominative, it is difficult to adhere to rational principles of classification. Principles like those found in Mr. Jönsberg's proposal have been adopted for the larger townships only. In Finland, also, drivers and chauffeurs are reckoned among the workers of their employing concerns and not among transport workers. The order of groups is not the same, but the statements are so arranged that the figures may be computed even according to Mr. Jönsberg's groups. It has been impossible, however, to distinguish technical engineers and employees from the managers and directors.

He stated that if the Finnish census was reformed and became nominative, it would certainly be planned according to Mr. Jönsberg's principles.

Mr. *Jahn*, director of the Norwegian statistical central office, stated that the classification of occupations at the Norwegian census was originally planned in far more detail than it was carried out. The detailed planning was due partly to a

desire to gain more experience with regard to the character of the material, partly to a desire to differentiate more occupations than previously, under each class of industry. The fact that the final tables were not so detailed as those planned, was due both to the circumstance that the material failed, and to a desire to finish the work within a reasonable period. An elucidation here of how the classification was arranged in detail would take him too far. Generally speaking, the classification had been determined by the principle of a classification according to occupations within the framework of a classification by industries. In the main principles he fully agreed with Mr. Jönsberg, but he thought Mr. Jönsberg too sceptical with regard to the capacity of the material to yield information regarding the various occupations. The representative investigation undertaken with the Norwegian material gave a hope that it would be possible to reach farther than at the census of 1920. How far depended on the extent to which the various kinds of labour were felt to be occupations. This again depended chiefly on the stage of development of the trades and industries. One thing however was now decided, viz.: a general census cannot yield a detailed division of the persons within each branch of industry according to their individual occupations. If this is desired there was no other way than to proceed to a census of the working concerns. No one but these could supply the information.

Through his work with the statements concerning wage-earning Mr. Jahn had come to the conclusion, that a separate classification in respect of occupation and age was not desirable. There should be a full connection between the tables with age groups and the other tables. Under the analysis of the information obtained with regard to individual occupation, the information concerning age was required at every point. The development could not be judged if the statements of age were not considered.

He admitted that the treatment of the combined concerns is not at all easy, and that here it is difficult to carry out a principle to its full conclusions. Mr. Jönsberg mentioned the transport trade (drivers) in combination with other undertakings. Here the Norwegian census has aimed in the first instance at distinguishing the occupations of drivers and

chauffeurs, and these occupations were found under transport, not in the various groups of concerns. But the principle was not strictly carried out. Thus timber drivers were classified under forestry, because this occupation is so closely related to lumbering and forms an integrating part of forestry proper.

This was an example of how an attempt had been made to adapt the principle to the actual conditions. The classification needed to be elastic and adaptable to facts, even though the principles laid down might be infringed to a certain degree.

He believed that by proceeding in a similar manner with other occupations, the majority at least of the difficulties met with when treating the combined concerns, might be overcome, at the same time fulfilling what reasonably may be expected from a general census.

Mr. *Jönsberg* pointed out that there might be several solutions, equally good, of a number of detail questions in respect of the grouping of wage-earners. What interested him most was to prevent the laying down as a fundamental principle the double classification of the whole adult population.

The various members quite agreed with this, and expressed a desire for Mr. *Jönsberg's* elucidation to be translated into one of the chief languages in order that it might be presented to a wider public.

APPENDICES

Appendix 1 a.

TABLE . . . INDUSTRIES OCCUPATIONS OF MALES AND OF FEMALES, DRUGS AND FINE CHEMICALS (INDUSTRY CODE No. 073) IN

Code Numbers.	Occupations.	England and Wales.		Corresponding statements for 6 areas.	
		Males.	Females.	Males.	Females.
	<i>Total</i>	12.309	11.414		
013	Gardeners	32	—		
022—4	Agricultural Labours	29	3		
Chemical Workers	140 Employers and Managers	807	73		
	141 Foremen and Overlookers	245	197		
	142 Distillers and Stillmen	36	5		
	143 Processmen and Furnacemen	232	16		
	148 Other Skilled Workers	1.029	537		
	149 Other Workers	1.288	1.989		
	150—9	Makers of Greases Oils, etc.	107	—	
190	Smiths	20	—		
200	Machine Tool Workers	24	2		
210	Erectors, Fitters	98	—		
212	Millwrights	14	—		
213	Erectors, Fitter's Labourers	35	—		
244	Mechanical Engineers, Engineers (not Engine Drivers)	83	—		
245	Mechanics (so returned)	10	1		
246	Mechanical Engineer's Engineers and Mechanics Labourers	27	—		
248	Motor Mechanics (so returned)	25	—		
251	Pipe Fitters	15	—		
252	Plumbers (not Chemical Plumbers)	12	—		
254	Stampers and Press Workers	1	19		
264	Tinsmiths, Sheet Metal Workers	12	3		
300—319	Electrical Fitters and Electricians	42	1		
419	Sewers, Stitchers, Sewing Machinists	3	29		
434	Sugar and Sweet Boilers	18	7		
435	Sugar Confectionery-Makers, Moulders and Coverers	33	106		
Makin foods	448 Other Skilled Workers	15	10		
	449 Other Workers	22	29		
	474 Carpenters	92	—		
	477 Coopers	31	—		
	479	Packing Case Makers	17	6	
522—3	Compositors	63	3		
529	Printing Machine Minders and Setters	49	12		
530	Printing Machine Assistants	21	39		
531	Printers (so returned)	61	31		
532	Bookbinders	7	18		

AGED 12 YEARS AND OVER, EMPLOYED IN THE MANUFACTURE OF ENGLAND AND WALES AND THE SIX INDUSTRIAL AREAS.

