

CANADA
DOMINION BUREAU OF STATISTICS

FIRST ANNUAL REPORT
OF THE
DOMINION STATISTICIAN

FOR THE
FISCAL YEAR ENDED MARCH 31, 1919

THE DOMINION BUREAU OF STATISTICS
ITS ORIGIN, PURPOSE AND ORGANIZATION

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OTTAWA
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PRINTER TO THE KING'S MOST EXCELLENT MAJESTY

1919

LETTER OF TRANSMITTAL.

*To His Excellency the Duke of Devonshire, K.G., P.C., G.C.M.G., G.C.V.O., etc., etc.,
Governor General and Commander in Chief of the Dominion of Canada.*

MAY IT PLEASE YOUR EXCELLENCY:

I have the honour to submit herewith, for the information of Your Excellency and the Parliament of Canada, the First Annual Report of the Dominion Statistician, under Clause 4 of the Statistics Act, 1918, (8-9 George V., Chap. 43).

The report contains a description of the Origin, Purpose, and Organization of the Dominion Bureau of Statistics, established under the Act in 1918.

I have the honour to be,

Your Excellency's most obedient servant,

GEORGE E. FOSTER,
Minister of Trade and Commerce.

DEPARTMENT OF TRADE AND COMMERCE,
OTTAWA, March 31, 1919.

DIAGRAM SHOWING ORGANIZATION OF THE
DOMINION BUREAU OF STATISTICS,
CANADA, 1919

DOMINION BUREAU OF STATISTICS

(1919-1920)

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CENSUS

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FIRST ANNUAL REPORT

OF THE

DOMINION STATISTICIAN, 1918-19.

To the Right Hon. Sir GEORGE E. FOSTER, P.C., G.C.M.G.,

Minister of Trade and Commerce,
Ottawa, Canada.

SIR,—The present is the first report to be made under the Act respecting the Dominion Bureau of Statistics, passed during the parliamentary session of 1918 (to be cited as "The Statistics Act"), which requires the Dominion Statistician, as the officer charged with the supervision and control of the Bureau, "to report annually to the Minister with regard to the work of the Bureau during the preceding year." (8-9 George V, c. 43, s. 4.)

Several features of the past year's work in statistics have been of exceptional importance, including the establishment of annual statistics of agriculture in co-operation with all the provinces; the reorganization of the statistics of exports and imports; the expansion of the statistics of production and of internal trade; the holding of two conferences between Dominion and Provincial officials looking to a Dominion-wide system of vital statistics; the carrying out of the statistical work of the Canada Registration Board; the beginning of systematic treatment of the statistics of public finance; and the issue of a "Jubilee Volume" of the Canada Year Book.

The outstanding event of the year, however, was the passing of the Statistics Act, which established the Dominion Bureau of Statistics and inaugurated a new policy and organization for the official statistics of Canada. The Bureau was a product of evolution rather than of creation, the Act representing the culmination of plans which had been under consideration for some time. It has been thought, therefore, that the first administrative report under the Act should take the form of an explanation of the significance and purpose of the new legislation, and of a rather inclusive description of the work and arrangements of the Bureau in carrying them into effect. This is done in the statement which appears in the following pages entitled "The Dominion Bureau of Statistics—Its Origin, Purpose, and Organization." The developments of the past year just enumerated thus appear in their proper setting; an outline is given which will be of practical utility in the working out of arrangements still to be completed; whilst a suitable background is provided for future reports.

Not least of the lessons of the war is that the days of *laissez faire* are gone, and that statistics must more and more become the guide of Government as the haphazard methods of the past are outgrown. It is significant that Italy, noting doubtless the effectiveness of the *Statistisches Reichs Amt* as a German weapon, reorganized her statistics in 1917 as a war measure. It was a British High Commissioner to the United States who, in 1917, stated that statistics were winning the war for England. In the United States, it is safe to say that statistical organization doubled in scope during the year which followed the entrance of that country into the war. In the part that Canada must play in the era of peace and reconstruction that is now dawn-

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ing, no small issue will undoubtedly depend on the carefully classified and analysed knowledge she can muster of her resources and their possibilities—in other words, on her statistics.

Statistics wear a dry-as-dust and repellant look to many. The aversion to so-styled “arithmetical literature” has been explained by Mr. Knibbs, Commonwealth Statistician of Australia, as probably a reminiscence of school-day experience. The statistics of a nation are, in point of fact, the quantitative expression of the character and activities of the people, and hence are of the most profound significance. Once mere by-products of departmental accounting, they have long since passed the stage of being ancillary to administration in the narrow sense and are a scheme of organization in themselves, framed with the broadest purposes in view. Their application is now, in fact, so general that a review like the following may have an interest if only as a correlated statement of the features in modern life which are of importance from a sociological and economic standpoint, the ceaseless interplay of which forms that bewildering composite usually described as the progress of the nation.

I have the honour to be, sir,

Your obedient servant,

R. H. COATS,

Dominion Statistician.

DOMINION BUREAU OF STATISTICS,

OTTAWA, March 31, 1919.

THE DOMINION BUREAU OF STATISTICS—ITS ORIGIN, PURPOSE AND ORGANIZATION

The establishment of the Dominion Bureau of Statistics under the Statistics Act, assented to on May 24, 1918 (8-9 George V, c. 43), marks a fundamental departure in statistical policy and organization, and the beginning of a new era in Canadian official statistics. Briefly, the Statistics Act, which it is the function of the Bureau to administer, calls for the centralization and consolidation of all the purely statistical work of the Government—with provision for its organization on a scale commensurate with the national needs. The Bureau, it must be stated at once, was not created *de novo*, but was an outgrowth of the "Census and Statistics Office," in existence since 1905; moreover, the reorganization of statistics along the lines indicated by the Act had been in progress since 1916. The Act, however, crystallized and enlarged what had before been only tentative and partial, and may justly be said to have formally inaugurated the new régime. In proceeding, therefore, to a review of the reorganization which is now being effected and of the purpose it has in view (incidentally affording a practical guide to existing and projected statistics), it will be of interest first to sketch the history of statistical progress in Canada, and more particularly the conditions of the past decade which led to the passing of the Statistics Act. Thereafter, a detailed account will be given of the Bureau, and of the several divisions formed or forming in which the statistical work of the future will be carried out.

Historical.

The history of statistical development in Canada may be divided roughly into three periods: (1) the period of the early French and English colonies; (2) the period of the United Provinces, culminating in reconstruction at Confederation; and (3) the modern period, dating from the Census Act of 1879, and falling into two broad phases, the line between which may be placed at 1905. These periods are not sharply differentiated, statistics having been an unconscious rather than a conscious growth; they are, however, in the later stages marked off by legislation which affected considerable sections of the field and may be said to constitute a dominating influence.

The Early French and English Colonies.—It may not be generally known that the credit of taking the first census of modern times belongs to Canada. The year was 1686, the census that of the colony of New France. Still earlier records of settlement at Port Royal (1605) and Quebec (1608) are extant; but the census of 1666 was a systematic "nominal" enumeration of the people (i.e., a record of each individual by name), taken on the *de jure* principle, on a fixed date, showing age, sex, occupation, and conjugal and family condition. It is, therefore, clearly a census in the modern sense, and not a mere report of settlement, like its precursors. The results (showing 3,215 souls) occupy 154 pages in manuscript deposited in the Archives of Paris, with a transcript at Ottawa. Two years later a supplementary inquiry included the areas under cultivation and the numbers of sheep and cattle.

Similar censuses of Acadia (Nova Scotia) and Newfoundland followed in 1671. These initial experiments were evidently held to justify themselves, for within the next hundred years the process was repeated several times, and was gradually extended to cover all the French colonies in America.

After the British Conquest (1763), numerous memoranda on population and other statistics by colonial governors are on record, and censuses of the different sections under British rule (Upper and Lower Canada, Nova Scotia and New Brunswick) continued to be taken at frequent though irregular intervals. A full account and summary of these may be found in volume IV of the Report of the First Census of Canada (1870-71), a volume designed to start the new Dominion on its career with a review of all previous statistics appertaining to the territories within its domain.

When it is recalled that in Europe the first censuses (those of certain of the German Kingdoms) date only from early in the eighteenth century (those of France and England dating from the first year of the nineteenth), whilst in the United States no census was taken before 1790, the achievement of the primitive St. Lawrence colony in instituting what is to-day one of the principal instruments of government in every civilized community, may call for more than passing appreciation.¹

The United Provinces.—The policy of desultory census-taking was ended for Canada in 1847 by an Act which represents the first legislative attempt to bring official statistics under control. The Act created a "Board of Registration and Statistics," with instructions to "collect statistics and adopt measures for disseminating or publishing the same," and to report annually to Parliament. It also provided for a decennial census. The Board was originally composed of the Receiver-General, the Provincial Secretary, and the Inspector-General, but in 1857 the Minister of Agriculture was substituted for the Inspector-General, and became Chairman of the Board. Thus originated the connection maintained for over half a century between the Census of Canada and the Ministry of Agriculture. Two censuses were taken under the Act of 1847, in 1851 and 1861, respectively. Censuses of Nova Scotia and New Brunswick were taken in the same years.

Reconstruction at Confederation.—For some time prior to Confederation, dissatisfaction had been felt with the working of the Act of 1847. This culminated in 1865 in a report by the then Minister of Agriculture, the Hon. T. D'Arey McGee, which included a memorial by Dr. J. C. Taché, Secretary of the Board of Registration and Statistics. The strictures in this report on existing conditions were of the severest

¹ An article on "Census-taking in various countries" which appeared in the *Census and Statistics Monthly*, vol. IV, 1911, pp. 94-96, and which dealt with the origin of Census-taking, may be of interest for purposes of reference here.

Mr. G. H. Knibbs, C.M.G., F.S.S., Commonwealth Statistician of Australia, has the following note on early Census-taking: "Though the practice of Census-taking, in some form or other, is probably as old as any form of civilization, the institution now known as the Census may be said, in so far as its scope and application are concerned, to have been evolved only during the 19th century. We at least know that in Babylonia statistical inquiries were carried out as far back as 3800 or perhaps even 4500 B.C. whilst in China enumerations of the people took place certainly as early as about 3000 B.C., and in Egypt in about 2500 B.C. It is not without interest to note that the first Biblical account of an enumeration of the people is that referred to in the Book of Exodus (Exodus, xxx, 12), where it is stated that Moses was directed to number the Children of Israel and to levy a poll tax, the assigned date of this being 1491 B.C. There are several other Biblical references to Censuses (Numbers, i, 1-3 and 47-49. Numbers iii, 14, etc., and 14, 34, etc. 1 Chronicles, xxiii, 3, etc. 2 Chronicles, ii, 17. 2 Samuel, xxiv, 1-9. Ezra, ii, 1-61. Nehemiah, vii, 6-69). The most notable of all these is, perhaps, that carried out in 1017 B.C. by the Hebrew King David. Strange as it may appear to-day, there is good authority for believing that the Biblical account of the Divine wrath (1 Chronicles, xxvii, 24. See also 1 Chronicles, xxi, 1-6), resulting from the action of David in carrying out this enumeration of the Israelites, gave rise to the idea that the act of Census-taking was in all cases a religious offence, and consequently had the effect of delaying the adoption of the Census in England for many years. A form of Census, taken every quinquennium for fiscal and military purposes, was a regular Roman institution, and lasted from about 435 B.C. until the sacking of Rome (A.D. 410). After the latter date, although various works of a statistical nature, notably the *Breviary of Charlemagne* (A.D. 808) and the *Domesday Book* of William the Conqueror (A.D. 1086)—were compiled in Europe during the Middle Ages, we have no record of any further Census having been taken until the 17th Century. The credit for the revival of systematic enumeration belongs to the Canadian Province of Quebec, or La Nouvelle France, as it was then called. There, a Census was taken in 1666, and at a somewhat later date Censuses were also taken in Nova Scotia (then Acadia) and Newfoundland."

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character. Notwithstanding the express provisions of the Act, no statistics, it was affirmed, had been collected or published, except those of the two decennial censuses, and the latter abounded in inaccuracies and inconsistencies ("absurdities of the most ridiculous character") notwithstanding that over \$260,000 had been expended on their preparation. The report concluded with a plea for "real Canadian statistics" to be achieved under a series of nine recommendations which may be resolved into two: (1) the working-over, collection, and republication of Canadian statistics from the earliest times, and (2) the taking of a census in 1871 by way of bringing the series of statistics thus obtained to date and of laying foundations for a better future on improved methods. "Such a mass," wrote Dr. Taché, "of well-prepared information on the territorial, vital, religious, educational, administrative, judicial, agricultural, commercial, industrial and financial statistics of our country would constitute a monument at which the enlightened part of the population would look with complacency, and other countries with a great deal of interest." The proposals of the report were to a large extent adopted, and Dr. Taché was himself appointed Commissioner for the Census of 1871, which was taken under a special Act passed in 1870. Meanwhile, the British North America Act, 1867, had specifically mentioned "Census and Statistics" among the subjects falling under the jurisdiction of the Dominion Government, as requiring national rather than local direction, whilst the Act establishing the Dominion Department of Agriculture in 1868 named "the Census, Statistics and the Registration of Statistics" as the sixth of nine subjects under its control.

