

STATISTICAL AND SOCIAL INQUIRY SOCIETY OF IRELAND.

THE SESSION OF THE INTERNATIONAL INSTITUTE OF STATISTICS AT MEXICO, 1933.

By STANLEY LYON.

[Read before the Society on 2nd March, 1934.]

In the year 1851 there was an important gathering of statisticians in London in connection with the Great Exhibition held there, including the famous M. A. Quetelet of Belgium, who urged the necessity for co-operation amongst officials in order to secure uniformity in the compilation of the official statistics in the different countries. This meeting resulted in the calling of an International Congress of Statisticians in Brussels in 1853. In succeeding years Congresses were held at Paris, Vienna, London, Berlin, Florence, The Hague, Leningrad (St. Petersburg) and Budapest. This last was held in the year 1876. By that time the meetings had begun to assume enormous proportions. At Florence 750 persons attended, most of whom had no connection with statistics and did not even take part in the proceedings. No meetings were held between 1876 and 1885.

It was decided to resurrect the International Institute in connection with the celebration of the Jubilee of the Royal Statistical Society in 1885. A new Constitution was drawn up specifying the objects of the Institute and limiting membership to 200, with a few honorary members elected for outstanding qualifications. It was arranged that the Institute would meet biennially at the capital cities in different countries of the world. Probably the experience gained previously of the difficulty of keeping together an international organisation of this kind and of the rocks against which the Institute buffeted and eventually was wrecked induced the pilots of the new organisation to steer more carefully and keep a better look-out for any dangers that might loom ahead. Anyway, the result is that the Institute to-day holds a foremost place amongst international organisations and has almost reached its Golden Jubilee. During the period of the European War (1914-1918) fears were entertained that the sympathy that kept the Institute together might have been lessened; but that was not the case, despite the fact that the chief officers belonged to the belligerent nations. Soon after the termination of the War attempts were made to bring the work of the Institute directly under the League of Nations as part of its organisation. Fortunately wiser counsels prevailed, and owing to

the fact that the seat of the Institute was, and is still, at The Hague, Holland, a neutral country during the War, and to the able guidance of the Secretary-General, M. Methorst, the Institute stands strong and independent. In many respects, however, it works in close collaboration with the League of Nations as well as with other International bodies such as the International Institute of Agriculture, the International Labour Office, the International Chamber of Commerce, etc., etc. Since the termination of the European War, Sessions have been held at Brussels, 1923; Rome, 1925; Cairo, 1927-28; Warsaw, 1929; Tokio, 1931; Madrid, 1932.

The meetings at Tokio and at Mexico were Extraordinary Meetings and were outside the scheme of the biennial meetings. The officers of the Institute consist of a President, three Vice-Presidents, Secretary and Treasurer. These are elected at the final Plenary Meeting of each Ordinary Session of the Institute and form the "Bureau" who conduct the general business of the Institute. The publications of the Institute consist principally of the *Bulletin*, the *Quarterly Review*, the *Apèrcu de la Démographie* (biennial), and the *Statistiques des Grandes Villes*. The *Bulletin* which is published soon after the holding of each Session, usually in two volumes, contains a full account of the Proceedings at the Session, including reproductions of the several Reports and Communications presented thereat.

Since the beginning of 1933 the *Bulletin Mensuel* ceased publication and its place was taken by the *Quarterly Review*. Apart from the publications specified, the Institute does not enter much into the issuing of Reports, etc.

The Twenty-first Session of the Institute, which I attended as official delegate from the Saorstát, was held at Mexico from 11th to 26th October, 1933. It was an Extraordinary Session specially convened at the invitation of the Government of Mexico. The principal difference between an Ordinary and an Extraordinary Session is that matters affecting the organisation and constitution of the Institute can be dealt with only at Ordinary Sessions. Forty-eight official delegates, representing 34 countries, and 47 other individuals (members of the Institute, not delegates and specially invited persons) attended the Congress.

The total number of Reports and Communications presented for consideration at the Mexican Congress was 32. These were grouped into three sections (1) Demographic Statistics (2) Economic Statistics, and (3) Social Statistics, and after the first Plenary Meeting the Congress divided into three Commissions, one for each group.

The opinion was freely expressed that a Congress lasting as a rule for only one week cannot give sufficient attention to the consideration and discussion of such a large number of papers on different subjects. It is a matter for the Institute to decide whether it would not be preferable and more useful for the members and delegates, instead of dividing into three Commissions, to meet in full Session all the time and consider only a limited number of papers—say three or four—selected by the Bureau from amongst those offered for discussion. The present system, which does not allow time for adequate study of the papers themselves beforehand or for proper discussion at the meetings, begets the formation of a

number of Commissions to pursue the study of the subject under discussion; in other words, postponement to next Session when the same difficulties are again likely to be experienced.

It is not proposed to give here an account of each paper, but the following summaries of some of the more important papers will give a general idea of their subject matter. The volumes of the *Bulletin* which will be issued in connection with the Congress at Mexico will contain the papers in full. My purpose is to bring to the notice of the members of this Society briefly the subjects discussed and some of the views expressed thereon.

DEMOGRAPHIC STATISTICS.

Study of the Extent and Effect of Delay in Registration of Births towards the end of the Year. (C. Gini.)