Code Numbers.	Occupation.	England and Wales.		Corresponding statements for 6 areas.	
		Males.	Females.	Males.	Females.
554	Carboard Box Makers	4	207		
560-589	Builders Bricklayers, etc.	55	1		
590-599	Painters and Decorators	26	2		
719	Carmen	97	—		
720	Motor Drivers	180	2		
723	Van Boys and Van Guards	68	4		
756	Telephone Operators	1	43		
757	Lift Attendants	22	6		
758	Messengers	208	78		
759	Porters	159	1		
770	Sales and Shop Managers	91	8		
771	Brokers, Agents, Factors	60	2		
772	Buyers	38	3		
773	Commercial Travellers	836	24		
775	Salesmen Shop Assistants	284	176		
779	Advertising Agents and Managers	34	2		
866	Analytical and Research Chemists	452	42		
869	Laboratory Attendants	220	104		
900	Domestic Servants	1	51		
921	Caretakers and Office Keepers	10	13		
922	Charwomen and Office Cleaners	3	122		
930	Company Secretaries and Registrars	78	8		
931	Heads of Managers of Office Departments	59	10		
932	Draughtsmen	6	21		
933	Costing and Estimating Clerks	51	18		
939	Other Clerks and Typists	1,317	2,378		
940	Warehousemen	515	80		
941	Storekeepers	80	25		
942	Warehouse- and Storekeepers Assistants	140	213		
944	China and Glass Packers	7	17		
949	Other Packers	827	2,951		
950	Stationary Engine and Crane Drivers	45	—		
951	Boiler Firemen and Stokers	178	—		
962	Timekeepers and Gatekeepers	25	2		
963	Watchmen	45	1		
970-1	General and Undefined Labourers	801	168		
	All other Occupations	631	495		

Appendix 1 b.

TABLE INDUSTRIES. THE NUMBER OF AND THE PRINCIPAL OCCUPATIONS OF PERSONS AGED 12 YEARS AND OVER, ENGAGED IN THE MANUFACTURE OF DRUGS AND FINE CHEMICALS, DISTINGUISHING SEX AND 12 AGE GROUPS.

England and Wales.

Code Numbe s.	Occupation.	Total over 12.	Age groups 12, 13, 14, 15 etc., 20-24, 25-34 etc. 55-59, 60-64, 65-69, 70 and over.
<i>Males.</i>			
		Total	12.309
140	Employers and Managers	807	
141	Foremen and Overlookers	245	
143	Processmen and Furnacemen	232	
148	Other Skilled Workers	1.029	
149	Other Workers	1.288	
720	Motor Drivers	180	
723	Van Boys and Van Guards	68	
758	Messengers	208	
759	Porters	159	
773	Commercial Travellers	836	
775	Salesmen and Shop Assistants	284	
866	Analytical and Research Chemists	452	
869	Laboratory Attendants	220	
939	»Other» Clerks and Typists	1.317	
940	Warehousemen	515	
942	Warehouse- and Storekeepers Assistants	140	
949	»Other» Packers, Wrappers, Labellers	827	
951	Boilers, Firemen and Stokers	178	
970-1	General and undefined Labourers	801	
<i>Females.</i>			
		Total	11.414
141	Forewomen and Overlookers	197	
148	Other Skilled Workers	537	
149	Other Workers	1.989	
435	Sugar Confectionery-Makers, Moulders and Coverers	106	
554	Cardboard Box Makers	207	
775	Salewomen, Shop Assistants	176	
869	Laboraty Attendants	104	
922	Charwomen and Office Cleaners	122	
939	»Other» Clerks and Typists	2.378	
942	Warehouse- and Storekeepers Assistants	213	
949	»Other» Packers, Wrappers, Labellers	3.951	
970-1	General and Undefined Labourers	168	

Appendix 2.

I. STATEMENT OF PERSONS WITH GENERAL OCCUPATIONS FROM THE CENSUS NORWAY 1920. IN SOME CASES THESE DO NOT BELONG TO ANY DEFINITE TRADE, IN OTHERS THEY ARE OFTEN EMPLOYED OUTSIDE THEIR OWN TRADE. THE RELATIVE IMPORTANCE OF THESE PERSONS WITH RELATION TO THE ENTIRE WAGE-EARNING POPULATION.

Groups of Occupations	Total N:o of persons	Of whom are employed outside their own trade ¹	Perc.ge employed outside their own trade ¹
I. <i>Entirely general occupations:</i>			
Office employees (including also managers etc.)	53.373	53.373	100
Engineers, etc.	3.970	3.970	100
Machinists and stokers at factories etc.	2.875	2.875	100
Total of entirely general occupations	60.218	60.218	100
II. <i>Occasionally employed outside own trade:</i>			
Craftsmen workers, total	55.964	11.785	21.1
<i>Of which:</i>			
Smiths	4.935	3.226	65.4
Carpenters	7.128	3.262	47.2
Joiners	13.018	3.862	29.7
Painters	3.979	860	21.6
Plumbers	1.916	475	24.8
Electricians	7.242	1.952	27.0
Chauffeurs & drivers	12.222	28.560	70.0
Sum group II.	75.428	22.297	30.0
Sum group I & II	³ 135.646	82.515	60.8
Other wage-earning persons	1.065.212	0	0
Total of wage-earning persons ⁴	1.200.858	82.515	6.9

¹ Including all who do not belong to any group of trade or industry (See Gr. 1).