The Modern Period.—From a legislative standpoint, the statistical system which lasted until 1918 may be said to date from the "Census and Statistics Act" of 1879. The Act required a census to be taken in 1881 and "at the beginning of every tenth year thereafter." A section headed "Statistics" provided that the Minister of Agriculture should, from time to time, make rules and regulations "for the purpose of collecting, abstracting, tabulating and publishing vital, agricultural, criminal, and other statistics." As administered, however, the Act was mainly a Census Act, and took little cognizance of general statistics. These, for the most part, grew up independently, and only briefest mention of them is possible here: A miscellaneous collection of municipal, insurance, and building society statistics had been brought out in an annual volume by the Department of Finance prior to 1873. From the earliest times, the statistics of imports and exports had been recorded by the Department of Customs; after 1893 these statistics were also published in made-over form by the Department of Trade and Commerce. A Railway Statistics Act had been passed in 1873, and a Criminal Statistics Act in 1876. Statistics of banking and public finance were present from the beginning, as were those of certain phases of production, notably fisheries. A scheme of mortuary statistics for leading cities dated from 1883. In general, each department published such statistics as were thrown off by its administrative machinery. The only medium for co-ordination was the Statistical Year Book, which came into existence in 1886; the general statistical sections of the Act of 1879 had in that year been erected into a separate statute, and the Year Book was brought out thereunder.¹ The decennial census, however, remained the most comprehensive statistical inquiry in Canada, and the sole authority upon many important phases of national activity. With the opening of the West, the practice of taking a census for these rapidly growing sections

¹ Immediately after Confederation a "Year Book and Almanac of British North America, being an Annual Register of Political, Vital and Trade Statistics, Customs Tariffs, Excise and Stamp Duties, and Public Events of Interest in Upper and Lower Canada, New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland and the West Indies" was founded. Subsequently this title was altered to "The Year Book and Almanac of Canada, being an Annual Statistical Abstract of the Dominion and a Register of Legislation and of Public Men in British North America." The editor was Mr. Arthur Harvey, of the Finance Department, Ottawa, but the work was in no sense a government publication. It lasted from 1867 to 1879.

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midway between the general censuses was inaugurated in 1885 with a census of the Northwest Territories and in 1886 with a census of Manitoba. The latter was repeated in 1896, and was extended to the other Prairie Provinces in 1906 and 1916.

A new but not essentially different phase was introduced in 1905, when the Census Office was made permanent. Previously, what amounted to a new organization had been called into existence for each census. The United States had made its census permanent in 1902, and there were potent reasons for similar action in Canada, notably the need of a trained and experienced staff for work so important and unique, and of the maintenance of a uniform policy and technique.¹ The "Census and Statistics Act," 1905, was of the nature of a consolidation of the Census Act, the Statistics Act, and the Criminal Statistics Act. The new "Census and Statistics Office" was placed under the direction of a "Chief Officer" whose duties comprised the taking of the decennial and quinquennial censuses of population, natural products, and economic resources, and the prosecuting of such special intercensal inquiries as might be ordered from time to time by the minister. The Act made several improvements in statistical machinery.

A considerable amount of new work of original character was undertaken by the reorganized office after 1905, including a postal census of manufactures in 1906, and postal censuses of dairying and agriculture in 1907. In 1908, a crop-reporting service was instituted, the results being issued in a monthly bulletin. No attempt, however, was made to work with other statistical departments. The Year Book was, in fact, remodelled in 1905 by omitting education, vital, municipal, and other statistics of provincial origin, though the review of Dominion departmental statistics was maintained. Meanwhile the latter continued to multiply. The immigration statistics of the Department of the Interior date from 1897; statistics of forestry, issued by the Forestry Branch of the Department of the Interior, from 1908; statistics of mining production (reorganized) from 1906; and statistics of unemployment, strikes, wages, and prices from different years of the opening decade of the present century. Statistics of transportation and communications were reorganized in 1907.

It would be interesting to describe in a less impersonal way the growth of this considerable body of data, and possibly in some future report to trace more intimately the conditions surrounding the beginnings of statistical work in Canada and some of the difficulties that met its pioneers. The decennial censuses, as already remarked, were the outstanding landmarks. Those of 1871 and 1881 were taken by Dr. Taché, whose report in 1865 was so far-reaching in its effects. The third census, (1891) was taken under supervision of the late Dr. George Johnson, and the fourth (1901) and fifth (1911) under that of the late Dr. Archibald Blue, as special census commissioners. How the scope of the census increased from decade to decade may perhaps be most succinctly indicated by the accompanying tables, which include certain obvious and important indices of growth, although they are, of course, by no means a final criterion. It will be seen that whilst population doubled, the extent and cost of the inquiry increased more than proportionately.

¹ For a detailed discussion of the point, see "A Permanent Census Office," prepared at the request of the Chairman of the Committees on the Census, U.S. Senate and House of Representatives, Washington, 1901.

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DECENNIAL CENSUSES.

Year.	Commissioners.	Enumerators.	Schedules Used.	Questions.	Population.	Total Cost.	Cost Per Capita.	Compilation Clerks Employed.
	No.	No.	No.	No.	No.	\$ cts.	Cents.	No.
1871.....	206	2,789	9	211	3,682,257	511,330 47	13 86	-
1881.....	205	3,183	8	172	4,324,810	452,507 79	10 46	-
1891.....	241	4,366	9	216	4,833,239	549,991 76	11 38	143
1901.....	351	8,847	11	561	5,371,315	1,184,458 94	22 05	201
1911.....	264	9,703	13	549	7,106,643	1,302,854 57	18 07	194

DETAILS OF EXPENDITURES.

Census.	For Salaries at Ottawa.	For Field Work.	For Office Expenses.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
1871.....				511,330 47
1881.....				452,507 79
1891.....	108,918 63	411,432 26	29,640 87	549,991 76
1901.....	268,562 56	883,159 16	32,737 22	1,184,458 94
1911.....	140,009 35	1,090,752 31	72,092 91*	1,302,854 57

* Includes cost of adding and tabulating machines and the installation of the latter.

Provincial Statistics.—A word may be added on provincial statistics. The British North America Act did not, of course, preclude the collection and publication of statistics by Provincial Governments. In the provinces, as in the Dominion, the practice has been for each department to publish the statistics it considers desirable, usually in the form of annual reports to the Legislature. Ontario has the longest established and until recently the most completely developed series, but statistics of a sort have existed in all the provinces from the earliest times. Some of these have overlapped and duplicated Dominion statistics, as in agriculture, dairying, insurance, and mining; in other cases, the provincial figures have been the only ones in the field, as in education, municipal and vital statistics. In all cases, each province and each department within the province has proceeded for the most part independently, thus rendering interprovincial comparisons on any extended scale extremely difficult, and Dominion totals impossible.

An exception must be noted in the case of Quebec, until 1912 one of the most backward of the provinces statistically, but now among the most progressive. By an Act of the Legislature, dated December 21, 1912, a Bureau of Statistics was created for the collection and publication of useful statistics and information, especially with regard to education, industry, trade, agriculture, population and colonization. For the preliminary organization of the work, M. Henri Bunle, Statistician in the General Statistical Service of France, was engaged; on the completion of this survey, a chief of the bureau was appointed in the person of M. G. E. Marquis, and substantial progress has since been registered. The chief organ of the Bureau is a Statistical Year Book, published in the French and English languages.

The Statistical Commission of 1912.

Such in briefest outline was the situation which had developed in Canadian statistics in the opening decade of the century. A considerable body of statistical publications had grown into existence; in certain sections of the field good work was being done—in many others not so good; there was much duplication, at the same time that there were numerous gaps, often at crucial points; finally, there was a total lack of general plan or provision for consistent progress. The embarrassment which this occasioned with the rapid growth of the country and the increasing complexity of its problems, many of which called in the most insistent way for statistical treatment, will be appreciated. It led in course of time to much search for a remedy, and at length to the step which brought remedial action within reach.

On April 1, 1912, the Census and Statistics Office was transferred to the Ministry of Trade and Commerce, with general reorganization in view. A few weeks later, the step to which reference has just been made was taken, namely, the appointment on May 12, 1912, of a departmental commission "to examine and report upon the official statistics of Canada."¹ The Order in Council appointing the commission set forth in general terms the evils for which it was expected to find a cure. Outside of the decennial census, the reference affirmed, no comprehensive system of statistics was in existence. Especially to be deprecated was the dearth of statistics of production and of the distribution of Canadian commodities within the country itself. The duplication of effort between departments was referred to, and the opportunity for co-operation with the provinces pointed out, the suggestion being made that Dominion and provincial effort should be co-ordinated, and a central statistical organization set up. The commission was in fine directed to inquire into all the statistical work going forward in the several departments, its scope, methods, and reliability, and with a view to practical results, "to report a comprehensive system of general statistics adequate to the interests of the country and in keeping with the demands of the time."

The commission duly presented its report, and it is interesting before going further to quote the general confirmation of the unsatisfactory nature of existing conditions with which they prefaced their findings—a statement which may be regarded as the final word on the method under which Canadian statistics had thus far been permitted to develop. Referring to the remarks contained in the reference as paraphrased above, the commission said:—

"Though many of the statistical reports issued by various departments and branches are of undoubted excellence and value, there is apparent in the body of Canadian statistics, considered as a whole, a lack of coherence and common purpose. This is traceable to imperfect appreciation in the past of the fact that the statistics of the country, whether the product of one agency or several agencies, should constitute a single harmonious system, with all divisions in due correlation. Under the British North America Act, 1867, the Dominion is given specific authority to deal with 'statistics,' and while this must not be regarded as precluding statistical activity on the part of local governments it does apparently imply that statistics are a matter of national concern and may therefore properly come under the general co-ordinating authority of the Federal Government. No such viewpoint or function, however, has in the past been assumed by the Dominion. On the contrary each department or branch, charged either directly or indirectly with statistical investigation, has con-

¹ The members of the Commission were Richard Grigg, Commissioner of Commerce, Chairman, and Adam Shortt, Civil Service Commissioner, E. H. Godfrey, Census and Statistics Office, W. A. Warne, Department of Trade and Commerce, R. H. Coats, Department of Labour, and J. R. K. Bristol, Department of Customs.

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cerned itself primarily with the immediate purpose only in view. This is, from the usual standpoint, quite as it should be; a department is not to be expected to regard points of view beyond the scope of the administration assigned to it. Nevertheless, the effect statistically has been to inculcate routine and the neglect of opportunities for furnishing wider information and service.

"While this detachment has characterized the departments of the Dominion Government, still more has it been evident as between the several provinces and the Dominion, and between province and province, notwithstanding that the national importance of many of the functions of the provincial governments under Confederation calls urgently for statistical uniformity and homogeneity. This general condition we would consider to be the fundamental defect which must be met and overcome in the existing situation. Some of the unfortunate results which have followed may be briefly noted.

"(1) The scope of Canadian statistics has been restricted. On not a few points of vital interest to the country little or no statistical information exists in a form suitable for practical application. There has been no general comprehensive answer to the question, what statistics should a country such as Canada possess? i.e., what are the phenomena requiring the scientific measurements supplied by statistics if Canadian national development is to proceed to the best advantage? It may be argued that the demand for statistics may be trusted to create the supply; but to wait for the occasion to arise is often to be too late, and such a policy precludes the growth of a statistical system along logical lines.

"(2) Where the statistical activities of several bodies working along similar lines are virtually independent, duplication is inevitable. The notes of evidence show many cases both of actual duplication and of serious waste of effort through lack of co-operation between statistical authorities.

"(3) The statistics are unequal in quality and value. There are instances, both Dominion and provincial, of imperfect statistical method resulting from (a) lack of expert knowledge of the subject under investigation and (b) lack of appreciation of the nature and conditions of statistical measurement. The absence of leadership is nowhere more apparent than in the varying extent to which statistical methods have been developed in different branches. The whole question of reliability is involved in this. Without careful adjustment of method accuracy is impossible. On such a point no more severe criticism is possible than the statement that room for improvement exists.

"(4) The restriction of outlook has impaired promptitude in the issue of reports. Many statistics lose a large part of their value after a comparatively short lapse of time. Especially is this true in a rapidly-growing country like Canada.

"(5) Lack of unity and co-ordination prevents true comparisons between Canada and other countries. The recent growth of international trade and intercourse has rendered such comparisons more than ever necessary, and they have become indispensable to the national progress of Canada."

Before leaving this aspect, it may be said that whilst the above constitutes the most comprehensive arraignment that has appeared of the Canadian statistical scheme other weighty authorities have borne witness to the inconvenience and worse caused by its inequalities and lack of system. Indeed, few public inquiries have been made in recent years without uncovering this feature. Almost simultaneously with the Statistical Commission, the Ontario Commission on Unemployment passed a resolution strongly advocating statistical reform, whilst the Municipal Improvement League of Canada and the Dominion Economic Commission drew attention to fields of first importance in which existing statistics were either wholly lacking or were inadequate to the country's needs.

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The Remedy—Centralization.

Next, as to the remedy. On the subject of general statistical organization, the commission recommended as follows:—

(1) That there be created a Central Statistical Office to organize, in co-operation with the several departments concerned, the strictly statistical work undertaken by the Dominion Government.

The object of this organization should be to co-ordinate the statistics of Canada under a single comprehensive scheme and so to extend them that they may meet the present needs of the country and follow the probable course of its development. To borrow a phrase employed in a similar connection by an eminent statistician, the object of such a reorganization should be primarily to constitute a "central thinking office" on the subject of the statistics of Canada. Describing the possible functions of such an office in Great Britain, Mr. Bowley wrote¹:—

'Such an office must have cognizance of all the statistics of more than departmental importance which are published officially Misleading statistics must be suppressed, overlapping must be stopped, careful plans must be devised for filling in the gaps at present left and preparations made for investigation of matters likely to become of public importance. All Bills involving or affecting the collection of statistics should be considered by it Publications for the use of the public should in some cases be edited by it, with careful definitions, and with short analyses and criticism stating accurately and intelligibly the purport and meaning of their contents; in other cases, where a department already exists for such publication, there should be co-operation with a view to carrying out the purposes already indicated.²

This so well expresses our own views as to the scope and functions which the proposed Canadian Office should assume that we cannot do better than allow it to stand as a part of the report, adding that the examples of Germany and Australia show that the idea is both practicable and valuable.

(2) In order to give effect to this recommendation, it may be necessary to enact fresh legislation or to amend the present Census and Statistics Acts.