In response to a questionnaire dealing with delay in registration of births at end of year twenty-two countries furnished information, some of which provided daily figures and others only monthly figures. In eleven countries there was positive evidence of error due to delay in registration, and consequently births were attributed to the wrong year. In two the evidence was uncertain and in the remaining nine there was no evidence of error. This question was under discussion at the Sessions of the Institute in 1929 and 1931 and further consideration was postponed till after a period of five years had elapsed.

Notes on the Calculation of Stillbirth Rates. (L. de Berardinis.)

As a result of the communication and the discussion on the paper it was decided to appoint a Committee to study the question of stillbirth rates and in particular to define "death at birth" so that all countries might adopt the same basic principles for these investigations. Miscarriages, stillbirths, deaths within a short time of birth, deaths before the date when civil registration was compulsory, were each differently treated in the vital statistics of different countries. The author of the paper described an investigation he had made recently amongst the several registration areas of Italy. Professor Linders favoured the idea, when making international birth-rate comparisons, of taking account only of survivors of at least one year, while M. Bohmert would like to have had more detailed information than had been put forward and stressed the difficulty of distinguishing between miscarriages and stillbirths, the former of which showed a marked increase in number in almost every country.

The Influence of the Variations of the Economic and Health Conditions of a Country on the Fluctuations in the Number of Births. (L. Livi.)

In this paper Dr. Livi presented charts which showed that, in eight of the principal countries of the world, using statistics for quarterly (three-monthly) periods, the curves of numbers of *conceptions* (antedating births by nine months), numbers of *deaths* as representing health state, and numbers of *unemployed* as representative of the economic conditions, showed a marked degree of correspondence. The movements were in the same directions with remarkable uniformity, especially when the data for the two latter

curves were combined and presented as one curve. His line of attack on the problem was criticised and it was mentioned that the subject investigated was not original. Dr. Livi agreed, but stated that his thesis was based on movements extended over quarterly periods and drew attention to the activity of the relations. He admitted that his method of amalgamating deaths and unemployed into a single curve was somewhat arbitrary. Dr. Bowley thought that Dr. Livi should have used the well known multiple correlation formula rather than a new formula in his calculations and, further, that the particular period over which the investigation was spread, viz., five years, was too short and disturbed a period from which to draw deductions concerning the influence on birth-rates of either deaths or unemployment.

Progress in Vital Statistics of the United States. (W. F. Willcox.)

Dr. Willcox of Cornell University presented a paper on the development of vital statistics in the United States, 1900-1930. It was to be regarded as a supplement to his "Introduction to Population Statistics of the United States of North America for the period 1900-1930" already published. Dr. Willcox traced the history of the registration of births and deaths in the United States and pointed out that notoriously imperfect as they were up to a few years ago, they are to-day almost complete. A hundred years ago births and deaths were regularly registered in countries representing only one-tenth of the world population. Fifty years ago the proportion had improved to one-fourth, and to-day the proportion is one-half. Latin America is very backward in this respect and perhaps the Congress of the Institute at Mexico may have some influence in bringing about a reform. Even when registration is compulsory it is found that in many Countries or States there must be a considerable amount of evasion. Unless in exceptional cases rates should not be much below 12 per 1,000. For comparing the healthfulness of a people three indices may be used—crude death-rate, standardised death-rate and expectation of life. Dr. Willcox criticises, as applied to the United States of North America, each of these three systems, pointing out their inherent defects, and illustrates methods of compilation. Life tables he states are often regarded as the best measure.

Fertility of Marriages. (C. Gini.)

This paper discusses methods for arriving at sound and reliable indices representing fertility of marriages. It was pointed out that in those countries where the problem had been investigated from the statistical side some big differences emerged, and the author suggested that at the time of registration of births the "order of generation" of the child should be stated. The definition of this expression would have to be agreed upon internationally, i.e., as to whether "stillborns" or only living children should be included, whether single and multiple births should be taken account of or mere "accouchments," whether illegitimate births should be included, etc. The principal object of the paper was to draw attention to the difficulties which beset international comparisons of statistics of fertility of marriages, and, while admitting that each of the several methods had its utility according to the conclusions to

be drawn, it was suggested that a Commission be appointed to study the question and draw up a programme for adoption by all countries.

International Cancer Statistics. (W. Bohmert.)

Little advance has been made in the progress of medical science to cope with cancer, deaths from which would seem to be increasing in numbers. Statistics properly collected and compiled from questionnaires filled in either by those suffering from cancer or on behalf of those who die from cancer would throw much light on this important subject and indirectly help to alleviate the incidence of the disease. Dr. Bohmert stated that one-sixth of the deaths recorded in Western as distinct from Eastern countries are attributed to cancer and this proportion appears to be growing. He submitted a draft questionnaire asking for particulars such as place where patient lived, the occupation followed and, in the case of married women, details regarding numbers of children born. Other speakers questioned whether deaths from cancer were in fact increasing, and suggested that the increased numbers recorded were due to improved systems of registration of deaths, more accurate medical diagnosis, and to the fact that people were longer lived than formerly; cancer is generally a disease of old age, which also tended to make the increase more apparent than real. It was agreed that a questionnaire suitable for all countries might be drawn up and that the Institute should recommend its adoption in all countries.

Cancer Statistics of the Republic of Mexico, 1922-30. (F. L. Hoffman.)