² Distribution of the 841 persons who did not state where they worked has been made proportionately.

³ 11.3 % of all wage-earning persons.

⁴ Persons above the age of 15 years with independent occupations and also children living at home and other relatives over 15 years of age who take part in the parents' occupation, and in the case of women also those who are domestic helps for parents and relatives. If the latter are not included we obtain 1,070,359 wage-earning persons, whereof the group of industry and the group of occupation do not coincide in 7,7 % of the cases.

II. STATEMENT FOR THE MOST IMPORTANT GROUPS OF TRADE AND INDUSTRY, OF THE NUMBER OF PERSONS FOR WHOM THE GROUPING OF CONCERNS AND OCCUPATIONS COINCIDE AND OF THE NUMBER OF PERSONS IN GENERAL OCCUPATIONS.

Groups of industry.	Total number of wage earning persons.	Group of industry & of occupation coincides for:		Group of industry & occupations not coinciding for:	
		No.	% of all wage-earners.	No.	% of all wage-earners.
Agriculture and cattle rearing	298.649	298.649	100	0	0
Gardening and park work, forestry and timbre floating	37.407	37.380	100	27	0
Fishing, sealing & whaling	57.719	57.621	100	98	0
Industry, building and construction	309.524	273.368	88	36.156	12
Commerce	86.781	68.005	78	18.776	22
Banks, insurance, brokerage etc.	14.998	4.175	28	10.823	72
Hotels and restaurants etc.	17.321	16.768	97	553	3
Shipping	33.502	31.850	95	1.652	5
Railways, post, telegraph	32.016	29.685	93	2.331	7
Ordinary transport by land	26.246	24.929	95	1.315	5
Immaterial activities	54.222	44.176	81	10.046	19
Household work	227.561	227.561	100	—	0
Occupation insufficiently stated	4.914	4.176	85	738	15
Total	1.200.858	1.118.343	93	82.515	7

III. STATEMENT OF THE VARIOUS GENERAL OCCUPATIONS THAT OCCUR IN EACH GROUP OF TRADE AND INDUSTRY.

	Office functionaries & managers etc.	Engineers	Chauffeurs & drivers employed outside the transport trade.	Craftsmen workers in factories etc.	Total number of persons for whom group of industry and occupation does not coincide.
Agriculture & cattle rearing	—	—	—	—	—
Gardening & forestry	27	—	—	—	27
Fishing & sealing	98	—	—	—	98
Industry, building and construction	13.590	2.792	3.162	16.612	36.156
Commerce	14.279	266	4.231	—	18.776
Banking, insurance etc.	10.656	167	—	—	10.823
Hotels & restaurants etc.	553	—	—	—	553
Shipping	1.652	—	—	—	1.652
Railways, post, telegraph etc.	2.019	312	—	—	2.331
Ordinary transport by land	1.315	—	—	—	1.315
Immaterial activities	8.626	253	1.167	—	10.046
Household work	—	—	—	—	—
Occupation insufficiently stated	558	180	—	—	738
Total	53.373	3.970	8.560	16.612	82.515

¹ Of which: Factory artisans 11785, electricians employed outside their trade 1952, machinists and stokers 2875.

Appendix 3.

NUMBER OF WORKERS IN DIFFERENT INDUSTRIES BY OCCUPATIONS. FROM "SCHRIFTEN DES VEREINS FÜR SOZIALPOLITIK 1910-12: UNTERSUCHUNGEN ÜBER AUSLESE UND ANPASSUNG (BERUFSWAHL UND BERUFSSCHICKSAL) DER ARBEITER IN DEN VERSCHIEDENEN ZWEIGEN DER GROSSINDUSTRIE".

I. Dr. Marie Bernays: Gladbacher Spinnerei und Weberei A. G., München-Gladbach im Rheinland.

Gruppen.	Gesamtzahl 1908. ¹	Prozent.	Gruppen.	Gesamtzahl 1908. ¹	Prozent.	
<i>a. Arbeiter.</i>			<i>b. Arbeiterinnen.</i>			
1. Werkmeister	20	3.6	1.	—	—	
2. Handwerker	48	8.6	2.	—	—	
3. Gelernte Akkord- arbeiter:			3. Gelernte Akkordarb.:			
a. Weber	115	38.3	a. Weberinnen	54	52.5	
b. Spinner	99		b. { Ringspinnerinnen Vorspinnerinnen	221 156		
4. Angelernte Arbeiter	—		4. Angelernte Arbeiter:			
			a. Haspelerinnen	124	42.5	
			b. Kreuzspulerinnen	28		
			c. Spulerinnen	44		
			d. Zwirnerinnen	37		
			e. Streckerinnen	116		
5. Ungelernte Arbeiter:			5. Ungelernte Arbeiter:			
a. Maschinenarb. (Batteur, Mi- schung, Karden)	127	49.5	Zwirnaussucherinnen Kopseinlegerinnen Putz- u. Kehrfrauen	41	5.0	
b. Nebearbeiter der Weberei (Rauher Passie- rer, Schlichter)	25					
c. Draussenarbeiter (Hofarbeiter, Pack- er, Heizer, Öler)	124					
Männliche Arbeiter	558	100.0	Weibliche Arbeiter	821	100.0	