(3) The Central Office referred to should, we think, carry out the general policy and the various specific recommendations of the present report."

The report went on to outline how the above could best be carried into effect. With respect to a number of subjects, specific recommendations were made, but it was pointed out that a more detailed examination of the field as a whole than the commission had been able to give was necessary before exact procedure could in any case be laid down. The intention of the report was in fact to be suggestive, rather than constructive, and the commission expressly urged that the first task in the proposed reconstruction should be the formulation of a comprehensive plan of statistics having reference to such matters as the scope of the data to be included, the agencies best qualified to cover the several subdivisions, and the precise manner in which the data in each subdivision should be collected, compiled, and published. In general, it was

¹ The Improvement of Official Statistics, by Arthur L. Bowley, M.A., *Journal of the Royal Statistical Society*, vol. LXXI, pt. III, September 30, 1908, p. 478.

² Mr. Bowley further recommended procedure (for Great Britain) as follows: "Let an office be formed, whose first duty shall be to undertake the decennial census and frequent supplementary inquiries. Let it co-operate with, perhaps ultimately absorb, the Registrar General's departments. Let it take over the tabulation and publication of statistics collected by administrative departments. Let it arrange a *modus vivendi* with the Board of Trade in whatever way will secure the best delimitation of functions and completeness of information. It should, perhaps, be subject for constitutional purposes to the Treasury."

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suggested that the proposed central office should work in close co-operation with Dominion departments concerned in the statistics through an advisory committee, and that a working plan for inter-provincial co-operation should also be evolved. Full discussion, it was thought, would open a door to a solution of the more important difficulties of detail, the lack of national statistical direction and initiative being in the opinion of the Commission the feature which chiefly called for remedy under existing conditions.

Action on the Commission's Report.

The first step in carrying out the report of the commission was taken on June 19, 1915, by the creation of the office of "Dominion Statistician," to which were attached the duties previously exercised by the "chief officer" of the Census and Statistics Office. The title "Dominion Statistician" had been borne by the editor of the Year Book previous to 1904, but the significance now attached to it was widened to include direction of the various statistical activities comprehended in the proposed scheme of enlargement and centralization. As the latter, however, was still tentative, the first duty, in addition to the ordinary administration of the office, was the minute examination of the statistical field as enjoined by the commission, and the drawing up of final and definite plans. The work was interrupted by the Western Census of 1916, but on December 6, 1916, an Order in Council was passed reaffirming the desirability of centralization in statistical organization, and arranging for conferences between the Census and Statistics Office and the several departments concerned. In the practical discussions which ensued, some time further was consumed. On their conclusion, however, it was felt that a thorough canvass had been made of possibilities, and it was decided to proceed by way of legislation along the lines that appeared feasible.

The Statistics Act, 1918.

The Act "respecting the Dominion Bureau of Statistics" (to be cited as the "Statistics Act"), passed at the session of Parliament of 1918, is the measure designed to give final form to the statistical policy of Canada. It crystallizes the suggestions of the Statistical Commission in the light of subsequent research, and with the regulations thereunder lays down a definite plan for the organization and development of statistics. Structurally, the Act is a consolidation of previous statistical legislation of the Dominion Government, including the Census Act, the General Statistics Act, the Railway Statistics Act, and the Criminal Statistics Act—with additions to render the scheme comprehensive. Specific sections deal with the decennial and quinquennial censuses of population and agriculture, an annual census of industry (to include mines, fisheries, forestry, manufactures), the statistics of trade and commerce (foreign and internal), transportation statistics, criminal statistics, and general statistics. Many improvements and additions in detail are made, and the general machinery of administration is considerably strengthened. But the most significant section is that which provides for the creation of the Dominion Bureau of Statistics and broadly defines the latter's functions. The Bureau is charged with the general administration of the Act. Its duties are "to collect, abstract, compile and publish statistical information relative to the commercial, industrial, social, economic and general activities and condition of the people." To these, however, is added the task of collaborating with all other departments of the Government "in the compilation and publication of statistical records of administration." Finally, the taking of the census is under its jurisdiction.

The above, it will be seen, confers what may be regarded as complete jurisdiction in statistics. Particularly significant is the provision for collaboration with the other

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departments, the interpretation of which is, briefly, that where statistics necessarily originate as by-products of departmental administration and their compilation is in the nature of departmental accounting, they should not only meet departmental requirements, but should conform, under arrangements with the Bureau, to the general needs of statistics from the broadest point of view. In other words, provision is made for the organization of the inquisitorial powers possessed by the Government in different connections to the best statistical advantage. Inquisitorial powers are conferred on (1) departments having executive control in specific fields in connection with the exercise of that control, and (2) upon the Dominion Bureau of Statistics for informational purposes. Where the two sets of powers are parallel they are to be organized from the statistical standpoint in co-operation. All other statistics are vested in the Bureau. The multiplication of inquiries by departments having no legal powers to demand response, and the resultant carelessness inculcated in the public, has provided not the least of latter-day handicaps to statistical efficiency.*

In order to define the principle explicitly, and to provide for arriving at satisfactory interdepartmental adjustments, an Order in Council under the Act was passed October 12, 1918, as follows:—

The Committee of the Privy Council have had before them a report, dated October 7, 1918, from the Minister of Trade and Commerce, submitting that section 3 of the "Act respecting the Dominion Bureau of Statistics," passed at the last session of Parliament, imposes upon the Bureau the duty of collecting, abstracting, compiling and publishing statistical information relative to the commercial, industrial, social, economic, and general activities and condition of the people, and of collaborating with all other Departments of the Government in the compilation and publication of statistical records of administration, and that at the present time statistics are being compiled and published in various departments and branches of the public service, resulting in some cases in unnecessary expense and overlapping.

The Minister, therefore, recommends as follows:—

(1) That all purely statistical investigations relative to the commercial, industrial, social, economic and general activities of the people shall be carried out in the Dominion Bureau of Statistics;

(2) That with respect to such records of any department or branch of the public service as are of a statistical character the Dominion Statistician shall confer with the head of such department or branch with a view to arranging that such records be collected, and compiled in so far as possible in conformity with the methods and organization established in the Bureau, the object of such

* As between (a) complete consolidation of statistical staffs under a single control, and (b) co-ordination under different controls through a commission, the Act provides for consolidation, though leaving room for adjustments in the light of expediency.

Whether statistics is an independent science or merely a highly technical method of presenting facts to be evolved by each science in turn, the principle of each specialist compiling his own statistics has been less frequently followed in government departments than would in a superficial view be supposed. For example the mining statistics of the Mines Department have not been compiled by the departmental experts on copper, iron, coal and the like products but by a statistician attached to the department. Canadian railway statistics have likewise been popularly regarded as decentralized because attached to the Department of Railways and Canals, whereas in reality they have been self-centred, the control of Canadian railways being vested in the Board of Railway Commissioners, whilst the department's function has been to operate the Intercolonial Railway and Canadian Canal system, and to pass on applications for the building of new railway lines. The intercensal statistics of agriculture, again, might be conceived to have shifted from a decentralized to a centralized condition with the passing of the Census and Statistics Office in 1912 from the Department of Agriculture to the Department of Trade and Commerce, carrying the agricultural statistical work with it; in reality there was no change in the practical relation of the work—a fact that shows how purely verbal such distinctions may be. The task of centralization is therefore less difficult than is sometimes supposed, once the principle is accepted as matter of government policy.

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arrangement being the prevention of overlapping, the increase of comparability, and the utilization of departmental organizations in the best manner for statistical ends:

(3) That after such conference the Dominion Statistician shall, at as early a date as practicable, prepare a report on the statistical work of each department or branch of the public service, with a view to carrying out the above requirements, such report to be submitted to Your Excellency in Council for approval with a view to effecting a permanent arrangement for dealing with the statistics collected by the Government; and

(4) That to further promote efficiency and economy, all statistical compilations for the Government be carried out in so far as practicable by mechanical appliances, and that for this purpose use be made of the machines installed in the Bureau of Statistics.

The Committee concur in the foregoing recommendations, and submit the same for approval.

Under the above, adequate means were provided for the working out of the scheme of centralization in so far as the Dominion departments are concerned. It remains to add that the Act also provides the machinery for provincial co-operation—which in view of the extent of provincial jurisdiction is no less essential to statistical organization than is co-operation between Dominion departments—by a clause enabling the Bureau to enter into arrangements for the collection and supplying of statistical data through provincial departments or officers, the latter when executing any duty in this connection to be deemed, for purposes of the execution of that duty, officers under the Statistics Act.

Organization under the Statistics Act, 1918.—The Dominion Bureau of Statistics.

We may now turn to a statement of the organization that has been effected under the Statistics Act, 1918. Though still under development and in places tentative, the plan to which the Bureau is working admits of review in some detail.

At the close of its initial year, the Bureau was embraced in eleven main divisions. Division I, devoted to Administration, was, as the name implies, in executive and general control. The actual field of statistics was apportioned among the remaining divisions as follows: Division II, Population (Demography)—The Census; Division III, Agriculture; Division IV, The Industrial Census (fisheries, furs, forestry, dairy factories, mines, central power stations, general manufactures and construction); Division V, Exports and Imports; Division VI, Transportation (Land and Water); Division VII, Internal Trade, Prices, etc.; Division VIII, Finance (Public and Private)—Wealth, Debt, Taxation; Division IX, Administration of Justice; Division X, Education; Division XI, General Statistics—The Canada Year Book.

In describing the work of the above divisions in turn, an opportunity will be afforded both of noting the principles of centralization that have been followed—and more particularly the co-operative arrangements that have been made with Dominion and Provincial Departments—as well as of indicating, at least in summary, the scope and character of the statistics that are now being undertaken or that are being projected as necessary for important public policy.

Division I.—Administration.

The Administration Division is charged with the general executive work of the Bureau, which is performed in close contact with the office of the Dominion Statistician and under the more immediate supervision of the Secretary of the Bureau. It

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answers the inquiries of the public, appoints and dismisses staff, keeps the Bureau's accounts, and has charge of its permanent records and correspondence files. All requisitions are issued by it, stationery and other supplies given out, mailing lists for the Bureau's publications prepared and revised, and the distribution of reports, bulletins and press notices made. A mimeographing and multigraphing service for the other divisions is a feature, and organization is being made of a central checking and verifying office through which all reports of the Bureau will pass for final revise, drafting of graphs and diagrams, etc.

The Administration Division is naturally the focal point of the Bureau's organization by subjects, and an important part of its duty is to act as *liaison* agent between the other divisions, in which connection three features of the Bureau which specially exemplify the advantages of centralization call for mention:—

(1) *Floating staff*.—Two pronounced characteristics of statistical work are: (1) the large proportion of routine, and (2) the ebb and flow. Such work is peculiarly of the kind which gains by centralization: as the experience of "big business" proves, any arrangement which increases the proportion of low-priced employees adds efficiency and reduces expense. A staff of experienced clerks capable of being shifted to points of pressure is accordingly a prominent feature of the Bureau. Accompanying it is a cost-accounting system to record the working time spent on each piece of work, and incidentally to provide a measure of clerical efficiency.

(2) *Machinery*.—The use of card-punching and electric tabulating machinery has revolutionized statistical compilation. The machines require expert supervision and are expensive (installations to date by the Bureau have cost \$75,000, and the rental of others is proportionate), but the added range of analysis and the saving in time and final costs they permit are great. Thus far machinery has been applied in the Bureau's work only to the census of population and to certain internal trade and transportation records; centralization, however, will facilitate the extension of its use. It will have been noted, in fact, that the Order in Council of October 12, 1918,* looks (clause 4) to the utilization of the Bureau's machines by other Government departments as well, the installation being on a peak-load basis, and intervals occurring when the machines are either wholly or in part idle. In France, a central battery of machines compiles the executive statistics of several departments, and in private business central compiling plants are springing up in the larger cities, as in Montreal, supported by banks, insurance companies, etc., which are thus enabled to avoid the overhead of installation. At the close of the year, services of the nature above indicated were being organized for the Pensions Board and the Taxation Division of the Department of Finance (the cards to be punched in the departments and transferred for compilation to the Bureau) the Bureau gaining in this way, in addition to the primary object, some useful statistical by-products and a wider technical experience.†

(3) *Library*.—A library of standard works on statistical technique, outstanding statistical documents of the past, and current statistical publications of the principal countries is being assembled under a competent librarian. The amalgamation of branches has reduced overlapping—which in library work is particularly expensive—and has rendered some previously uncatalogued collections of books and pamphlets generally accessible. The library is purely statistical, recourse being had to other local sources for works of more general application, except where the latter are constantly in requisition.

*Quoted on pages 18-19.

†The following outline of the manner in which mechanical tabulation is effected in the Census of Population may be of popular interest. It will be understood that the records of each individual instead of being taken off from the census returns by hand on a compilation sheet are punched upon a card, and the compilation effected by passing the cards through sorting and tabulating machines.

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Division II—Population—The Census.

Entering the field proper of statistics, the first subject of all to demand attention is undoubtedly the people which make up the nation—to which phase the term "demography" has been applied. And here on the threshold of the Bureau's work a principle which runs throughout its organization (applicable to best advantage under centralization) must be briefly noted.

In familiar parlance, two kinds of records are commonly employed in accounting, (1) a record of transactions as they occur, and (2) a periodical stock-taking. Similarly, statistics may be roughly divided into those derived from the continuous observation of phenomena while functioning, and those of the census or national stock sheet. Certain information is best brought out by the one treatment, certain other by the second. It is superfluous to add that the two series of records should be carefully related to each other, and that the limitations of each should be clearly recognized.