Dr. F. L. Hoffman presented a brief account of a recent study into the extent of cancer in the Republic of Mexico. The registration of deaths and the ascertainment of their causes is much more accurate in the cities than in the other parts of Mexico. The enquiry covered eleven cities. Contrary to expectation, gastric cancers were not common; probably due to the wholesomeness of the Mexican diet, which is more natural than the diet of some of the more highly civilised countries. It was found that cancer was exceedingly rare amongst the native Indian population and was not a very serious health problem for the Republic at large.

Suggestion of Uniformity in International Migration Statistics. (A. Molinari.)

A conference of statisticians held at Geneva in October, 1932, considered statistics of migration and certain resolutions were adopted. Dr. Molinari, the President of the Central Institute of Statistics for Italy, now puts forward a concrete proposal, based on the system in actual operation in Italy, which he thought all countries could adopt and which would render migration statistics of the various countries internationally comparable. Passports could be issued with a small booklet of detachable coupons (say 12 to 24 coupons) of two kinds, e.g., one (all white) for departures from a country and the other (white with a red line across) for all entrances to a country. Each coupon would contain particulars of two kinds, (a) permanent information—name, country of birth, age, occupation, etc., and (b) variable information—country

to which proceeding, how long likely to be absent, reason for leaving country. The former would be filled in on all coupons immediately on receipt of passport and the latter according as each journey was being undertaken. The coupons would be detached at the frontiers or ports and sent for compilation to the Central Statistics Office. The several countries would be at liberty to vary the amount of information required on the coupons as well as the degree to which details might be summarised. If a number of countries adopted the proposal an International Convention could be agreed upon and all countries would have perfect migration statistics. Dr. Zahn thought the proposed system was excellent but that it required very rigorous control at the frontiers. In Germany the system of compulsory declaration to the police at the place of last residence or intended future residence of all persons arriving or departing gives equally good statistics.

Population Statistics in Spain. (J. A. Vandellós.)

The enormous fluctuations in the population of Spain during the last twenty centuries is analysed and three great upward movements and two great downward movements are noted. The first upward movement was at the time of the Roman domination and culminated at the end of the third century when the population had increased from eight millions to fifteen-twenty millions. The successful invasion of the Goths, who developed an economic regime little suited to an increase of population, marks the beginning of a decline. Three centuries later the Arabs brought about a struggle for independence and the population rose again. At the end of the fifteenth century the population numbered ten million inhabitants. Expulsion of Jews and Moors, coupled with American colonisation consequent on the Spanish conquests in that Continent, depleted numbers so much that in the seventeenth century the population of Spain numbered only six millions. During the next two centuries the population increased to twenty-five millions and now decreases are noted in the North-East district of Spain, an area which in the past was always the first to show signs of a decline.

Population Census-taking in Poland. (E. Szturm de Sztrem.)

In describing the method of compilation of the Census of Population in Poland (1931) the reader drew attention to the many difficulties met with in all countries by those in charge of Population Censuses. The whole problem reduces itself to a question of precise definitions. He alluded to the accuracy of data given in answer to the age question and suggested that, as is done in Italy for example, the actual date of birth should be required as well as the age in years. In connection with housing, the difficulty of definition of "household" is mentioned and reference is made to the different conceptions of the word in Great Britain, Germany, Austria, Italy, United States and Poland. Further difficulty arose concerning the classification by occupation and industry to such an extent that Poland had to forego a classification by occupations in their 1931 Census.

Population Statistics in Latin-America. (J. de D. Bojorquez and E. A. Patino.)

A satisfactory classification of the population of Latin-America is impossible unless some body, such as the International Institute

of Statistics, takes interest in the matter and uses its influence with all the Latin-American countries to agree on some particular scheme. The problem is very great in these countries and it is noted that estimates made by reputable observers show that out of a total population of approximately forty-one millions some twenty-six millions are "primitive" and ten millions of these dwell in Mexico. The Statistics Office in Mexico endeavour to classify their population in three main groups, Whites, Metes (mixed) and Natives, sub-classified on the basis of kind of food used, kind of clothing, etc. Representatives of some of the South American countries supported the proposition for uniformity and emphasised the necessity for reliable statistics. Reference was made to writings of Frederick Hoffman (1931), who estimated that out of 2,000 millions inhabitants of the world, 1,125 millions were "primitive" population.

The Need for Uniformity in Presentation of Statistics. (F. Osegueda.)

On behalf of the delegation from Salvador, a plea for uniformity in the presentation and classification of statistics was made. The progress of the modern world and especially in transport, instead of bringing nations closer to one another, only emphasises differences in national tendencies. It is difficult to find two countries which use the same basis in their statistics and a scheme towards making a beginning in this direction was submitted.

Graphic Presentation of Statistics. (C. Gini.)

A short technical paper by Professor Gini entitled "Two Observations on the Subject of Graphic Representations" drew criticisms from some of the members of the Institute. The first "observation" referred to diagrams in polar co-ordinates and suggested a fuller use of the Archimedes Spiral, while the second urged that diagrams in Cartesian co-ordinates, when the curves ran very close to one another, should be accompanied by representations of absolute differences between the values corresponding to the two functions. Arising out of the discussion, Dr. Winkler was of opinion that the Institute should set up a Commission to bring about uniformity (normalisation) in published statistics, particularly as affecting method of tabulation, and the use of signs and symbols.

ECONOMIC STATISTICS.

The Census of Distribution in the United States. (J. A. Hill.)