Den gelernten Arbeiten geht eine bestimmte Lehrzeit voran, die die Arbeiter mit der Maschine und den Handgriffen vertraut machen soll. Bei den angelernten Arbeiten beherrscht man die nötigen Handgriffe nach einigen Tagen, und nur eine kürzere oder längere Übungszeit ist erforderlich um sich eine zur Leistung des Durchschnittsquantums an Arbeit nötige Geschicklichkeit anzueignen.

¹ Die Gesamtzahl der Arbeiter u. Arbeiterinnen die überhaupt in Laufe des betreffenden Jahres, sei es auf kürzere oder längere Zeit, sei es das ganze Jahr hindurch, dem Betrieb angehört hatten. Da der Wechsel innerhalb der Arbeiterschaft ein ausserordentlich starker ist, gibt uns die Gesamtzahl der Arbeiterschaft ein weniger vom Zufall beeinflusstes Bild als die Arbeiterschaft irgendeines einzelnen Tages.

II. Dr. Fritz Schumann: Die Arbeiter d. Daimler-Motoren-Gesellschaft,
Stuttgart-Untertürkheim.

Arbeitskategorien	Gesamtzahl der Arbeiter	Prozent	
1. Professionisten:			Diese Einteilung ist von der Direktion gemacht. Ungelernte Arbeiter — nach der Ausdrucksweise der Firma unproduktive. Gesamtzahl der Arbeiter Ende September 1909.
a. Schlosser	503	} 69.7	
b. Werkzeugmacher	18		
c. Dreher	243		
d. Kupferschmiede	29		
e. Flaschner	51		
f. Plattierer	7		
g. Schmiede	109		
h. Feilschmiede	23		
i. Former	43		
j. Holzarbeiter:			
Schreiner	52		
Wagner u. Zimmerleute	47		
k. Sattler	40		
l. Maler u. Lackierer	20		
2. Angelernte:		} 11.3	
a. Maschinenarbeiter (Fräser, Bohrer, Hobler, Stosser)	151		
b. Schleifer	41		
3. Ungelernte:			
Tagelöhner	323	19.0	
Alle Arbeiter	1.700	100.0	

III. Dr. Richard Sorer: Auslese u. Anpassung in einer Wiener
Maschinenfabrik.

Arbeitskategorien	Gesamtzahl der Arbeiter	Prozent	
1. Fabrikprofessionisten:			} 6.5
a. Tischler	5		
b. Anstreicher	3		
c. Maschinist	1		
2. Gelernte:		} 62.3	
a. Dreher	34		
b. Schlosser	41		
c. Schmiede	11		
3. Angelernte:		} 13.1	
a. Hobler	6		
b. Bohrer	5		
c. Stosser	3		
d. Fräser	4		
4. Ungelernte:		} 18.1	
Hilfsarbeiter	13		
5. Werkführer	3		
6. Lehrlinge	9		
Zusammen	138	100.0	

Appendix 4.

MALE & FEMALE INDUSTRIAL WORKERS, DISTRIBUTED ACCORDING TO OCCUPATIONS. FROM THE FACTORY CENSUS IN NORWAY 1909,
PART 2, TABLE I. HERE ARE INCLUDED ONLY GROUPS WITH A MINIMUM OF 500 MALE OR FEMALE WORKERS.