The decennial population census is, of course, the national stock-taking *par excellence*. The fact, however, that it has for primary object the enumeration of the people is of considerable moment statistically. The enumeration of the people in itself is a very large task (it has been said of the United States census that it is "the largest single administrative act of the Government") demanding machinery of an elaborate and special character. In chief it requires a very numerous field force, sufficient to reach by personal contact, within a few days' time, each individual within the country. Obviously the heavy expenditures of so large an organization should be made to yield the largest possible statistical return. But there are limits to the kind of data that a census thus organized can supply. It cannot, for example, undertake inquiries involving scientific or technical knowledge on the part either of the census agent or the person from whom the data are obtained. Perhaps the feature of the Canadian census that has oftenest provoked criticism in the past, namely, its tendency to over-elaboration, arose through lack of allowance for the limitations of the population enumerators—joined to its isolation from the general body of statistics. The attempt to collect mortuary statistics, or a record of the deaths occurring during the census year, is a case in point: vital statistics require fundamentally the method of continuous observation. Another instance of overtaxing is furnished by industrial production, a highly complex and technical subject, breaking up into innumerable subdivisions, each requiring special treatment beyond the powers of the ordinary popu-

Punching.—The punch-card is divided into fields or zones, each corresponding to a certain specific detail of record on the population schedule. In the card adopted for the 1911 Census, the first four fields were for the identification or "gang punch," so-called from the fact that the cards are perforated with a "gang" of punches simultaneously, the perforations corresponding to the number of the electoral and enumeration district to which they belong. As every district has a particular number, it is impossible, even should the cards become accidentally misplaced, to compile a card belonging to one district with those of another. The remainder of the card was divided into twenty-three fields or zones, covering all the information regarding the individual which could be efficiently compiled.

Verification.—After the cards are punched, gang punched and inspected, they are put through a verification machine in order to detect and reject cards which are insufficiently or inconsistently punched. It is considered "inconsistent," for example, if a woman is recorded as a blacksmith, or a person under five or over twenty as attending school, or a male under eighteen or a female under fifteen as married. Cards rejected for these and similar reasons are referred back for comparison with the original record.

Sorting.—Sorting is accomplished by an automatic machine which feeds the cards one by one between electric contacts. In synchronism with the forward movement of the card, a chute or opening is reciprocated across its path. The sorting is done at great speed, each machine sorting about two hundred and fifty cards per minute into twelve different classifications.

Tabulating.—After sorting for any one field, the cards are ready to be tabulated for the various data predetermined for publication. This is done by tabulating machines at the rate of about 15,000 per day.

The possibilities of mechanical tabulation may be illustrated by the fact that the analytical data of the Census of 1911 comprised 1,664 pages, as compared with 537 pages in 1901, as a result of new studies covering families, immigration, etc.

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lation enumerator. Speaking broadly (the principle must not be run into the ground) the decennial census should be a stock-taking, primarily of the people but extended in so far as possible to the whole field of statistics. How this works out in specific cases, and the Canadian census is made to yield the maximum dividend on its overhead, is touched upon in the proper connection in the following. The taking of the census in this general way is made the duty of Division II of the Bureau, though the latter is assigned population as its subject proper.*

Coming to population statistics in the light of the above, the subject falls into (1) those of the census or decennial stock-taking just mentioned, and (2) the statistics of day-to-day increase or decrease, including (a) vital statistics (births and deaths), and (b) the statistics of migration to and from the country. As above stated, these three divisions should be closely co-ordinated.

The Census.

The Statistics Act provides for a census of the whole of Canada in 1921 and in every tenth year thereafter. Midway between, i.e., in 1926 and every tenth year thereafter, a census of the three prairie provinces, Manitoba, Saskatchewan and Alberta, is to be taken, in view of the more rapid growth that may be expected in these newer regions. This so-called "quinquennial" census dates from 1885-6, when Manitoba and the Northwest Territories were included; since 1906 it has been extended over the three provinces occupying the prairie section of Canada.

The census thus provided for is termed the "Census of Population and Agriculture." The reason for the inclusion of agriculture will, in the light of preceding remarks, be obvious. Approximately 35 per cent of the population of Canada is engaged in agriculture, and the most expensive part of the census organization is that of the rural districts. For agriculture, moreover, the ordinary population enumerator proves a satisfactory field agent, most of the processes of agriculture being familiar ones and such as an enumerator chosen in an agricultural district and usually a practical agriculturist himself can well cover. Hence the provision that the stock-taking of the Canadian people shall be a comprehensive survey as well of their primary industry. Reference in detail to the census of agriculture and its place in the scheme of general agricultural statistics will be found further on.†

* In effect, the Dominion Bureau of Statistics is a general statistical office charged with the taking of the Census, whereas the Census and Statistics Office, which the Bureau supersedes, was a census office *plus* specific independent duties. "A highly organized Government" says a writer in the *Journal of the American Statistical Association* (December, 1914) "should provide for the continuous registration of social phenomena, and for the periodical census of social conditions." He continues, with reference to the U.S. Bureau of the Census: "Permanent maintenance for the performance of a function periodically, however important that function, is a stigma which is fundamentally discrediting to any public office The decennial census has been called the 'greatest single piece of work' undertaken by the Government . . . but it is decidedly unfortunate that the notion should prevail so generally as it does, that providing a nucleus is the chief justification for permanent maintenance The justification for permanent maintenance must ultimately be found if at all in the work done by the office in its character as a permanent bureau. If this other work of the permanent Bureau is casual, a sort of statistical fly-flapping without practical social value in itself, its continuance can not be justified by the exigencies of the decennial census, and the Bureau itself had best be abolished,—even though its abolition might somewhat impair the quality of the decennial census, or prevent any material improvement in that work The intercensal activities of the Bureau absolutely determine the character of its working force. If these activities are trivial, the Bureau itself will always be found incompetent to undertake the decennial census. Unless, therefore, there is concrete evidence that the Bureau has become during the first decade of its existence a 'great statistical laboratory,' it has failed to qualify even for performing the one function which is generally regarded as its distinguishing character."

† See pages 26 and 30.

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Vital Statistics.

Vital Statistics, notwithstanding their importance as the basis of public health and of much of the security and moral tone of social life, have never been satisfactorily organized for the whole of Canada. They are under provincial jurisdiction (as pertaining to civil rights); but in two of the provinces they have virtually never been brought into existence, whilst in the others legislation and administrative methods have differed in the widest way. (For example, the statistical year is not uniform; the International Classification of Deaths is not universally followed; each province has its own standard of administration; and each province its own methods of compiling and presenting results.) Interprovincial comparisons of data or their combination into Dominion totals have accordingly heretofore been impossible.

The original Census Act provided that a record of deaths should be taken for the census year—an attempt to bridge the chasm—but this again may be set down as questionable method. For the reason mainly that in census-taking inquiries involving the use of memory or of scientific knowledge should be avoided (there are other reasons as well), the mortuary census was never more than a partial success, over twenty per cent of the deaths being missed and the information actually collected being of limited value, especially in the all-important matter of the cause of death. Even had it proved otherwise, mortality statistics are only a section of the field of vital statistics, and at ten-year intervals are of little use. Thirty-five years ago, the Dominion Government began the annual collection of vital statistics directly from the leading municipalities, then the only source of birth and death records, but the statistics lapsed in the early nineties with the organization of the provincial systems.

The remedy, of course, lies in uniform standard legislation and administration by the provinces, with a central Dominion office as intermediary agent for the maintenance of the standard and for the compiling and publication of the more important comparative results. More than almost any other subject, vital statistics gain by breadth of treatment; to work in a water-tight compartment is to lose half the fruits. Vital Statistics, in fact, are international in scope. The decennial census also should carefully relate its population rubrics to the needs and objects of vital statistics; certain data of first-rate interest to vital statistics are most readily obtained through the census. The census in the past has not always obtained these data, but it might plead in extenuation that it was difficult to relate its inquiry to vital statistics when the latter did not exist.

Looking to the working out of an arrangement as above outlined, the Census and Statistics Office, in 1916, submitted a memorandum to the provinces, in which the situation was reviewed in detail and a tentative solution put forward. A model provincial bill was drafted and appended to this memorandum, with model forms of registration and model regulations for procedure in detail, together with a draft Order in Council defining Dominion obligations—the whole based on the vital statistical legislation and administration of the several provinces and of other countries, notably the United States and Australia, whose forms of Government and social institutions approximate closely to our own. The memorandum was followed by an exchange of views, and by the end of 1917 sufficient progress had been made to warrant the calling of a conference for more formal action.

The conference was held in June, 1918, and there were present, in addition to the provincial and Dominion officials, who constituted the principals in the negotiations, representatives of the Dominion Departments of Immigration and Insurance, the Commission of Conservation, the Dominion Pension Board, a committee from the American Society of Actuaries, and delegates from the Canadian Medical Association, the Union of Canadian Municipalities, and the Municipal Improvement League of Canada. The United States Bureau of the Census kindly sent the chief of its Vital

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Statistical Division to assist in the deliberations. The conference, after a two-days' session, adopted the general plan suggested by the Bureau, the Model Bill and forms being sent on to a committee, which completed the work of drafting at a meeting held in December, 1918. Briefly, the plan involves the passing of the Model Bill and its enforcement to a ninety per cent standard by the provinces. The Dominion Bureau, on its part, agrees to print and supply the various forms and schedules called for by the scheme; to pay the cost of transcribing and forwarding the data when collected by the provinces; to effect all compilations by the punched-card method and according to a plan of tabulation to be agreed upon; to co-ordinate the statistics of migration in accordance with the scheme; to take the census of population in close relation with vital statistics; and to pay the expenses of periodical conferences between Dominion and provincial representatives for the discussion of problems arising in the working out of the plan. The Decennial Mortuary Census will be abandoned, its insufficiency having long been recognized in the United States, France, and Germany, and experience in Canada pointing strongly in the same direction.*

Since the conclusion of these negotiations, four of the provinces have introduced the necessary legislation. In two others, new legislation will not be called for, whilst in the rest action will probably be taken in 1920. An Order in Council ratifying the engagements of the Bureau of Statistics has been passed, (P.C. 693, dated April 22, 1919), and it is thought that actual work upon the plan will be begun in 1920 and completed within the twelve months following. Thus, within measurable distance of time, the problem of vital statistics bids fair to be solved. Always important, the war has rendered the intelligent study of our vital stock increasingly so, not only for the repairing of losses but for the building up of a people equal to the development of our natural resources, on which the economic future so largely depends. The reforms now contemplated, it may be pointed out, coincide with the establishment of a Dominion Department of Health, which, without the measurements afforded by vital statistics, would be seriously handicapped. The general statistical work of the new department will be carried out in the Bureau.

Migration Statistics.

The place which migration statistics occupy in the scheme of population statistics has been already indicated. As vital statistics show the natural increase or decrease, Migration Statistics show the increase or decrease by movements to or from other countries. A record of immigrant arrivals has been maintained by the Immigration Branch since the beginning of the century. It is the intention to have this record include in future all items necessary for co-ordination with the decennial census and vital statistics, a punched-card of each entry to be filed in the Bureau, where it can be made part of the general population record.

With regard to emigration, no statistics are at present available, but it is hoped to institute a record coincidentally with the beginning of the work on vital statistics. The treatment of emigration from Canada falls into two divisions, namely, (1) that by seaports, which offers no special difficulty, and (2) that by land to the United States. The latter movement is very heavy, and involves the added difficulty of distinguishing bona fide emigration from the transient interchanges that take place daily on so considerable a scale between the two countries. It is thought that by co-operation with the Immigration Department of the United States, which records and classifies all passengers from Canada into the United States (as emigrants, returning citizens, visitors, etc.) in the same way that emigrants from the United States to Canada are recorded by the Canadian Department, the problem

* A report of the proceedings of the conference was issued as a special document and may be had on application to the Bureau.

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may be solved, and an accurate measurement set up of this important movement. The necessity for such measurement will be appreciated when it is said that according to the last decennial census nearly half of the huge volume of immigration of the preceding ten years had passed out of the country, only a little over fifty per cent remaining domiciled in Canada when the census was taken.

National Registration, 1918.

A special feature of the work during the past year was the compilation of the returns of the national registration taken in June, 1918. A temporary staff of over 400 clerks was employed in the various operations of coding, punching, verifying, and typing the cards, the necessary office space being obtained in the Victoria Museum. The cards were then transferred to the Bureau to be sorted and tabulated on the Bureau's machines. The signing of the armistice on November 11, 1918, having rendered the continuance of further national war effort unnecessary, the greater part of the work projected was not pushed to completion, but the following information was taken off, for the use of the Board of Registration:—

For Males:—

- (1) Classification of the male population, 16 years of age and over, according to citizenship; by provinces.
- (2) Classification of the population of foreign origin, as enemy, allied or neutral;
- (3) Classification of unmarried males, free from physical disabilities, by single years of age, between 16 and 45.

There was also in course of preparation the following:—

- (1) Classification of the male population by families, and the number of children under 16 years in each family;
- (2) Number of males deflected from their regular occupations to emergency work;
- (3) Number of males supporting families, by industrial groups;
- (4) Classification of male immigrant population by occupations; their segregation in urban and rural centres.

For Females.—The tabulation of the data concerning the mobilizable women of Canada, being demanded for various purposes by women's organizations, were carried further than in the case of males, the following tables being compiled:—

- (1) Number of females able to give full time paid work, classified (a) as being able to leave home, (b) as not requiring remuneration for work.
- (2) Number of females whose home ties permitted them to give full time paid work, classified by provinces, according to their industrial or professional training.

(3) Number of females able to give full time paid work, classified according to the branch of farming in which they possess experience.

(4) Number of females employed in each specified industry, classified according to language spoken: (a) English only; (b) English and French; (c) French only; (d) Foreign tongue only.

(5a to 5j) Ten tables, classifying mobilizable women reported in "Domestic and Personal Services," for Canada and the provinces, by occupational or trade callings.

(6a to 6j) Ten tables, classifying mobilizable women reported in "Professional Services," distributed for Canada and the provinces, by occupational or trade callings.

(7a to 7j) Ten tables, classifying mobilizable women in each industrial group for Canada and the provinces.