Perhaps, as far as the Saorstát is concerned, this was the most instructive paper presented to the Congress. It gave an account of the experience of the United States in the taking of their first Census of Distribution, viz., for the year 1929. In the Saorstát a Census of Distribution is at the moment being taken for the year 1933, and although the plans for taking the Census had to be worked out and put into operation almost twelve months ago, this account of the United States Census is helpful in so far as it gives a backing to the plans laid down and the method adopted here for carrying through a formidable undertaking of its kind for the first time.

The principal differences between the two Census is that in the United States the enquiry was conducted through agents acting as

enumerators whereas in the Saorstát the enquiry is being conducted from the Statistics Branch of the Department of Industry and Commerce direct by post. A much more difficult task is thus thrown on the 50,000 retailers and wholesale merchants in this country, who will have no expert guidance, save the set of instructions printed on the Schedule, to assist and direct them. Our experience in connection with the Censuses of Industrial Production leads us to hope that on the whole a satisfactory set of returns will be received, for in the Census of Production a remarkable high degree of efficiency is shown in the manner in which the Schedules are filled in.

In the United States the need for statistics in this field of economics was long felt and the idea of taking a Census of Distribution was first officially proposed in 1925, when the Chamber of Commerce of the United States arranged for a National Distribution Conference at Washington. Before undertaking the task the Bureau of the Census made a trial sample Enquiry covering eleven of the principal cities of the United States, from the experiences of which details for the general Census could be worked out. At first it was intended to exclude establishments below a minimum size, as is done in the Census of Production, but it was finally decided to make the Census complete and comprehensive, covering all establishments which from the nature of their business ought to be included. Purely service businesses, such as hair-dressing establishments, dentists, estate brokers and dealers, shoe repairing shops, etc., were excluded.

Three types of schedules were issued to retailers—one for establishments in cities of over 10,000 population doing a business with an annual turnover of not less than \$60,000, one for establishments in those cities doing a smaller business, and one for all classes of establishments in the smaller cities and rural districts. Special schedules requiring details of sales were issued to (a) grocery establishments, (b) dry goods stores, and (c) automobile businesses. One type of schedule was considered sufficient for all wholesale establishments. The total number of establishments covered by the Census was 1,713,000, of which 1,543,000 were retail and 170,000 wholesale. A set of men specially appointed for the task were employed for cities of over 10,000 population, while the ordinary enumerators, i.e., those used for Population and Production Censuses, were employed for places of smaller size. Although details of sales by commodities were asked for, it was found from the trial Census that probably less than ten per cent. of all the stores included in the Census kept any records whatever concerning sales by commodities. (In the Saorstát Census, distributors are not being asked to split up their total sales into sales by commodities—they are being asked only for the total value of their net sales in the year.) "Sales by Commodities" were not asked for from establishments doing a business of less than \$60,000.

The information furnished by retailers for commodity sales was so incomplete that the Bureau of the Census did not publish the actual figures but only percentages of the total enumerated sales that could be assigned to each item. They did not consider it safe to assert officially even that the commodity classification for those stores for which the information was obtained would always apply

to other stores for which the information was lacking. The classification of sales by commodities secured from wholesale merchants was much more complete and the Bureau felt justified in publishing the amount of the actual sales reported. To give an idea of the extent of the enquiry, it is noted that the published reports of the Census comprised four volumes—three on retail and one on wholesale distribution—the total number of pages being 5,060. Mr. R. H. Coats, Dominion Statistician, Canada, referred to the Census of Distribution taken in Canada in respect of the year 1930, which was taken by post direct and not by special enumerators and which produced most valuable results. The Congress recommended the Bureau of the Institute to set up a special Commission to study the best methods to be adopted for making enquiries of this kind. This Commission has been appointed.

Statistics of the Cost of Distribution. (A. Molinari.)

Lack of statistical information is responsible for the existence of many unsolved problems affecting the cost of distribution and the excessive prices frequently charged to consumers. The International Chamber of Commerce has interested itself in the subject and with the assistance of the Chambers of Commerce in the different countries hopes to achieve some useful results. An independent investigation was undertaken by the Central Institute of Statistics for Italy and certain particulars relating to each of the years 1929 and 1932 were asked for. The enquiry was made through the agency of the Provincial Committees of Economic Corporations. It was not an exhaustive inquiry and referred only to the following types of business: grocers, creameries, pork butchers, other butchers, bakers, fish merchants, egg and poultry dealers, wine merchants, chandlers, drapers, milliners and boot and shoe shops. Information was collected for each type of district—small town, large town, rural area—from independent businesses, co-operative stores, shops attached to factories, shops directly belonging to industrial or agricultural producers, those having stalls in open market-places and hawkers. In cases of independent businesses one small shop, one average shop and one large shop or store was selected for each type of district. Along with this inquiry a supplementary form was issued asking in respect of coffee, milk, butter, bacon, oil, wine, eggs, poultry and fish, (a) the price paid by the producer or wholesale merchant and (b) the retail price at which sale was made to the public. Being the first enquiry of its kind schedules (a copy of which was given as an Annex) were distributed only to 16 principal places, some of which were industrial districts and others agricultural districts in each province. The particulars were to be obtained from account books and invoices and the strictest secrecy about the business of individuals or single concerns was to be observed.

The Debt-Deflation Theory of Great Depressions. (Irving Fisher.)