Groups of Industries	M a l e s											
	Total number of workers	Percentage with the following occupations										
		Craftsmen	Ordinary production workers	Engine men & electricians	Stokers, oilers, greasers etc. Cranemen	Repairs, mechanics etc.	Watchmen etc.	Packing makers	Day labourers in yards & warehouses	Drivers & chauffeurs	Assistant workers not otherwise stated. Miscellaneous	Total
Industry, total	90.638	14.8	55.0	1.8	1.8	2.2	0.3	0.9	18.4	0.1	4.7	100.0
Of which:												
I. Mining & Smelting	7.424	7.1	72.0	2.2	1.3	1.6	0.2	—	13.3	1.6	0.7	100.0
II. Earth & Stone Industry												
1. Brick works	2.609	1.9	83.5	1.4	0.5	—	—	—	12.7	—	—	100.0
2. Glass works	805	4.5	78.1	—	1.7	—	—	—	15.7	—	—	100.0
3. Cement factories	547	15.5	66.0	—	—	—	—	—	18.5	—	—	100.0
III. Iron & Metal Industry												
1. Mechanical workshops partly combined with iron foundry	10.276	20.3	67.2	1.3	0.4	—	0.4	—	9.0	—	1.4	100.0
2. Ship yards & dry dock partly combined with mechanical workshops	9.344	23.3	65.0	0.6	0.3	—	0.2	—	8.0	—	2.6	100.0
3. Iron & steel foundries	601	16.2	60.2	—	1.3	5.8	—	—	12.0	—	4.5	100.0
4. Nail factories	755	17.2	40.6	0.5	0.4	9.1	—	—	31.4	—	0.8	100.0
5. Gold & Silver ware works	544	85.6	3.5	0.4	0.6	1.5	—	—	2.9	—	5.5	100.0
6. Factories for electric machinery & apparatus	1.382	10.8	81.8	0.1	0.1	—	0.5	—	6.1	—	0.6	100.0
IV. Chemical Industry												
1. Electro-technical manufacture	1.115	4.7	25.6	4.2	3.0	9.9	—	10.0	17.8	—	24.8	100.0
2. Carbide factories	1.624	3.1	43.5	2.1	0.4	4.1	—	7.5	36.9	—	2.4	100.0
3. Match factories	520	1.2	43.1	0.8	1.0	6.0	—	18.4	3.5	—	26.0	100.0
V. Light & Heat Production												
1. Electricity works	1.108	5.3	59.5	22.8	3.8	—	6.6	—	2.0	—	—	100.0
VI. Textile Industry												
1. Wool spinning & weaving mills, factories for woollen articles	1.452	5.9	84.1	0.5	2.6	—	—	—	5.8	1.1	—	100.0
2. Cotton spinning & weaving mills	852	4.2	77.9	0.5	2.7	2.2	2.4	—	9.3	0.8	—	100.0
VII. Paper, Leather & Rubber Industries												
1. Wood pulp, paper & cardboard mills	11.795	5.9	37.4	1.2	5.3	5.9	0.4	—	37.3	—	6.6	100.0
2. Tanneries	523	9.4	82.5	2.9	2.7	—	—	—	2.5	—	—	100.0
VIII. Wood Industry												
1. Large saw mills	3.086	3.1	37.6	2.6	2.5	1.0	—	—	45.0	—	8.2	100.0
2. Small saw mills	1.544	0.3	54.5	4.4	5.9	0.3	—	—	32.1	—	2.5	100.0
3. Planing mills	912	10.4	33.9	2.4	2.9	4.7	—	—	38.7	—	7.0	100.0
4. Saw & planing mills	5.329	8.2	40.6	1.5	2.0	1.9	—	—	38.4	—	7.4	100.0
IX. Manufacture of Food & Luxuries												
1. Corn mills	1.091	10.3	59.9	—	—	—	—	—	29.8	—	—	100.0
2. Canning works	1.341	1.5	53.8	2.5	0.2	—	—	29.2	10.4	—	2.4	100.0
3. Breweries	1.236	10.8	48.4	2.5	2.2	—	1.9	—	34.2	—	—	100.0
4. Tobacco factories	671	—	92.4	—	—	—	—	—	4.0	—	3.6	100.0
X. Clothing Industry												
1. Shoe factories	1.100	2.9	94.8	0.3	0.2	—	—	—	1.4	—	0.4	100.0
XI. Polygraphic Industry												
1. Book & paper printing, incl. book-binding	1.847	82.3	16.2	—	—	—	—	—	—	—	1.5	100.0

Appendix 4 (continued.)

MALE & FEMALE INDUSTRIAL WORKERS, DISTRIBUTED ACCORDING TO OCCUPATIONS. FROM 'THE FACTORY CENSUS IN NORWAY 1909' PART 2, TABLE I. HERE ARE INCLUDED ONLY GROUPS WITH A MINIMUM OF 500 MALE OR FEMALE WORKERS.

Groups of Industries	Females						Total
	Total number of workers	Percentage with the following occupations					
		Artisans	Ordinary production workers	Packing makers	Day labourers in yards & warehouses	Assistant workers not otherwise stated, Miscellaneous.	
Industry, total	22,748	3.3	84.4	2.0	6.5	3.8	100.0
Of which:							
I. <i>Chemical Industry</i>							
1. Match factories	596	—	19.0	28.7	49.0	3.3	100.0
II. <i>Textile Industry</i>							
1. Wool spinning & weaving mills, factories for wollen articles	2,291	—	97.5	—	2.5	—	100.0
2. Cotton spinning & weaving mills	2,405	—	98.7	—	1.3	—	100.0
3. Knitted ware factories	1,161	—	100.0	—	—	—	100.0
III. <i>Paper, Leather & Rubber Industries</i>							
1. Wood pulp, paper & cardboard mills	929	—	78.4	—	—	21.6	100.0
IV. <i>Manufacture of food & luxuries</i>							
1. Canning works	3,212	—	96.3	2.1	1.6	—	100.0
2. Dairies	643	—	99.5	—	0.5	—	100.0
3. Tobacco factories	862	—	94.9	—	—	5.1	100.0
V. <i>Clothing Industry</i>							
1. Shoe factories	601	—	100.0	—	—	—	100.0
VI. <i>Polygraphic Industry</i>							
1. Book & paper printing, incl. bookbinding	1,035	39.9	60.1	—	—	—	100.0

Appendix 5.