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The cards were also employed to furnish lists of farmers for use in collecting the annual and monthly statistics of agriculture, the work on which will be described in the next following section.

Division III—Agriculture.

The census of agriculture for Canada is taken, as previously stated, in Division II. Comprehensive and definitive as it is, the census can obviously form only part of a complete system of agricultural statistics. The immediately practical part is a month to month service of reliable information on conditions affecting current farm production, and more particularly a statement of the volume of production annually at the earliest date consistent with accuracy. So important is the latter service, not only to agriculturists but to the business community at large—agriculture bulking so preponderatingly in the Canadian scheme—that it has been assigned a distinct division in the Bureau.

The manner in which the work of crop reporting was carried out for many years in the past offered a leading example of statistical malpractice. Originally the statistics of the census were the only data having official imprimatur, and these, as just remarked, can be regarded as foundational only. The first annual statistics were undertaken by certain of the provinces. Others gradually followed, but their methods differed, and some were content with estimates of only meagre character. The Dominion Government accordingly, faced with the need of nation-wide statistics, began in 1908 through the Census and Statistics Office the issue of a monthly bulletin on agricultural conditions (originally the "Census and Statistics Monthly," in 1917 changed to the "Monthly Bulletin of Agricultural Statistics"), including annual statements of agricultural yields and the numbers of farm live stock. Reliance was had for the estimates contained in the Bulletin upon a large body of voluntary crop correspondents, scattered throughout the country, who reported monthly according to a fixed routine. In 1910, the Office became the medium through which data were prepared for the International Institute of Agriculture, to which Canada was one of the original adherents. Thus for a considerable portion of Canada a dual series of agricultural reports and estimates, Dominion and provincial, came into existence (and not infrequently into conflict),—a source of embarrassment to the many who required trustworthy agricultural figures, and the cause of constant friction among officials. Even for the census years, when the element of estimate was eliminated, the figures of the provinces were in some cases left at variance with those of the Dominion.

The situation has now been cleared up, and there exists to-day a unified and co-ordinated scheme of agricultural information and statistics, monthly and annual, for the whole of Canada. The negotiations which achieved this result were begun in 1913. On March 26, 1914, a further step was taken at an informal conference held at Ottawa between representatives of the Dominion and Provincial Governments, at which the question of improving the methods of agricultural statistics was generally considered, the principle of co-operation endorsed, and adjournment made on a resolution which relegated to the Census and Statistics Office the drafting of a detailed plan. After minute and comprehensive study of the situation the Office in due course completed the task assigned, with the result that in 1917, after a further exchange of views, a co-operative arrangement between the Dominion and four of the provinces (Quebec, Alberta, Saskatchewan, and British Columbia) was successfully applied; in 1918 this was extended to all the nine provinces of the Dominion.

In the scheme as devised—which, as already explained, aims primarily to keep the country in constant touch with agricultural conditions and prospects—the pivotal figures, in the case of field crops, are those of the acreages sown in the spring: apply-

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ing the average yields per acre at harvest, the total crop is estimated. In the case of live stock, the numbers of each kind on the farm in the month of June are similarly important. The method previously in use for securing these spring data, namely, by means of estimates from correspondents as to the percentage increase or decrease in each district compared with the preceding year, was frankly admitted to be faulty, notwithstanding that it has had the adherence of the United States Department of Agriculture for sixty years. It provides no solid foundation, and errors tend to become cumulative. What is required instead is a series of actual returns from as large a number as possible of individual farms, so that the estimate, if estimate there must be, may rest on fact. Ontario early recognized the superiority of this method and adopted the plan of circularizing individual farmers.

The difficulty, of course, lies in reaching so large a number of individuals: there are over 640,000 holdings in Canada of five acres and upwards. After a thorough canvass of ways and means, it appeared that the best avenue of approach to the farmer for statistics purposes lay through the rural school teacher. The school is ubiquitous, and the work of distributing and collecting a census card annually through the school teacher fits in well with educational work. Briefly, the method worked out by the Bureau and the provinces is in general as follows: A card previously agreed upon is printed by the Bureau: it carries some twenty-five rubrics relating to areas of field crops and numbers of farm live stock. The number of cards corresponding to the estimated number of farms in the province is then shipped to each Provincial Department of Agriculture. The latter, by arrangement with its sister Department of Education, forwards the cards in bundles of thirty or forty to the rural school teachers, who have been previously advised and coached in the work by joint circular of the departments concerned. The teacher distributes the cards through the children, to whom a statement of the objects of the inquiry in simple language is read, making the whole a school exercise and a lesson in public service as well as in agricultural education. The plan has also a prospective value in that it is training the children to fill up the forms themselves when they shall have become farmers. The cards are in the first instance sent back by the teachers to the Provincial Department, which arranges them according to counties or crop districts. They are then shipped to the Dominion Bureau for compilation. When this work is completed, the results are forwarded by the Bureau to the province, and the element of estimate is decided by an exchange of views, on the wire or otherwise. Thus, during the fall in each year, the country is in possession of a trustworthy statement by provinces and districts of the acreages under the principal crops and of the number of the principal descriptions of farm live stock.

The average yield per acre is similarly arrived at by co-operative methods. It has been already noted that the Bureau maintains a large staff of correspondents, who report monthly on agricultural conditions, according to a fixed scheme. Several of the provincial departments have similar staffs, though in most cases only quarterly or less frequent reports are received from them. In all, however, an estimate of average yields per acre is made at harvest time. The Bureau, it may be added, for this special service, also obtains a return from the rural postmasters. Thus, the final figures represent the experience of many thousand competent observers scattered throughout the country, most of whom are either practical farmers or are in close touch with the farming community, the figures being settled by agreement between the Dominion and Provincial experts after careful consultation with each other.

At present the scheme of annual agricultural statistics is limited in the case of field crops to those in general cultivation, but there are particular branches of agricultural or horticultural production that remain to be brought within the range of the Bureau's activity. These include fruits (especially apples), vegetables, sugar beets, tobacco, flax for fibre, and maple syrup. In fruits, the possibilities of obtaining satisfactory annual figures, and the ways and means of doing so, have been carefully

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studied by the Bureau, in conjunction with the Fruit Branch of the Department of Agriculture, and a joint plan for the collection of fruit statistics for the year 1919 is to be put into operation next fall. For vegetables, other than potatoes, already included as a field crop, it would appear wise to use the data to be collected by the next decennial census of 1921 as a starting point for annual statistics. For sugar beets, special data including the quantity of sugar made from Canadian-grown sugar beets are furnished annually by the Dominion Sugar Company of Chatham, Ont. For flax fibre—a coming industry—the Bureau publishes annually data obtained through the Flax Fibre Division of the Dominion Experimental Farms. For tobacco, the Tobacco Division reports annually to the Bureau as to results of the tobacco harvest in Quebec and Ontario, including area, yield, quality, and value, and the report is published in the Monthly Bulletin of Agricultural Statistics, usually in November. For maple syrup and sugar no statistics other than those of the census have as yet been collected, except in Quebec, but the possibilities of collecting annual figures for Canada are under investigation.

The above, as previously stated, are the pivotal figures in the Bureau's scheme of annual agricultural statistics. They are released to the press in summary form immediately they are available, and the full details appear in the next following issues of the Bureau's "Monthly Bulletin of Agricultural Statistics." The other matter of the Monthly Bulletin may be regarded as grouped about the above. Each number contains a statistical summary of the current reports of the Bureau's correspondents on agricultural conditions by provinces; summaries of similar reports from provincial sources; reports from Dominion Experimental Farms and Stations; crop reports from other countries; the latest statistics of the International Institute of Agriculture on world crops and live stock; a report on the weather of the previous month; and from three to five tables giving weekly and monthly average prices of the principal agricultural products in the Canadian and British markets. The general scheme of the Bureau's annual agricultural crop reporting service may be seen from the following statement:—

January.—Farm values, including values of farm land, wages of farm help and values of farm live stock.

March.—Farm products on hand and percentage of merchantable quality. Condition of live stock.

April.—Areas winter killed of fall wheat, hay and clover. Condition of the growing crops of fall wheat and of hay and clover. Progress of seeding operations (spring wheat, oats and barley). Dates of sowing and appearance of wheat above ground.

May.—Preliminary estimate of areas sown to spring wheat, oats, barley, rye, peas, mixed grains, hay and clover, alfalfa and pastures. Condition of these crops and also of fall wheat. Dates of sowing and of appearance of wheat above ground.

June.—Revised estimate of areas sown to spring wheat, oats, barley, rye, peas, mixed grains, hay and clover, alfalfa and pastures. Condition of these crops and of fall wheat. Areas of late-sown cereals and hoed crops, including buckwheat, flax, corn for husking, beans, potatoes, turnips, sugar beets, mangolds, carrots, etc., and corn for fodder. Dates of sowing and of appearance above ground of wheat. Dates of heading, flowering and milk-stage of wheat.

July.—Preliminary estimate of the yield per acre of fall wheat, hay and clover and alfalfa. Condition of spring wheat, oats, barley, rye, peas, beans, buckwheat, mixed grains, flaxseed, corn for husking, potatoes, turnips, mangolds, carrots, etc., hay and clover, alfalfa, corn for fodder, sugar beets and pasture. Dates of heading, flowering, milk-stage and cutting of wheat.

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August.—Estimate of the yield per acre of spring wheat, rye, oats, barley and flax. Estimate of areas sown to these cereals that from any cause will not produce a crop. Condition of spring wheat, oats, barley, rye, beans, buckwheat, mixed grains, flaxseed, corn for husking, potatoes, turnips, mangolds, carrots, etc., hay and clover, alfalfa, corn for fodder, sugar beets and pasture. Dates of heading, flowering, milk-stage and cutting of wheat. Stocks of wheat, oats and barley in hand on August 31.

September.—Estimate of the yield per acre of fall wheat, spring wheat, oats, barley, rye, peas, beans, buckwheat, mixed grains, flaxseed and corn for husking. Quality of these crops when harvested. Condition of potatoes, turnips, mangolds, carrots, etc., sugar beets, corn for fodder and alfalfa. Date of cutting of wheat.

October.—Yield per acre, quality and average price of potatoes, sugar beets, turnips, corn for husking, other roots (mangolds, carrots, etc.) hay and clover, fodder corn and alfalfa. Acreage sown to fall wheat. Condition of fall wheat. Percentage of fall ploughing completed. Acreage summer-fallowed in percentage of previous year.

December.—Final estimates of yields per acre based upon reports of threshing results. Average market prices and weight per measured bushel of cereals.

In addition to the statistics and estimates founded on the above and on the co-operative work with the provinces, a more or less regular sequence of special articles is issued in the Bulletin, including during 1918 the following:—

Outbreak of Wheat Rust in 1917, by W. P. Fraser, M.A., Officer in charge of Grain Diseases Investigations, Division of Botany, Central Experimental Farm, Ottawa, (Expert statistical and botanical study of schedules collected by the Dominion Bureau of Statistics from its correspondents). Influence of the Weather upon Farm crops, (Article explaining new arrangements for co-operation with the new section of agricultural meteorology of the Dominion Meteorological Service at Toronto). Agricultural Meteorology, (Scientific article on the relation of the weather to the yield of wheat in Manitoba, by A. J. Connor, M.A., Dominion Meteorological Office, Toronto). Canada's Opportunity for Exports of Foods, (Special illustrated article by Dr. R. J. McFall, Chief of Internal Trade Division, Dominion Bureau of Statistics). Milling and Baking Tests of Canadian Wheat, 1918, (Report by Dr. F. J. Birchard, Chemist in charge of the Dominion Grain Research Laboratory of the Department of Trade and Commerce at Winnipeg). International movement of artificial fertilizers, from reports issued by the International Institute of Agriculture, including table showing the production and trade in natural phosphates, basic slag, sulphate of ammonia and sulphur, 1913 and 1916, and imports and exports of potash salts and nitrate of soda, 1913 and 1916. Special article by the Editor on the World's Production of Grain and Potatoes, including tables showing by countries the area and production of cereals and potatoes in the Northern Hemisphere for 1918 as compared with 1917, and with the annual averages of the five years, 1912-16. The same, by tables for the Southern Hemisphere and for the southern and northern hemispheres combined. Field Roots Seed for sale, (Statement showing quantities of mangolds, turnips and carrot seed for sale, as furnished by the Experimental Farms Branch of the Dominion Department of Agriculture).

It may be added that the Provincial Governments now assist the Bureau in the appointment of the staffs of correspondents who furnish the above information, in

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some cases the personnel of the Dominion and Provincial staffs of correspondents being the same. The Bureau distributes all data supplied by the correspondents to the provinces immediately upon completion of the compilation each month, and the provinces reciprocate with any similar information that accrues to them.

It has been agreed between Dominion and provinces that the returns of the decennial and quinquennial agricultural censuses shall be accepted as final and as the basis upon which all estimates shall fundamentally proceed, the Bureau undertaking to appoint enumerators by the merit system, and generally to employ approved methods. On the latter point a reform inaugurated in the Western Census of 1916 may be mentioned. In previous censuses the agricultural statistics have been obtained by a series of questions intimately associated with the population rubrics. In 1916, use was for the first time made of a separate agricultural schedule for each farm, covering such features as ownership, areas, values, expenditures, tenure, live stock, animal products, field crops, fruits and vegetables, and forest products on farms; altogether 380 items are comprised under 32 headings. This, though a somewhat more expensive method, gives more accurate and complete results, and will be adhered to in future censuses.

The above plans, while doubtless capable of improvement, represent, it is believed, a suitable beginning in the building up of a valuable scheme of statistics relating to the premier industry of Canada. For 1918, the first year in which the plan was uniformly applied throughout Canada, the returns received represented about 240,000 farms, and these, it is considered will be increased as the work becomes better known and appreciated. Conflicting results in connection with the annual agricultural statistics of Canada are now eliminated, and the work is arranged on a basis that is theoretically sound and that unites all available technic throughout the Dominion in a common effort towards a common goal.