In his paper Professor Irving Fisher reminds the Congress that at Yale in 1931 he first propounded his theory of debt deflation. This theory insinuates that debts and deflation are the two essential factors in great depressions. Neither of them alone is the cause of serious trouble, but when both are at work at the same time equi-

brum is so gravely affected that a capsizing effect is brought about. Debt liquidation leads to distress selling, and to contraction of deposit currency. That brings on a fall in the level of prices. If the over-indebtedness is sufficiently great the reinforcement of the monetary unit (the dollar) causes *real* debt to grow although it has the appearance of reducing *nominal* debt. Thus we have the paradoxical situation that "the more the debtors pay the more they owe." A vicious circle is brought into play bringing in its train bankruptcies, unemployment and all those other symptoms of commercial depression. The remedy, he says, is "Reflation" and eventual "Stabilisation." Reference is made to the Roosevelt declaration of March 4th, 1933 which, by means of "artificial respiration" (Reflation), arrested the depression in the United States of America. The principal starter of over-indebtedness appears to have been the "new opportunities to invest at a big prospective profit." Other causes were the left over war debts, the reconstruction loans to foreigners and the low interest policy adopted to help England to get back on the gold standard in 1925.

Prices of Finished (Manufactured) Products. (H. Platzer.)

In the absence of the Rapporteur (Dr. Platzer) Dr. Buchner presented his interim report on the prices of finished products. The report contained a draft questionnaire giving a list of finished products for which prices, both wholesale and retail, should be entered, which it was proposed to circulate to the Statistical Authorities of the different countries. In recent years prices of finished products had assumed a special importance notably for comparisons between the prices of those products which were necessary for agriculture and the prices of agricultural products themselves. Dr. Bowley referred to the British Board of Trade index number of prices of exports of manufactured goods and pointed out the difficulty of formulating definitions of specific manufactured articles so that they would be identical from one year to another and between one country and another. Reference was also made to the method adopted by the Bank of England in their retail prices enquiries.

Statistics of Consumption and of Carry-over of Commodities. (J. I. Craig.)

Little progress has been made in this branch of international statistics which is more generally called "Statistics of Stocks." The subject was before the meetings of the Institute at Rome and Cairo, and a report on further study was presented by Mr. Craig. The list of primary products suggested at the Rome meeting as basis for enquiry was subsequently very much curtailed and now includes only rubber, hemp, flax, jute, cotton seed and linseed. Cotton is the only commodity for which first-class statistics of stocks are available, probably because that particular industry is so well organised; it is desired to obtain equally adequate statistics and information in respect of the other commodities. A questionnaire was issued during the course of last year to the several Government Statistical Authorities enquiring how far statistics of imports and exports and statistics of consumption and stocks for the abbreviated list of commodities were available—the answers to be given as "completely available," "partially available" or "not available."

Replies from all countries had not reached Mr. Craig in time for the meeting at Mexico and he was accordingly unable to say how far this question of stocks of specific commodities can be pursued. Certain statistics of stocks of American cotton, lead, zinc, rubber and petroleum have been collected by the "London and Cambridge Economic Service" and the Institute was asked to secure their co-operation in the present work.

On the Method of Ascertaining the Supply and Demand in Urban Short-distance Transport. (O. G. A. Büchner.)

A study of transport needs is usually associated with population statistics, rather than with transport statistics. Important factors are the relation between place of residence and place of work; distribution of large businesses in urban areas, etc. The practical difficulties met with in the collection of transport statistics and the methods of dealing with them are explained. The use of this branch of statistics is illustrated by a practical example taken from the statistics of street car traffic in German large and medium sized towns. The question is a difficult one even for national as distinct from international statistics. One member wished to have an investigation into the cost of such transport included in family budgets. It was agreed that the matter should be referred to in the reports of the Institute on International Statistics of large towns.

International Statistics of Motive Power. (M. Huber.)

A considerable amount of duplication occurs in the statistics of motive power in different countries and M. Huber asks that the International Institute of Statistics should prescribe definitions which would secure uniformity amongst the various countries in the manner in which they publish statistics of motive power. He stated that the difficulty did not arise in the case of prime movers, the statistics for which were expressed either in horse power or in kilowatt hours and which were usually stated by capacity to generate power, but that it occurred in statistics of motive power generated. He cited three different systems one or other of which is at present adopted by different countries. In Switzerland they took the power of primary motors installed in each establishment plus power purchased from outside less power sold outside. In Sweden, Norway, Finland, Germany and Italy they took the power of prime movers applied direct to machinery and other mechanical appliances plus the power of all electric motors in the establishments. In Japan, France, the United States, Hungary and Russia they took the power of prime movers installed in the establishments plus the power of electric motors in the establishments fed by power purchased from outside. For a large number of other countries no special precaution was taken to avoid duplication (double emploi) and statistics were given for prime movers and for electric motors without any discrimination.

International Forestry Statistics and their Problems. (V. Dore.)