REPRESENTATIVE SURVEY. DESIGNATIONS OF OCCUPATIONS FOR 4.000
FACTORY CRAFTSMEN

Branches of Industry	Total number of statements	No title	Indications.	Full particulars
1. Mechanical works	1.569	166	480	923
2. Other metal industry	240	57	48	135
3. Cement article industry	73	1	21	51
4. Brick works	17	11	2	4
5. Other earth & stone industry	42	7	11	24
6. Match industry	9	—	7	2
7. Other chemical industry	39	20	2	17
8. Fat industry	105	64	8	33
9. Sawmills & planingmills	341	72	104	165
10. Other wood industries	98	37	22	39
11. Wood pulp & paper manufacture	137	14	65	58
12. Paper goods	8	3	—	5
13. Leather & rubber industry	53	9	31	13
14. Spinning and weaving industry	92	27	12	53
15. Other textile industries	54	12	14	28
16. Shoe factories	364	164	123	77
17. Other clothing factories	30	5	3	22
18. Canning industry	53	11	31	11
19. Brewery	135	68	10	57
20. Chocolate industry	45	25	12	8
21. Tobacco industry	92	21	34	37
22. Other food & luxury industries	404	178	50	176
	4.000	972	1.090	1.938
<i>Distribution in percentage</i>				
<i>All branches</i>	100.0	24.3	27.3	48.4
The chief branches:				
Mechanical works	100.0	10.6	30.6	58.8
Fat industry	100.0	61.0	7.6	31.4
Sawmills & planingmills	100.0	21.1	30.5	48.4
Wood pulp & paper manufacture	100.0	10.2	47.5	42.3
Spinning & weaving industry	100.0	29.4	13.0	57.6
Shoe factories	100.0	45.0	33.8	21.2
Brewery	100.0	50.4	7.4	42.2
Tobacco industry	100.0	22.8	37.0	40.2
Other food & luxuries industry	100.0	44.0	12.4	43.6

MALE FACTORY HANDS IN TOWNS AT THE NORWEGIAN CENSUS OF 1920.
 ARE NOT INCLUDED.

Distribution of group: Full particulars									
Production workers	Stokers	Warehousemen	Yardhands	Watchmen, doorkeepers, messengers	Repairers etc.	Packing makers	Cranemen, greases etc.	Drivers	Chauffeurs
773	14	24	40	15	27	—	13	10	7
72	14	6	2	8	24	—	1	4	4
45	—	2	1	1	—	—	—	2	—
—	1	—	—	—	—	—	—	3	—
18	2	1	—	1	2	—	—	—	—
2	—	—	—	—	—	—	—	—	—
2	3	—	1	1	9	—	1	—	—
11	1	2	2	6	4	1	—	4	2
28	1	25	90	8	4	—	—	8	1
15	1	6	6	6	2	—	—	2	1
12	4	13	16	3	7	2	—	—	1
2	—	1	—	1	—	—	—	1	—
8	4	1	—	—	—	—	—	—	—
16	3	14	1	7	5	—	3	4	—
17	4	2	—	2	2	—	—	1	—
50	2	7	2	9	1	1	—	3	2
11	—	3	—	6	2	—	—	—	—
4	—	1	—	1	—	1	—	2	2
6	4	1	—	1	3	—	—	39	3
—	—	2	—	3	1	—	1	1	—
24	1	3	—	3	2	—	—	2	2
22	8	68	—	9	9	—	4	41	15
1.138	67	182	161	91	104	5	23	127	40
58.8	3.5	9.4	8.3	4.7	5.4	—	1.2	6.6	2.1
83.8	1.5	2.6	4.3	1.6	2.9	—	1.4	1.1	0.8
33.3	3.0	6.1	6.1	18.2	12.1	3.0	—	12.1	6.1
17.0	0.6	15.2	54.6	4.8	2.4	—	—	4.8	0.6
20.7	6.9	22.4	27.6	5.2	12.1	3.4	—	—	1.7
30.2	5.7	26.4	1.9	13.2	9.4	—	5.7	7.5	—
64.9	2.6	9.1	2.6	11.7	1.3	1.3	—	3.9	2.6
10.5	7.0	1.8	—	1.8	5.3	—	—	68.3	5.3
64.9	2.7	8.1	—	8.1	5.4	—	—	5.4	5.4
12.5	4.6	38.6	—	5.1	5.1	—	2.3	23.3	8.5

Appendix 6.

SURVEY OF THE NUMBER OF MORE IMPORTANT COMBINED UNDERTAKINGS IN NORWAY COMPILED WITH REGARD TO THE GROUPING OF OCCUPATIONS IN 1920 ON THE BASIS OF "NORGES HANDELSKALENDER" (THE NORWEGIAN TRADE CALENDAR).

<i>I. Total number of firms with several activities</i>	809
Of which: Several kinds of manufacturing industry	91
› Industry and another kind of activity	355
› Several kinds of other activities (not industrial)	363
<i>II. These 809 firms comprise 1846 various activities, which are thus distributed amongst the various groups:</i>	
a. Mining	4
b. Earth and stone industry	35
c. Electro-chemical and metallurgical industry	8
d. Mechanical workshops and other metal industries	89
e. Saw-mills and other wood industries	162
f. Wood pulp and paper manufacture	30
g. Textile and clothing industry	39
h. Fat industry	57
i. Food and luxury industry	75
k. Paper goods and graphic industry	62
l. Building handicraft	25
m. Other industries	49
	635
a. Agriculture and forestry	29
b. Fishery and whaling	38
c. Trade	524
d. Other business activities	294
e. Shipping and transport by land	326
	1.846