In addition to the agricultural volumes of the decennial and quinquennial censuses and the "Monthly Bulletin of Agricultural Statistics" which have been described in the foregoing, it is in contemplation to bring out an Agricultural Year Book, under the joint direction of the Agricultural and Internal Trade Divisions of the Bureau. The latter Division, as will be explained in detail further on, compiles the statistics of the marketing of grain, live stock, meats and other agricultural products, within the country. The annual statistics of dairy factories, covered by the Industrial Census (Division IV of the Bureau) will also be included, and a summary of agricultural imports and exports and the more important world statistics relating to agricultural production, trade, prices, etc., added.

Division IV.—The Industrial Census.

There is no need to emphasize the importance of a well-rounded system of production statistics, especially in Canada where production is the larger part if not the sole source of the national income. Agricultural production has been already dealt with (Division III). For the large and variegated field that remains—including such sharply differentiated operations as the raising of minerals, the catching of fish, the hewing of timber, as well as the multifarious processes that go on in shops, mills, and factories in converting raw materials into the forms in which they enter human consumption, the "Industrial Census" has been organized.

Historically, the first statistics of industrial production were those of certain Dominion and Provincial departments. The Mines Departments of the provinces, for example, automatically secured statistics whilst collecting royalties upon or otherwise supervising the mining output. Similarly, Departments of Fisheries and Forestry came, in certain cases, to publish the statistics thrown off by their administrative

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activities. But while much valuable information was secured in this way, the statistics as a whole were not satisfactory. Executive departments very properly adapt their records to executive needs; the latter are limited and often differ between departments, whilst statistical methods may vary at will. It has been impossible, therefore, in the past to compare with safety a statistic of, say, a Provincial Mines Department with the corresponding statistic of another province—still less to collate the statistics of, say, a Mines and a Fisheries or Forestry Department. Much overlapping ensued; at the same time, wide areas of the field were left uncovered. Again, for numerous phases common to all industrial processes, but falling beyond the purview of such departments as have been mentioned (notably the problems surrounding capital and labour), still another series of departments have partially surveyed the field from time to time; and still other bodies like the Conservation Commission have been at work from their own distinctive standpoint. It is true that once every ten years a comprehensive survey of industry was made by the decennial census. But decennial statistics of production are only a little better than no statistics at all. Moreover, as explained in a previous section, the organization demanded for an industrial census is of a character almost diametrically opposite to that of a population census. The latter must reach several millions of individuals for a comparatively simple inquiry; the former, outside of fishing and farming, requires access to less than 50,000 entities—but for information which is often complex and technical to a degree. To attempt to collect the data of mines and manufacturers through the medium of the population enumerators is, in point of fact, to invite discomfiture: the census inquiries of the past may have illustrated the broader tendencies of industry, but they did not illuminate details, and details are more and more essential.

In framing the Statistics Act, therefore, it was decided to create entirely separate machinery for the treatment of industrial statistics, including under that heading the statistics of fisheries, mines, forestry, and general manufactures.* The decennial census of the future will compile lists of industries, and otherwise exercise a check, but the industrial census proper will be taken on an annual basis and by a distinct organization. (Statistics Act, 1918, sections 20 and 21.) This organization will proceed in the first instance by collaborating with the departments, Dominion and provincial, having executive functions in specific sections of the field (there are over thirty of these), and will erect independent machinery only in sections outside the range of such administrative supervision. The desideratum in such collaboration is, of course, to place the industrial technique of the administrative departments at the service of the census, and the general statistical point of view of the census at the service of the departments. Many of the latter have considerable field staffs in close touch with the industries under investigation and of expert training. These form the ideal substitute for the untrained enumerators of the population census, and it will be found on other grounds that the departments are the better qualified to collect and visé the statistics in the field, to the Bureau falling the duty of bringing the departments into council, planning the inquiry as a whole, creating the nexus of association between its parts, and generally defining methods. The Bureau also has the larger experience in, and greater facilities for, the work of compilation. The major portion of the field, of course, lies beyond the possibilities of co-operation as above, less than twenty per cent of industrial production falling under departmental observation. Here the Bureau must act alone, proceeding for the most part by correspondence, but employing field agents in the final stages.

* Agriculture, as before stated, is treated in a separate division in view of its importance. The broad classification of production into (1) primary or extractive, and (2) secondary, is carried out in the fisheries, mines, and forestry sections of the Industrial Census, which thus dovetail with the section on manufactures. Divisions III and IV of the Bureau are to be considered together as affording a complete view of production with the several sections in due correlation.

With this by way of general statement, it may be of interest to note just how the field breaks up under the scheme, and how far organization has been effected to the present. The co-operative sections of the Industrial Census include the statistics of dairy factories, fisheries, forestry, mines and central power establishments, and on these in turn a word may be given:—

Dairy Factories.—Dairy factories may be regarded as an appendage to farming. The Provincial Dairy Commissioners are in close touch with the field; most of them have instructors or inspectors who visit every factory once or oftener a season. To secure the statistics of these establishments adequately and without friction and duplication, the following plan has been adopted: First, a common form has been agreed upon. The Bureau prints this and supplies a sufficient number to each Provincial Dairy Branch. The latter, largely through its field staff, collects a return from each establishment. These after viséing, are forwarded to Ottawa for compilation. Immediately the latter is effected for a province, the results are sent back for use in any way deemed expedient. The Bureau publishes an annual report for the whole of Canada, with the editorial assistance of the Dominion Dairy Branch, and there is thus obtained a single coherent return as comprehensive and accurate as official machinery can make it. Quebec, which has long done excellent work in dairy statistics through the Central Bureau of Statistics for the province, prints her own schedules, which, however, conform to the general requirements. For Ontario, the Bureau mails the forms to the factory operators direct, the provincial officers supplying the lists and co-operating in the work of securing the tardy ones and revising results as a whole. Farm dairying is covered as a section of agricultural statistics proper.

Fisheries.—The sea fisheries have always been regarded as the domain of the nation at large (the right dates from Magna Charta), only inland waters falling under provincial jurisdiction. As the lake and stream fisheries of the Maritime Provinces are unimportant commercially, and those of the west still remain under the Dominion, it follows that Ontario and Quebec alone, in addition to the Dominion Fisheries Branch, are concerned in the statistical problem. British Columbia has a Fisheries Branch, but it does not collect statistics.

Statistics of fisheries cover (1) the catch, and (2) the product marketed, the latter divided into (a) fresh, (b) domestically prepared, and (c) factory-made. The men, boats, gear, etc., should, of course, be recorded under (1), as well as the capital, labour, and other details of smoke-houses, freezers, canneries and the like under (2). For the collecting of the data exceptionally effective machinery exists in the departmental field inspectors and overseers who, between the Dominion and Provincial Governments, bring every fishing section under direct supervision; the Dominion officers, in fact, cover their sections monthly. With regard to (1) the catch, two forms are used, one for the sea fisheries and the other for the inland fisheries. The local fisheries officers collect the data, which are forwarded to the Bureau and compiled, after thorough check and revision. The same procedure is followed for the records of (2) fish marketed (a) fresh and (b) domestically prepared. For (c) manufactured fish products, lists of the canneries, salteries, smoke-houses, etc., are furnished by the fisheries officers; the owners are then circularized by the Bureau and the returns viséed by the Dominion Fisheries Branch prior to compilation. The Bureau issues the statistics of fisheries for the Dominion in a report which is edited by the Dominion Fisheries Branch.

Forestry.—The Forestry section includes (1) operations in the woods, (2) saw-mills, (3) cooperage shops, (4) sash and door factories, planing mills, etc., (5) pulp and paper mills, and (6) wood distilleries—from which the subject shelves into specialized wood manufactures.

For operations in the woods, Quebec and British Columbia have excellent statistics, but the other provinces record merely the cut on Crown Lands (on which stump-

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age dues are collected), the increasing areas of forest held in fee simple not being covered. (In Nova Scotia practically all timber lands have passed from under the Crown.) The Bureau proposes to obtain statistics direct of such operations and also of the contingent operations of river-driving, the cut of logs, the numbers and wages of the men, the cost of supplies, etc.

The operations of saw-mills and cooperage shops reflect and check the work in the woods, their product being the logs in another form (except, of course, in the case of products like telegraph poles, cross ties, fence posts, etc.). In the saw-milling subdivision, the Bureau collaborates with New Brunswick, Quebec, and British Columbia in preparing lists and collecting the data, but works alone in the other provinces. Similarly the field staffs of the provinces assist in collecting the returns from pulp and paper mills, and the Pulp and Paper Manufacturers' Association also renders valuable assistance in this connection. For sash and door factories, wood distillation, etc., the Bureau acts alone, circularizing the various establishments as sections of general manufactures. Throughout the section on forestry and related subjects, however, the Bureau works in close co-operation with the Dominion Forestry Branch, which previously issued for several years a series of statistical reports on forest products. The latter are continued by the Bureau but in enlarged form and under arrangements as to joint revision, similar to those which obtain between the Bureau and the Fisheries Branch.

Mines.—Mining statistics are perhaps the most difficult of all to arrange for, by reason of their exceptionally varied and technical character. At least five provincial departments, as well as the Dominion Department of Mines, have been issuing statistics for many years. These statistics are of good quality, but the methods followed are often at variance, and they are limited to the mining point of view. As to the principles which co-operation might follow, a general agreement has been arrived at between the Bureau and the provinces. As between the Bureau and the Dominion Mines Branch, an arrangement has been made whereby the forms and machinery of the latter will be used to cover mining production, whilst the Bureau will independently secure the other data of the inquiry. The arrangement is not final, but it at least prevents the same Government asking the same concerns twice for the same information. For future years a plan of complete co-operation is aimed at.

Hydraulic and Other Central Power Plants.—Another important section under dual control statistically consists of plants for the manufacture of electric current for sale. There are two kinds of these, namely, hydraulic power plants, whose product is merely the transformed "white coal" of waterfalls, and those which manufacture power from fuel. The first alone are matters of direct administrative concern, but the second are so closely allied that the subject must be treated as one. The Dominion Water Power Branch, the Ontario Hydro-Electric Power Commission, the Quebec Streams Commission, and the Water Power Association of Nova Scotia divide the administrative field. In collaboration with the Bureau, these bodies have agreed upon two forms (the Conservation Commission being also consulted), which it is thought will illustrate the main features of power production, and which can be varied from year to year over the entire range of the subject. They have united also in the preparation of lists of plants. The forms are sent out by the Bureau (except that the Hydro-Electric Commission of Ontario collects from the 250 plants under its control). The compilation is made by the Bureau, after revise of the schedules by the Dominion Water Power Branch, the Assistant Director of which has been sworn in as an officer of the Census. The report is issued in two parts, Part I comprising a comprehensive statistical survey with accompanying explanatory matter, whilst Part II consists of a directory of the commercial and publicly-owned power stations in operation throughout Canada, showing the principal features of each, locations where

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blocks of electrical energy are for sale, the prices at which power is obtainable, transportation facilities available in the vicinity, etc. Part I is issued under the imprimatur of the Bureau of Statistics, and Part II by the Dominion Water Power Branch. The material brought together as above is thoroughly exhaustive, and it is thought will prove particularly valuable during the period of reconstruction upon which the Dominion is now entering. Part I will be repeated from year to year, whilst the Directory will be brought up to date as necessary. An additional feature of this section is the maintenance of a record of water-wheel and other power installations in general industry, on which data are collected by the Bureau from every establishment in Canada.

General Manufactures.—There remains the large and complex field of general manufactures, in which little or no statistical work has been done in the past save by the decennial census or by intervening postal censuses like those of 1905 and 1915. These statistics will now be collected annually. The problem consists first in securing the names of going concerns. Every known source is exploited for these—directories, gazetteers, commercial agencies, boards of trade, and manufacturers' associations. Among governmental departments, the Factories' Inspection Branches and Workmen's Compensation Boards assist materially in this connection. Each concern is then circularized under the Statistics Act (section 21). Some field work is necessary; this is provided by a small staff of local agents. About ninety different forms are used—one for each distinct group of industries; previous censuses of manufactures were taken on a single form, a procedure which made it impossible to call for specific data on such points as equipment, raw materials and products. It is now hoped to get complete statistics for about four thousand named products.

The office organization required for so extensive and intricate an inquiry has been given careful consideration. Each concern has been assigned its place in a classification scheme that includes some 400 divisions. Each is card-catalogued and given an office number—by which alone it is known to the clerical staff, thus ensuring the secrecy of individual returns. There are about 40,000 names in the catalogue.

The above is an outline of the basic organization of the Industrial Census. It by no means represents the entire plan (which is still under the hand) or the several points of view from which the data are capable of analysis and publication. For example, a Census of Chemical Industries, including in the term not only the manufactures of chemicals but all concerns in which any of the processes used are essentially dependent upon the agencies of chemical change, is a feature introduced during the past year on the representations of the Honorary Advisory Council for Scientific and Industrial Research. An inquiry of this kind is necessarily of the nature of a cross-section of the work proper. The statistics bearing on labour conditions are also a special feature. Here delimitation with the Department of Labour is being arrived at, the latter dealing with trade disputes, unemployment, and rates of wages (as administrator of Government Labour Exchanges and the legislation relating to fair wages and trade disputes), whereas the Bureau provides the general background of employment statistics (number and classification of employees, days worked, etc.) and the statistics of working class earnings (analysed), wage standards, hours worked by industrial establishments, etc.

The scheme of publication has been partly indicated in the foregoing. An object of the Bureau has been to separate the statistics of the primary or extractive industries from those of secondary production wherever possible. Thus there will be reports on the fisheries, on forestry and on mines, as constituting, with agriculture, the primary industries aforesaid. In some cases the statistics of immediately related manufactures will be printed within the same cover for convenience of reference, but the differentiation will be marked as clearly as possible. For example, the fisheries report will include the canneries, salteries, and other fish-preparing establishments, as well as the catch. In a similar way the mines report will cover contingent metallurgical operations.