Sylviculture occupies a very prominent place in the economic life of a large number of countries and there is a growing demand for reliable statistics concerning forestry. The subject has been con-

sidered by the International Institute of Agriculture and it was proposed that a mixed Committee of Representatives of that Body and of the International Institute of Statistics should study the question. Their principal work would be to draw up a set of definitions for the statistical authorities of the different countries. As an example the area under forests was mentioned. Should the area include only densely wooded districts or should tracts of poor grazing land between belts of trees be included, also should the area of large lakes or expanses of water found here and there amidst the forest be included? In most civilised countries it is not difficult to survey forests, but in countries such as Central Africa and some parts of South America, for instance, surveys can at most be only roughly approximate. A classification of trees by species would be useful and in the case of fellings one would require to know, as far as possible, the purposes for which the timber felled was intended to be used. Each country might proceed as far as was considered necessary in the amount of detail statistics to be collected but both definitions and classifications should be uniform for all countries.

Statistics of Mortgage Credit. (J. Piekalkiewicz.)

Amongst the different means of creating credit, that based on mortgages is of a very special kind and if made a subject for statistical investigation a great deal of useful and important information bearing on the economic structure of a country would be brought to light. Many facts relating to both mortgagee and mortgagor are recorded in the mortgage registers as well as particulars concerning the nature of the security offered, the rate of interest, period for redemption, etc. The writer of the communication presented at the end of his paper a very elaborate set of schedules containing the type of information that should be sought for. The scheme put forward was, however, considered too detailed and it was thought that it would be impracticable for those countries which were not legally required to enforce registration of all types of mortgages. For those countries in which no statistics of mortgages were compiled these remarks might have the effect of inducing them to consider the setting up of such a system of statistics.

Notes on Methods to be Applied to the Study of Economic Regions. (E. Szturm de Sztrem.)

The author states a problem but on account of its many complications does not attempt to offer any solution. An economic region he says is determined by two criteria, first the natural conditions of the area and secondly one or more branches of economic activity. Natural physical conditions are usually the basis for the formation of economic regions, yet the economic and social evolution of a mass of people creates artificial characteristics which appreciably modify the aspect of the area specified. One can distinguish three ways in which economic regions may be determined (1) by means of descriptive statistics which take account only of the actual state of the phenomena, (2) by means of examining the evolution of forms of national economy and (3) by means which take account particularly of the factor of opportunity or, in other words, which establish limits of areas so as to give to each region the most economic and

most useful working of productive forces. The study of the economic and social development of the different regions of a country and the regulation of the successive stages of that development is a matter of prime importance. Russia has attempted it. The subject met with a certain amount of criticism from other members of the Institute who doubted the feasibility of mapping out economic regions on this basis and a proposition that the Institute should pursue the study by means of a special Commission was in fact rejected.

SOCIAL STATISTICS.

Family Budgets with special reference to International Comparisons. (J. W. Nixon.)

Mr. Nixon's communication was based on the series of Resolutions concerning Family Budget enquiries adopted at a conference of statisticians held at Geneva in 1926 under the auspices of the International Labour Office. While the resolutions might be satisfactory enough for the purposes of each country's national statistics, they fell very far short of being satisfactory as bases for drawing up statistics for international comparison. Much use is made of material compiled for the International Labour Office by a number of countries for the purpose of comparing the standard of living of a Ford worker at Detroit with workers in other countries in which Messrs. Ford had a factory. He was of opinion that the International Institute of Statistics should take up the question and recommend criteria according to which Family Budgets should be obtained and that they should be collected in respect of Census of Population years (those ending in 0 or 1) but at least at intervals not exceeding 10 years having the same year for all countries. Otherwise international comparisons of standards of living could not be compiled which would be in any way trustworthy.

Statistics and Administration. (J. Guinchard.)

One of the most interesting papers brought before the Session was that of M. Guinchard on "Statistics and Administration." It dealt broadly with the status of statistics in both State and Municipal Services. The difficulties that Directors of Statistical Organisations encounter and the arguments for and against them are excellently portrayed by the author. Doubtless, he is writing very much in accordance with his own personal experience and shows the way to others who may not have had the courage or sagacity to stand up against attacks. These emanate not only from the Government or Municipal Services themselves but also from the general public. It is most important, he says, for those who make much use of statistics to bring into consultation with them the persons responsible for the compilation and publication of the statistical data which it is desired to use. Statistics are frequently blamed when inaccurate conclusions are drawn from them, whereas in most cases the statistics are quite correct, but the person using them interprets them wrongly. To safeguard the public against errors of this kind, statisticians should not alone compile and publish statistics in tabular form, but should accompany their tables with an analysis of their contents. He strongly favours centralisation of official statistics. The paper is written in a scholarly style and is by no means

“dry” reading. The Bureau of the Institute has nominated a Special Commission to study the proposals enumerated in this paper and to report thereon to the next Session of the Institute.

It would be unbecoming for one who had so thoroughly enjoyed the generous hospitality of the Mexican Government and of the Mexican people to pass it over with only a few words of recognition and thanks. During and after the Congress the members of the Institute and delegates were unanimous in their praise and appreciation of the efforts made by the Organising Committee for their enjoyment and comfort. The participation at the Congress of such a large number of members at a place so far distant from Europe was made possible by the offer of the Mexican Government to defray for each member the “*frais de voyage*” to and from Mexico. Credit for the successful organisation of the Congress must be given especially to Dr. J. de D. Bojorquez, the Secretary of the Department of National Economy.