III. Number of workmen at the 635 industrial concerns (see II) which are conducted in combination with other branches of industry or with completely different activities.¹

	Concerns found also in the list of concerns.		Not found in the list. Number of workers estimated.		Total	
	Concerns	Workers	Concerns	Workers	Concerns	Workers
a. Mining	2	218	2	40	4	2 8
b. Earth and stone industry	26	611	9	135	35	746
c. Electro-chemical and metallurgical industry	7	553	1	15	8	568
d. Mechanical workshops and other metal industries	54	2.213	35	385	89	2.598
e. Saw mills and other wood industries	130	5.575	32	704	162	6.279
f. Wood pulp and paper manufacture	27	3.874	3	114	30	3.988
g. Textile and clothing industry	16	705	23	230	39	935
h. Fat industry	33	536	24	192	57	728
i. Food and luxury industry	53	1.437	22	240	75	1.677
k. Paper goods and graphic industry	44	1.740	18	306	62	2.046
l. Building	13	121	12	108	25	229
m. Other industries	26	470	23	161	49	631
Total	431	18.053	204	2.630	635	20.683

¹ The number of workers taken from "List of Concerns" published by the Chief Inspector of Factories 1921. The smallest artisans' concerns etc. are not included in the list.

IV. A comparison between the numbers of concerns and workers at concerns conducted in combination with other activity and the total of concerns and workers, for such separate groups as allow a comparison.

	All concerns ¹		Concerns conducted in combination with other activity (industrial or other)			
	Number of concerns	Workers	Concerns		Workers	
			Number	Pct of all concerns	Number	Pct of all workers
Saw-mills and other wood industries	2.580	28.509	162	6.3	6.279	22.0
Wood pulp and paper manufacture	124	14.008	30	24.2	3.988	28.5
Paper goods and graphic industry	457	7.470	62	13.6	2.046	27.4
Other industries	5.683	125 929	381	6.7	8.370	6.7
Total	8.844	175.916	635	7.2	20.683	11.8

¹ According to "List of Concerns".

Here are included only such firms whose activities fall within different main groups (see II), and several different undertakings or concerns which fall within the same of the 17 main groups (12 industrial groups and 5 others) have been considered as one concern. As a combination of related

Appendix 7.

SYSTEMATIC SURVEY.

Occupational classes in a frame of groups of trades and industries. The arrangement of the groups is based on the main table in the Census of Norway 1920 (Part 9, Table 2).

There is first given a key to the abbreviations of the occupational classes in each group of trade or industry:

Independent employers	ind. emp.
Independent workers (working on own account)	ind. work.
x Managers of joint-stock companies and similar high class functionaries	f. high.
Expert functionaries (not technical)	f. exp.
x Engineers etc. (trained technical employees)	f. eng.
x Office functionaries	f. off.
Shop functionaries	f. sh.
Foremen etc.	w. for.
Ordinary workmen (including servants)	w. ord.
Craftsman workers employed by masters of the same trade	w. art.
x Craftsman workers at factories, etc.	w. spec.
Assistant members of farmers' families, etc.	w. fam.

As will be seen there are, in all, 12 main classes of occupations, 4 of which only with general occupations, marked x. Further specification of occupations will not be necessary in the case of a number of groups of trades and industries, but in other cases a further division of certain classes of occupations will be strictly necessary. The survey is only intended to show what must be required as the minimum specification of occupations in a satisfactory system of classification. All the occupations occurring can naturally be placed into one of the 12 classes of occupations. In the following we have shown which of these classes occur in each group of trade or industry in Norway. The general occupations are in all cases marked with an x in the main table. Remark the two supplements concerning the general occupations.

activities (e. g. sawmills and manufacture of wooden articles) is the most commonly found, a far greater number of combined undertakings would have been obtained, if all occurring combinations of somewhat different activities had been taken into consideration. In other words, the farther a classification of concerns goes in detail, the greater the obstacles to a correct classification formed by the combined concerns.

SCHMATIC PROPOSAL FOR MAIN TABLE.

The wage-earning population classified according to trade or industry and occupation.

<p>I. 1. Agriculture and cattle rearing.</p> <p style="padding-left: 2em;">ind. emp. ind. work. f. exp. w. for. w. ord. w. fam.</p>	<p>IV. 2. Banks, insurance, brokers and various other business activities.</p> <p style="padding-left: 2em;">ind. emp. ind. work. x f. high. f. exp. x f. eng. x f. off. w. ord.</p>
<p>I. 2. Gardening</p> <p>I. 3. Forestry and lumber floating</p> <p style="padding-left: 4em;">} As agriculture and cattle rearing with addition of x f. off.</p>	<p>IV. 3. Hotel and catering trade.</p> <p style="padding-left: 2em;">ind. emp. ind. work. x f. high. f. exp. x f. off. w. for. w. ord. w. fam.</p>
<p>II. Fishery, sealing and whaling.</p> <p style="padding-left: 2em;">ind. emp. ind. emp. x f. high. f. exp. x f. off. w. for. w. ord. w. fam.</p>	<p>V. 1. Shipping.</p> <p style="padding-left: 2em;">ind. emp. ind. work. x f. high. f. exp. x f. off. w. for. w. ord.</p> <p style="padding-left: 2em;">Here, it needs hardly be stated, a distinction should be made between sailors on one side, and the workers, messengers etc. on the shipowners offices on the other.</p>
<p>III. Manufacturing industry.</p> <p style="padding-left: 2em;">Corresponding groups of occupations in all the main groups of industry.</p> <p style="padding-left: 2em;">ind. emp. ind. work. x f. high. x f. eng. f. exp. x f. off. w. for. w. ord. w. art. x w. spec.</p>	<p>V. 2. Other transport: railways, post etc., and ordinary transport by land.</p> <p style="padding-left: 2em;">ind. emp. ind. work. x f. high. f. exp. x f. eng. x f. off. w. for. w. ord.</p>
<p>IV. 1. Trade in commodities.</p> <p style="padding-left: 2em;">ind. emp. ind. work. x f. high. x f. eng. x f. off. f. sh. w. for. w. ord.</p>	