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Surveying the entire field of manufactures or secondary production will be a general or summary report. There will of necessity be some repetitions of matter, but they will be few, and a broad review of production from end to end, with the several divisions in sharp relief will be for the first time possible. The number of special reports that might grow out of such general organization from year to year will depend on circumstances. The report on dairy factories already mentioned is essentially part of the subject of agriculture; other reports on flour and grist mills and on slaughtering and meat-packing establishments might be suggested as closely though not directly connected with the same basic industry. Closely associated with forestry operations are the series of reports on lumber, lath and shingle manufactures, cooperage plants, pulp and paper mills, wood distilleries, and sash and door and planing mills already mentioned. Other special reports in preparation for 1917 covered agricultural implements, automobiles, musical instruments, textiles and leather, respectively. The report on central power plants and on the chemical industry previously described may also be included in this category. In point of fact the list is capable of indefinite enlargement according to demand.

In each of the reports that have been mentioned a more or less uniform plan of presentation is followed; first the statistics in detail of goods produced and of raw materials consumed, are given; the agencies of production are then taken up, namely, (1) capital and (2) employees, including under the former the land and buildings, machinery, materials on hand, and "working capital," and, under the latter, details as to numbers, salaries, wages, working time, etc. The statistics of power employed, of fuel consumption are also given, together with those of certain miscellaneous expenses, such as taxes, insurance, advertising, rent, royalties, etc.

As remarked at the outset, the role of Canada for the next half century at least must be *par excellence* that of a producer. With a scheme of production statistics along the lines that have been indicated, improving with time, it should be possible to keep in close touch with this governing factor in Canadian development.

The Classification Problem.

A problem met at the outset of organizing the Industrial Census was that of classification. It is a problem of many ramifications, re-appearing in several sections of the Bureau, but the general principles applied to it may be stated here.

In the first instance, the industries have been brought together in a series of some four hundred groups, according to the chief article of production and prevalent trade custom. Thus, the "alluvial gold" and "nickel-copper" groups of mines; thus, the "lobster-canning" and "carriage and wagon" industries, which include every concern carrying on the operation specified or manufacturing the articles mentioned as their leading activity.

This, however, goes but a short distance. A large number of establishments manufacture more than one commodity. If, therefore, it is found that certain concerns listed in, say, the "agricultural implement" group, manufacture also carriages and wagons as a second product, it is clear that the statistics of the "carriage and wagon" group proper are incomplete. By securing separate returns from as many sections of industry as can be segregated, even when united under the same management, the amount of error in such statements is reduced to a minimum. For the products themselves a careful drafting of forms by insuring comprehensive returns provides substantial accuracy by means of cross-compilation. The forms of the Industrial Census include about 3,600 articles.

The main classification problem, however, arises in the grouping of the commodities. Here the purpose is two-fold: first, to ensure the maximum of accuracy for any group-heading employed; and, second, to enable statistics of production to be readily collated and compared with the statistics of trade, prices, transportation, occupations, etc.

In the past, the groupings employed have not met these requirements. This has been due largely to the fact that there has been no general appreciation of the principles which a system of grouping must follow in any section of the field if it is to avoid inconsistencies. To take an example—if a grouping system contains such headings as “leather” and “clothing” within the same category, accuracy becomes impossible, as an article like boots and shoes cannot be placed in the one without rendering the other defective. Concurrently, it becomes impossible to compare, say, the production of “leather goods” or of “articles of clothing” with imports, prices, wages, etc., under the same headings, as the headings in question, if left to determination by different branches, are almost certain to have different significations.

For the general discussion of the problem, the Bureau of Statistics organized in May, 1918, a committee consisting of Prof. W. C. Clark of Queen's University, chairman; Mr. Bryce M. Stewart, Department of Labour, and Mr. T. Norman Dean, Statistician of the Ontario Workmen's Compensation Board, Toronto. Beginning with the problem of grouping the products of the Industrial Census, the committee in the course of its work got into touch with the several Dominion and Provincial Departments interested, and also with a similar committee appointed in the United States in 1917, consisting of representatives of the Census, the Labour Department, the Interstate Commerce Commission, and the Workmen's Compensation Bureaus of New York and Massachusetts, who were engaged in a similar attempt to establish general principles of classification for the United States.

The broad conclusion reached by the Committee was that any grouping scheme for statistical purposes should adhere throughout to one of the three following principles, viz., the principle of grouping according to “chief component material”; according to “purpose”; or according to “source or origin” (the farm, the forest, the mine, etc.). These principles should not be intermingled in any one scheme; for the presentation of details one of the principles (preferably the “chief component material” principle) should be adopted and adhered to as far as possible, the remaining two classifications being used for the presentation of analyses and broad totals. By such a method “boots and shoes” would be shown in the detailed presentation under “leather”, but would also be included in the general analytical totals of “clothing”, and among manufactured products ultimately derived from “the farm.” Whilst the method cannot be applied with 100 per cent success, especially for comparative purposes (owing to the intermingling of manufacturing processes, the arbitrary combinations which occur in certain tariff items necessarily included in the trade classification, as well as inherent distinctions in the different points of view from which the problem must be approached), it is felt that it can effect a considerable increase in accuracy over previous practices, and that by adopting it as a standard still further improvements can be worked out in time. A more detailed description of its application will be found in the next following division, where the foreign trade classification has been made over in accordance with the new method during the past year. (See pages 38-40.)

Division V.—Foreign Trade.—Imports and Exports.

For many years an anomalous situation had existed in connection with the statistics of imports and exports. The statistics originate in Customs administration, and from the earliest times the Customs Department had published an annual report dealing with the “Trade and Navigation” of Canada. This, however, did not fully satisfy a rapidly expanding commerce, and in 1892 the newly organized Department of Trade and Commerce began a further series of reports, based on the Customs reports but furnishing additional analyses and elucidations from a trade point of view. The new matter consisted largely of comparative data on recent trade trends, various re-groupings of the trade statistical items, and an assembling of the statistics of Canadian

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trade by countries. In 1895 the department also inaugurated a quarterly trade report, which became a monthly in 1899. Meanwhile, the Customs Department had likewise put out a monthly, whilst in 1905, on the organization of the Census and Statistics Office, foreign trade statistics were included in the re-modelled Canada Year Book on a scale that constituted a third original treatment.* Thus, as it developed, three distinct departmental organizations were engaged in the analysis and presentation of trade statistics: inquiries for trade information might be addressed to three official sources in Canada and receive an independent reply from each.

In no other country has a similar method been adopted. Its disadvantages will be patent. Not only was a considerable duplication in compilation work and printing involved (there was perhaps 40 per cent pure repetition as between the Customs and Trade and Commerce reports), but the final result was to give the statistics considered as a whole an illogical and confusing as well as very prolix arrangement, and to prevent, by the dispersion of responsibility, the alert and constructive direction which the subject requires. The remedy lay, of course, in the unification of the work, allowing the adoption of a single series of reports and a simple and intelligible plan of presentation. Attempts to secure this from time to time failed through lack of opportunity for investigation and discussion in the detail necessary.

The first definite step towards a solution was taken in 1916, when under Order in Council of December 6, the Statistical Branch of the Department of Trade and Commerce was transferred to the Census and Statistics Office. This permitted co-ordination in so far as the more important analytical work connected with trade statistics was concerned. Towards the clearing up of the remaining duplication between the reorganized office and the Customs Department, a comprehensive memorandum on trade statistical reform and consolidation was first drawn up. This included a detailed scheme for the amalgamation of the two series of reports and the rearrangement of their matter, as well as a policy on such questions as trade classification, methods of collection and compilation, import and export valuations, etc. Out of the discussion which this received during the ensuing year were evolved the trade clauses in the Statistics Act, 1918, which embody the solution finally arrived at.

The clauses of the Statistics Act, 1918, bearing on foreign trade provide in effect for a delimitation of function between the Customs Department and the Bureau of Statistics. The precedent followed is that of countries where central statistical offices exist, as in Australia and Germany, and to a lesser degree that of countries where, as in the United States, the Customs and Commerce Departments work in close co-operation. In brief, the Customs Department will carry out the collection and primary compilation of the data, whilst their analysis, interpretation and publication is left to the Bureau of Statistics, the Act providing for the transfer of the necessary materials. Trade statistics are thus recognized as being more than "by-products" of Customs administration, but are placed where they not only receive the maximum of direction from the practical trade point of view but are linked with the general body of economic statistics, more particularly the statistics of production and internal trade—the Bureau of Statistics by periodical consultation meeting the requirements, both of the Department of Trade and Commerce (Commercial Intelligence Branch) as the department charged with trade promotion, the Department of Finance as the department responsible for fiscal policy, and the Department of Customs as interested in the analysis of revenue returns—and correlating trade statistics with those of economic phenomena in general.

Since the passing of the Act, the monthly Customs report has been discontinued, the monthly report of the Bureau on the Trade of Canada now being alone in the field. The annual report of the Customs Department under the Customs Act will be primarily

* Trade statistics occupied approximately one-half of the Canada Year Book of 1905. The chief new analysis was a classification of import items according to the Customs classification of exports.

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an administrative statement of revenues collected, all purely trade statistical analyses being relegated to the report on that subject by the Bureau of Statistics. Arrangements satisfactory to the two branches whereby the primary data are transferred monthly from the Customs Department to the Bureau, with a revise at the end of the year, have been concluded for confirmation, when finally tested, by Order in Council.

Though the new organization is still in the formative stage, several improvements have already been placed in train. The format of the new series of reports, monthly and annual has been worked over. In future the annual (and definitive) report on trade statistics will be in three parts. The first will present the general statement for the year. The main tables in this section will show the returns for each item of export and import by countries, both for the year and for the four years immediately preceding, the object being to illustrate the current trend as well as the present volume of trade. To these will be added two series of illustrative tables, the first broadly historical, showing the year in its general setting back to Confederation, and the second consisting of tables analytical of current trade items from various points of view. There will be ten of the historical tables and fifteen of the current analyses in the report of the current year, but this of course will vary as new data permit and new needs are uncovered. To the whole will be added a statement of imports and exports at values of a standard year by way of laying bare the real elements in trade fluctuations. (An index number of import and export valuations will be maintained in the Prices Section of the Internal Trade Division of the Bureau, as described on page 44.) In Part II the Trade of Canada with each country in turn will be re-assembled, whilst in Part III a résumé of the trade statistics of other countries will be made for the use largely of Canadian producers and exporters—especially necessary in the altered conditions that will follow the war. (Parts II and III will be issued in a series of pamphlets on the several countries, for convenience and economy in distribution.) The monthly reports will follow Part I above, but on a restricted scale. The Year Book treatment will be that of an "abstract" of Part I.

Greater promptness in the issue of reports is being provided. The data from the Customs Department are received on the 18th of the month following that to which they relate. This enables a stencil summary of the more important items to be issued on the 23rd to leading newspapers and trading concerns, whilst the final report goes to the printer on the 25th. The issue of the final annual statistics by the calendar year is under consideration.

Trade Classification.—Coincidentally with the above, a reform of considerable importance in connection with trade classification—the basic feature in any system of trade statistics—has been carried into effect. The general principles on which the classification of commodities is made in the Bureau for purposes of statistical analysis, has been briefly discussed in connection with the Industrial Census (see preceding section). The problem of trade statistical classification falls into two parts: (1) the items, and (2) the grouping of the items. With regard to the items, the starting point is, of course, the customs tariff, which designates over seven hundred articles. These, by subdivision from time to time, had been increased to some 1,690 items. Simultaneously exports items to the number of 430 had been originated. The whole, however, had been without systematic revision for many years and the first duty was the preparation of a memorandum of suggested changes and additions, based on the experience of the Bureau in answering trade inquiries, on the results of the Industrial Census and on the classifications of other countries; the views of the larger trading and producing concerns were also obtained. This memorandum was submitted to the Customs Department for discussion, and after conferences in which the views of the Department of Finance were also obtained the number of import items was extended to 1763 and that of exports to 521. Much benefit was derived in this connection from an exchange of views with the United States Bureau of Commerce which likewise had the subject of trade classification under revision during the year.

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In the matter of grouping, not only was the previous system without consistent principle which would enable it to be collated with other statistics, but differences existed as between free and dutiable imports and as between imports as a whole and exports. In revising the scheme accordingly, the plan already described in connection with the Industrial Census was applied whereby three separate classifications are made, namely, according to "chief component material," according to "purpose," and according to "source or origin." In the main tables of presentation, in which alone all items are included, the latter are grouped on the "chief component material" principle, except that minor purpose groupings are introduced where they do not conflict. At the same time complete schemes of purpose and source classification are worked out, but are published only for the broader headings and for such others as have been found to be in frequent requisition. The main headings of the two chief grouping schemes are as follows:—

Classification by Chief Component Material—

1. Vegetable products (except wood, fibres and chemicals).
(65 sub-groups.)
2. Animals and their products (except fibres and chemicals).
(30 sub-groups.)
3. Fibres, Textiles and Textile products.
(45 sub-groups.)
4. Wood, wood products and paper.
(31 sub-groups.)
5. Iron and its products.
(41 sub-groups.)
6. Non-ferrous metals and their products.
(14 sub-groups.)
7. Non-metallic minerals and their products.
(34 sub-groups.)
8. Chemical and allied products.
(47 sub-groups.)
9. All other commodities.
(15 sub-groups.)