The Congress opened on Wednesday, 11th October, at a Solemn Session in the Chamber of Deputies at which the Minister for National Economy presided, and the business part of the Congress began immediately afterwards in the National Theatre. The Minister for Education, the Minister for the Interior, the Minister for Agriculture and the head of the Department of Public Health, each entertained the members of the Institute and a large number of guests to luncheon on the days during which the Congress met in Session. The Minister for Foreign Affairs gave an official reception and the President of the Mexican Republic also received at the National Palace the members attending the Congress. To enumerate the excursions to Taxco, Cuernavaca, Xochimilco (Floating Gardens), Puebla, Toluca and Nevada Volcano, the Pyramids of Teotihuacan (as ancient perhaps as those of Egypt), Pachuca (Silver Mines) and El Chico in detail would occupy too much space. Suffice it to say that at each place we were formally welcomed and entertained by the Local Authority. At a number of the places visited special souvenirs appropriate to the particular place were presented to us forming quite a small collection when time came for our departure.

The holding of the XXIst Congress of the International Institute of Statistics coincided with the Centenary Celebration of the Mexican Geographical and Statistical Society founded in 1833. The members of the Institute and the official delegates to the Congress were invited to attend the Centenary Celebration Meeting held under the chairmanship of Senor Primo Villa Michel, the Minister for National Economy, and were admitted to Honorary Membership of the Society.

The Government Statistics Office is housed in part of the Castle of Chapultepec about $1\frac{1}{2}$ miles from the centre of the city. The remainder of the building is occupied by the President of the Republic as his summer residence.

It had been arranged that the members and delegates from Europe should return via New York where a few days might be spent before embarking direct for Europe. The American Statistical Association very kindly availed of this opportunity to invite the party to a Dinner in New York to meet the members. About 160 were present at the function which was presided over by Mr. Stuart H. Rice, Director of the Census Bureau of the United States of America, and in the course of the evening it was stated formally that the American Statistical Society would celebrate its Centenary in 1939, in which year it was hoped to arrange for the holding of the Congress of the International Institute of Statistics in New York. Professor Irving Fisher very kindly invited some of the delegates to New Haven, Conn., to visit Yale University, after which they had an opportunity of inspecting his own most interesting "Index Number factory."

APPENDIX.

Reports and Communications presented for discussion at the Session.

SECTION I

- C. Gini*, Su la portata e gli effetti delle false denunce di nascita per i nati denunciati al principio dell'anno.
- L. de Berardinis*, Alcune considerazioni sul calcolo della natimortalità.
- L. Livi*, Influenza delle variazioni dello stato economico e sanitario del popolo sul movimento oscillatorio della natalità.
- W. Böhmert*, Internationale Krebsstatistik.
- F. Hoffman*, Cancer Statistics of the Republic of Mexico 1922-1930.
- R. Pearl*, On the frequency of the use of contraceptive methods and their effectiveness as used by a sample of American women.
- W. Wilcox*, Progress in vital statistics of the United States.
- E. Szturm de Sztrem*, Les méthodes d'élaboration de recensement de la population en connexion avec les expériences faites en Pologne.
- C. Gini*, Sur la mesure de la Fécondité des mariages.
- F. de Osegueda*, Necesidad de uniformar los sistemas de Exposición Estadísticos.
- J. Vandellós*, La evolución demográfica de España.
- Dino Camavitto*, Le condizioni demografiche del Messico durante il XVI secolo.
- A. Molinari*, Projet d'une méthode internationale uniforme pour les statistiques des migrations.
- J. Bojorquez y E. Patiño*, La clasificación cultural en las estadísticas del movimiento de la población de los países de la América-Latina.
- C. Gini*, Due osservazioni a proposito delle rappresentazioni grafiche.

SECTION II

- H. Platzer*, Zur Statistik der Fertigwarenpreise.
- J. Piekalkiewicz*, La statistique de l'activité économique des entreprises d'état, des provinces et des communes.
- J. Piekalkiewicz*, Statistique du crédit hypothécaire.
- J. Craig*, Report of the commission for the study of statistics of consumption and of carryover of commodities.
- J. Hill*, The census of distribution in the United States.
- A. Molinari*, La statistica delle spese di distribuzione.
- O. Büchner*, Zur Methode der Feststellung von Angebot und Nachfrage im städtischen Nahverkehr.
- L. Livi*, Un'indagine sul frazionamento della proprietà fondiaria in provincia di Firenze.
- V. Dore*, La statistique forestière internationale et ses problèmes.
- R. Fernandez*, Historia de la estadística agrícola en Mexico.
- J. Bojorquez y G. Loyo*, Sobre las estadísticas de la reforma agraria Mexicana.
- J. Bojorquez y G. Loyo*, Estadísticas internacionales de los efectos protestados y de los secuestros ejecutados teniendo como base títulos de crédito.
- M. Huber*, La statistique internationale des forces motrices.
- E. Szturm de Sztrem*, Observations sur les méthodes appliquées à l'étude des régions économiques.
- J. Fisher*, The debt-deflation theory of great depressions.

SECTION III

- C. de Yanagisawa*, État de l'enseignement de la statistique dans les écoles des hautes-études au Japon en 1931.
- J. Nixon*, On family budgets with special reference to international comparisons.
- J. Guincharde*, Statistique et Administration.
- S. Massip*, La comisión nacional de estadística de la República de Cuba.

DISCUSSION OF MR. LYON'S PAPER.