- VI. 1. Civil administration, law, finances.¹
- ind. emp.
 - f. high.
 - f. exp.
 - x f. eng.
 - x f. off.
 - w. ord.
- VI. 2. Defence.
- f. high.
 - f. exp.
 - x f. off.
 - w. for.
 - w. ord.
- VI. 3. Religious activity.
- f. high.
 - f. exp.
 - x f. off.
 - w. ord.
- VI. 4. Public health & veterinary work
- ind. emp.
 - ind. work.
 - f. high.
 - f. exp.
 - x f. off.
 - w. for.
 - w. ord.
- VI. 5. Teaching, scientific and artistic activities.
- ind. emp.
 - ind. work.
 - f. high.
 - f. exp.
 - x f. off.
 - w. ord.
- VI. 6. Board of guardians; charities and other association work.
- f. high.
 - f. exp.
 - x f. off.
 - w. ord.
- VII. 1—2. Domestic work for strangers (private families and institutions).
- w. for.
 - w. ord. (servants.)
 - w. ord. (day labourers.)
- VII. 3. Family members occupied in domestic work.
- w. fam. (housewives.)
 - w. fam. (adult daughters living at home and other female relatives.)

¹ The superior functionaries in immaterial activities cannot in similarity to managers etc. at factories or in business etc. be classified together regardless of the institutions to which they are attached, they are therefore not »general occupations».

Supplement No. I to the main table.

SPECIFICATION OF THE CLASS OF 'CRAFTSMAN WORKERS AT FACTORIES ETC.' REGARDLESS OF WHERE THEY ARE EMPLOYED.

	Males	Females	Total
Total of craftsman workers etc. ¹			
Of these:			
Smiths			
Carpenters			
Joiners			
Painters			
etc.			
<hr/>			
Factory craftsmen ² , total			
Repairers etc. ?			
Engine men			
Electricians			

¹ x w. spec. in the main table under group III Manufacturing industry.

² Including ordinary factory craftsmen and apprentices, the latter may be specified if finances allow. The foremen among the factory craftsmen are proposed, from practical reasons, to be classified with the other foremen in the same group of concerns. The same for electricians.

Supplement No. II.

A SUMMARY OF THOSE OCCUPATIONS WHICH IN THE MAIN TABLE ARE DISTRIBUTED AMONG SEVERAL GROUPS OF INDUSTRY.

	Males	Females	Total
Managers etc., total			
Office employees, total			
Engineers, total			
Craftsmen workers etc. at factories etc. and in handicraft, total			
Of these:			
Smiths			
Carpenters			
Joiners			
etc.			

The same groups of craftsman workers etc. as in supplement No. I. The figures for these workers are obtained by adding up the numbers of factory craftsmen in each group (Suppl. no. I) and those of the corresponding craftsmen working for master craftsmen, in the main table.

In combination with age and matrimonial state the figures in this supplement are utilised together with the figures from the main table for all other groups.

Appendix 8.

A SAMPLE FROM THE MAIN TABLE.

(From main group III Manufacturing industry)

III. Metal Industry, Manufacture of Machinery and Transport Conveyances.

The whole group of Industry.

Males Females Total

A. Working on own account.

- A₁ Owners of factories.
- A₂ Independent mechanics etc. with no hired assistants.
- A₃ Master craftsmen.
- A₄ Independent craftsmen with no hired assistants.

B. Employees.

- B₁ Directors, managers etc.
- B₂ Engineers.
- B₃ Office employees.

C. Workmen.

- C₁ Foremen and the like.
- C₂ Craftsman workers employed by master craftsmen.
- C₃ Craftsman workers in factories etc.
- C₄ Other workers.

The suborders.

III. 4₁ *Motor car & bicycle industry.*

- A₁ Factory owners.
- A₂ Cycle repairers etc. with no hired assistants.

B Employees.

- C₁ Foremen and the like.
- C₂ Craftsman workers.
- C₃ Other workers.

III. 4₂ *Smiths' workshops.*

- A₁ Masters.
- A₂ Independent smiths with no hired assistants.

B Employees.

- C₁ Foremen and the like.
- C₂ Skilled workers & apprentices.
- C₃ Strikers & other assistant workers.

If the foremen are to be classified apart in the tables with distribution according to age etc., it is difficult to operate with less than the six classes of occupations here given for each class of industry. As will be seen there will occur some difference between classes in crafts and classes in factories.

The tabulation of the other main groups (outside manufacturing industry) is considerably simpler.

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