Following are résumés of the observations of some of the speakers to the paper:—

Mr. D. P. Gallagher, in complimenting Mr. Lyon on the scope and arrangement of his paper, expressed the view that the importance to the public of a reliable current statistical service had not yet been sufficiently realised, although, thanks to the efforts of the International Institute and the affiliated National Associations, Statistical Science had reached a position where its work and results could no longer be waved aside as the concern of mere faddists. Governments everywhere were coming to see that a proper public statistical service was, apart from its value in the education and stabilisation of public opinion, as necessary to the statesman as the chart and compass to the navigator, and that without the systematic aid of statistics Government administration and sociological organisation could only be from one blind experiment to another. For this reason among others Mr. Gallagher expressed satisfaction that the International Institute had succeeded in retaining its centralisation at the Hague, where the work would not be so congested nor the atmosphere so highly charged as at the moment in Geneva.

While pleased at the progress made towards the standardisation, internationally, of the form of presentation of Economic and Demological Statistics, Mr. Gallagher suggested, more particularly apropos the paper of C. Gini, that it would be well, so far as the general public are concerned, to keep the purely or highly technical presentation of public statistics in a compartment by itself. A leading aim and object of all the National Associations should be to attract and retain general public interest in and intelligent understanding of statistics, an interest which would be bound to reflect itself usefully on Governments and their policies. But while the public, even the more intelligently minded, might easily be frightened by references to such technicalities as "Polar co-ordinates" or "Archimedian Spirals," they would be widely and intensely interested in statistics relating to the concerns of everyday life and business if they could have these systematically supplied, preferably through the Press, accompanied always by authorised official analysis and interpretation which would not be open to the suspicion of manipulation or misrepresentation in party or sectional interests. The concerns more immediately in mind here would be such things as the cost of the main foodstuffs: clothing, including underclothing; household textiles, furniture, housebuilding and building materials, locomotion, and even such conventional necessities as tobacco and beverages, in every case analysing as far as practicable the "spread" between the cost of the raw material and the cost to the retail purchaser. The aim should be to let the public see the facts, authoritatively published, and public opinion by itself would act as a continuing and powerful corrective against profiteering ramps and, to a considerable extent, help to obviate the necessity for long-drawn-out and expensive Government Commissions and Inquiries. The systematic information of the public in terms and language easily understood, especially in these times of general unrest, is really overdue.

Professor B. F. Shields: There is one thing on which the Director of Statistics and his able staff are to be congratulated, and that is, they are not content, when they are called upon to collect and publish statistical data relating to the economic and social conditions of the country, to leave them as huge masses of unmanageable figures, but endeavour, with a large degree of success, to present them in a form, with such clarity and directness, that they can be easily understood and availed of by those who have to use them. The same qualities of lucidity and precision Mr. Lyon has brought to bear on the excellent summaries of the varied collection of papers read at the recent Biennial Convention of the International Institute of Statistics at Mexico, which he has presented to this Society, and for which he deserves our best thanks. Valuable lessons can be learned from his lecture, useful alike to the compiler of statistics and to those who have to handle them. A few references will serve to emphasise their significance. M. Guinchard pointed out in his paper on Statistics and Administration that those who make much use of public administration statistics should consult officials responsible for their publication. If this procedure were adopted even on a limited scale many erroneous conclusions would not be made in connection with certain returns issued by our State Statistical Office. This may be exemplified by the incorrect deductions made from our unemployment statistics within recent years, which have been compiled on different bases. The importance of analyses of the contents of primary tables by means of

secondary or derivative tables, to facilitate their interpretation, has also been stressed in this paper. This method has been adopted in most of our official statistics, in which a clear definition of the technical terms used has been given, and is most helpful to students of statistical methods and to responsible officials of local authorities, who should at least have a comprehensive acquaintance with the data relating to their particular localities. It may be mentioned that senior students of the Faculty of Commerce, U.C.D., read with great interest many of the official publications. The summary of the paper on the general results of the recent Censuses of Distribution taken in the United States and Canada is apposite in view of the present Census of Distribution for the Saorstát. It is interesting to note that the Canadian census authorities, who appear to have been more successful than those of the United States in securing more complete returns, have used the relatively inexpensive system of collecting the required data from principals of business firms, a procedure adopted in our Census of Distribution, rather than that of employing paid enumerators, as in the case of the United States, which is liable to a certain amount of suspicion on the part of interested business concerns that the requisite privacy of information afforded will not be assured. Professor Shields also referred to the fallacy of taking mere acreage of tree plantations as typical of the amount of afforestation in a country, and emphasised the importance, from the public and scientific standpoints, of a central statistical office exercising a directing control over all statistics published by State Departments.

Mr. Justice Meredith said that the only point of difference between himself and the reader of the paper was where the latter said, on the last page but one, "suffice to say." Mr. Lyon's account of their excursions, and of the hospitable entertainment by the local authority left far too much to the imagination. He hoped that in replying Mr. Lyon would say more about the Pyramids of Teotihuacan and the Floating Gardens of Xochimilco. He tried to imagine Mr. Lyon floating about on a bed of orchids, but he would appreciate a more graphic picture. The paper that he thought would have most interested members of the Society was the short technical paper by Professor Gini. For himself, he entirely disagreed with Professor Gini that in diagrams in polar co-ordinates a fuller use should be made of the Archimedes Spiral, which, in fact, he would prefer to see abolished altogether. But he quite agreed with Professor Gini that diagrams in Cartesian co-ordinates, when the curves ran very close to one another, as they have an awkward habit of doing, should be accompanied by representations of absolute differences between the values corresponding to the two functions.