Classification according to Purpose—

1. Abrasives.
2. Adhesives.
3. Arms, Military Equipment and Explosives.
(5 sub-groups.)
4. Beverages and Infusions.
(11 sub-groups.)
5. Books, Stationery and Educational Supplies
(8 sub-groups.)
6. Clothing.
(13 sub-groups.)
7. Containers, Wrapping and Packing Materials.
(5 sub-groups.)
8. Drugs, Medical and Dental Equipment and Supplies.
(6 sub-groups.)
9. Foods.
(18 sub-groups.)
10. Household Equipment.
(12 sub-groups.)
11. Industrial Equipment.
(25 sub-groups.)
12. Jewellery and Timepieces.
13. Light, Heat and Power; Equipment and Supplies.
(6 sub-groups.)
14. Producers' Materials.
(41 sub-groups.)
15. Recreation Equipment and Supplies.
(6 sub-groups.)
16. Soaps, Perfumery and Cosmetics.
(2 sub-groups.)
17. Telegraph and Telephone.
18. Tobacco.
19. Vehicles.
(5 sub-groups.)

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As already remarked, it is impossible, because of inconsistencies in the items, to apply literally and absolutely a system like the above. It represents, however, the maximum of accuracy obtainable, and by the degree to which it facilitates analysis and comparisons with other statistical fields is thought to repay the additional labour which it involves. Arrangements will be made to review the scheme thoroughly each year in conference with the Department of Customs, the Department of Trade and Commerce (Commercial Intelligence Branch), and the Department of Finance.

Division VI.—Transportation and Communications.

Geography has made transportation one of the greatest of Canadian national problems. The canal and railway systems were already extensive in the fifties, and it is significant that it was a railway that set the seal to Confederation. With the opening of the West, the relative importance of the railway has been multiplied. To-day the largest single employer of labour in Canada is a railway corporation, and Canada leads the world in the proportion of railway mileage to population.

As early as 1875 provision was made for the collection of railway statistics, by the "Railway Statistics Act" of that year. The Act was originally administered by the Department of Public Works, but was later on incorporated in the Railway Act, and with the establishment of the Department of Railways and Canals (1879), passed under the latter's jurisdiction. In course of time, statistics of express, telegraph, and telephone companies were added. For water transportation, however, no similar provision was made. The Customs Department maintains a yearly record of the total tonnages arriving at and clearing from Canadian ports, whilst the Department of Marine issues an annual list of the vessels of Canadian registry, but no statistics corresponding to those of transportation by land have been available.

On the consolidation of statistical legislation in the Statistics Act, 1918, the clauses of the Railway Act representing the original Railway Statistics Act were, by consent of the Department of Railways and Canals, incorporated in the new measure, with certain additions and improvements, the most important of which brought water carriers into the scheme on the same basis as carriers by land. It has been subsequently arranged that the similar inquisitorial powers vested, under the Railway Act, in the Board of Railway Commissioners (as the body charged with railway regulation in Canada) should be administered in so far as general statistical materials are concerned through the Dominion Statistician, thus permitting the complete consolidation of the statistical work connected with transportation.

The first step taken by the Bureau under the transportation sections of the Statistics Act in 1918 was the inauguration of a system of water transportation statistics, which, as previously remarked, had never hitherto been comprehensively organized. The plan adopted for the first year's operations, which are regarded as tentative, was briefly as follows: (1) Using the lists of the Department of Marine as a basis, a report for each vessel of Canadian registry will first be obtained, covering such details as construction, size, value, rig, route, freight and passengers carried, etc.; (2) Complementary to this, a report from every Canadian ship owner or company will be obtained on such points as, vessels operated and their registry, assets and liabilities, revenue and operating expenses, profit and loss account, etc. The results of these two inquiries, carefully co-ordinated, will furnish the statistics of Canadian registered shipping, whether operated in Canadian waters or elsewhere, and of all shipping interests located in Canada. (3) There remains to record the extent to which vessels of foreign registry and not of Canadian ownership are engaged in Canadian traffic, and the leading details thereof. Under the Statistics Act (sections 22 and 23), the Customs Department supplies annually to the Bureau of Statistics a record showing the number of vessels touching at Canadian ports, their registry, rig, tonnage, etc.,

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classified as sea-going and coasting. This return gives cumulative totals only, counting each boat every time it enters or clears any port, and is of value chiefly for broad measurements. For the purpose just outlined, and as a check against (1) and (2) above, a further report will be obtained annually from the Customs collector of each port listing once only the name, registry, rig, etc., of each vessel that enters or clears, such list to be made the basis of further inquiry as indicated. Should the shipping situation at any time become abnormal the extension of this report to a monthly basis would at once provide information essential to the determination of policy. (4) Canal statistics will be enlarged, placed on the same basis as the other sections, and worked into the general treatment. (5) Water-borne traffic will be covered as a part of the arrangement described under the heading of Internal Trade (Division VII).

The second step in the reorganization of transportation statistics under the Statistics Act was the transfer of the work of the Railway Statistics Branch of the Department of Railways and Canals to the Bureau, and its incorporation in the latter's Transportation Division. This was still pending at the close of the year, but an outline of its significance may be given. The objects of the transfer were two-fold. In the first place, duplication and overlapping, as well as variations in statistical method, had arisen between the work of the branch in railway, telegraph and telephone statistics and that of the Industrial Census. The latter covers the manufacturing operations of transportation companies (locomotive and car building and repairing, electric power installation and production, ship-building, etc.) as well as the construction and maintenance operations of railway, telegraph and telephone companies, but the figures cannot at present be co-ordinated with those of the Railway Branch. There was overlapping also in the traffic statistics of the Bureau and the branch; and the organization of the Bureau's work on municipal statistics opened up prospects of still further conflict. No totals of land and water transportation were feasible. The statistics of transportation, in point of fact, should be an integral part of the general scheme of economic statistics and should follow common methods in treating such subjects as capital, labour, raw materials, etc. In the second place, the statistics of the branch had not been organized on a sufficiently detailed scale to serve certain needs of the Board of Railway Commissioners; especially were additional data required on the subject of cost units, so essential to the work of rate-regulation, and covering also the engineering (equipment) and traffic aspects by which railway building policy is so largely directed. Summing up, there was need of correcting the isolation of the existing records from the general body of statistics, and at the same time of increasing if possible the closeness of their relation to practical transportation problems. With these objects in view, a comprehensive reorganization was undertaken at the end of the year, simultaneously with the transfer of the branch, by the Board of Railway Commissioners and the Bureau in collaboration. It is the intention by means of this reorganization to set in motion with the year 1920 a scheme of transportation statistics more definitely adapted to the needs of the Board and at the same time in unison with the general statistical organization on which the Bureau is working. The Division will keep in touch with provincial departments having jurisdiction in transportation, etc., such as the Ontario Municipal and Railway Board, the Manitoba and Saskatchewan Telephone Departments, etc.

Division VII.—Internal Trade.

In a country so extensive and diversified as Canada, internal trade calls urgently for study. It is an exceedingly complex subject. Broadly, internal trade includes every purchase and sale within the country. Ordinarily, however, the term is limited to the movements of the commoner consumption-goods between section and section,

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or to and from the large distributing centres, *i.e.*, wholesale as distinguished from retail marketing. Even thus narrowed, the field remains an immense one, and perhaps a still less inclusive interpretation is necessary before statistical treatment becomes possible. Economically, the Dominion falls into four main areas; (1) the Maritime Provinces, (2) the manufacturing and agricultural regions of the St. Lawrence basin, (3) the grain lands of the prairies, and (4) the Pacific slope. The inter-relations of these constitute a problem with which the future of Canada is largely concerned, and much will be accomplished if they can be measured by statistics. If, in addition, interprovincial movements can be recorded, it will be all to the better.

The Statistical Commission of 1912 gave the subject of Internal Trade Statistics considerable attention, and various expedients for measuring it were discussed and dismissed. In the end, the commission advocated, by way of beginning, "selecting a list of the more important articles and obtaining statistics as to their movement from producers, transportation companies and such other authorities as might be able to furnish them." The commission agreed that the broad statistics of trade between the economic areas of Canada above defined were desirable, but it offered no definite suggestion towards obtaining them.

More exhaustive consideration than was possible by the commission was devoted to this problem by the Bureau during 1916 and 1917. The establishment of comprehensive annual statistics of production through the Industrial Census and the reform of the foreign trade classification assisted in pointing the way. As soon as a definite plan of action was outlined, a Chief of the Division was appointed, in 1917, and the work has since taken form as rapidly as war conditions would allow. Certain channels available in peace were closed when the energies of business concerns were absorbed by the war; at the same time others were opened, and by co-operating with the war commissions, it was found possible at once to perform war-time service and lay the foundations for permanent work. While this program may not have built up as comprehensive results as might have been attained in normal times, it has given an opportunity for more intensive studies in certain directions than would otherwise have been practicable.

In general, it has been decided by the Bureau to work in two main directions, first, in a general way through traffic returns from transportation companies, under the transportation sections of the Statistics Act, and second, in the way recommended by the commission, but in co-operation with executive branches of the Government (Dominion and Provincial) that already follow the marketing of specific commodities rather closely, rounding out and supplementing these data from the traffic returns aforesaid and otherwise. Attached to these market statistics will be a subdivision of the Bureau on Prices. More detailed explanation of the scope of the work in its different phases is as follows:—

(1) *Traffic Returns*.—For the broad measurement of trade between different areas in Canada, it is proposed to secure a summarized monthly return from transportation companies of goods delivered and received for shipment within each of the nine provinces, a supplementary statement showing the receipts and shipments at each of the fifteen largest centres, and occasional reports, as market conditions demand, of shipments of specific articles out of the smaller producing areas (as of fruit from the Niagara peninsula). Thus it will be possible to show not only the amount of goods originating in each province, but also, by taking the difference between receipts and forwardings, the net amount of such goods contributed or consumed by each province and larger city. Were it feasible to require as detailed a classification of commodities as that employed for Customs entries, data for the provinces and cities comparable to the statistics of exports and imports would be available. Practical difficulties necessitate a much simpler classification, but at least the more important commodities may be covered.

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(2) The marketing branches with which the Bureau is already collaborating as above outlined in the second division of the work—which is an intensive and complementary aspect of the first—are as below:—

(a) *Grain Commission*.—The operations of the Board of Grain Commissioners, especially in the western inspection division, reveal the main currents in the movement of grain within Canada. The statistics of the Commission will be amplified from other sources so as to include the entire grain "pool" both East and West and the flow both in and out. This, checked against production and exports and imports, will complete the annual statistical account of Canada's most important product. In addition to this record, weekly data are collected and published showing the visible supply of all grains at all the large elevators and the weekly movements in and out of the terminals and other grain markets.

(b) *Live Stock and Veterinary Director General's Branches*.—The Live Stock Branch of the Department of Agriculture already maintains a record of live stock arrivals at leading markets. Data collected by the Veterinary Director General incidental to the administration of the Meat and Canned Foods Inspection Act, and extracted by the Bureau from official reports thereunder form a valuable supplement. Linked with the production figures of the agricultural and industrial census divisions, these will bring the live stock industry under comprehensive statistical review.

(c) *Fruit, Fish and Dairy Branches*.—The marketing reports of the Fruit Division, Department of Agriculture, enlarged through the general traffic returns of the Bureau, will effect a similar treatment for the fruit industry, whilst Fish can be similarly handled in co-operation with the Fisheries Branch now engaged in a campaign for increasing the consumption of Canadian fresh fish. The visible supplies of produce in cold storage plants is recorded in co-operation with the Dairy Branch.

(d) *Food and Fuel Control*.—The statistical work for the Canada Food Board and for the Fuel Controller was carried out in the Bureau of Statistics. The first permitted the publication of some interesting monthly data on the movements of general produce. Under direction of the Fuel Controller, the movements of coal were still more closely followed, and the first exhaustive report on the Canadian coal trade was issued in April, 1919. This work will be continued though in less detail than was necessary whilst the food and fuel situation was acute.

(3) *Prices Statistics*.—Intimately associated with internal trade is the subject of prices—market records almost invariably including prices. The Bureau will handle the latter in considerable detail, its general activities placing it in a position of exceptional advantage to do so and a section within the Internal Trade Division being wholly devoted to the task. The range covered by this subdivision is as follows:—

(a) *Producers' Prices*.—The annual Census of Production collects a large mass of producers' prices. Through the staff of agricultural correspondents (6,000 in number), the prices at which the farmers dispose of their grain throughout Canada is ascertained; similarly for the various fishing districts (about 400 in number), the prices at which fishermen dispose of their catch and of domestically prepared fish are recorded. Each dairy factory records the price received for butter and cheese. For a number of manufactured articles also the Census yields a record of selling values. The Prices Section will bring all under review and will provide by independent inquiry what additional matter may be necessary.

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(b) *Wholesale and Jobbers' Prices.*—A considerable mass of the prices ruling in the more important wholesale centres are collected incidentally to the arrangements with the Grain Commission, Live Stock Branch, etc., described above. For instance, in grains the daily high and low of the various grades marketed in Fort William and elsewhere are compiled; data for animals, meats, canned foods and fruit are similarly obtainable. For several years past, an excellent series of Wholesale Price Statistics has been issued by the Department of Labour; the statistics, however, are of limited scope, having been framed originally for the purpose of throwing light on variations in the cost of living rather than on trade movements. Even in this less comprehensive form, however, it has been recognized that the record takes the Department out of the sphere of its primary administrative interests*. With the completion of the Bureau's organization accordingly, the Wholesale Prices records of the Labour Department will be merged therein.

(c) *Import and Export Valuations.*—An index number of the valuations at which the leading imports and exports of Canada are entered by the Customs Department will be maintained as a check and sidelight on producers' and wholesale prices.

(d) *Farmers' Markets.*—A weekly record of prices ruling on farmers' markets throughout Canada will be maintained.

(e) *Prices of "Services."*—Freight and telephone rates will be recorded and analyzed through the Transportation Division, whilst water rates, gas and electric light rates, etc., will be obtained in collaboration with the annual industrial census. A barometer of property tax rates will eventually be afforded through the municipal statistics division. An index number of wages here regarded as the price of labour will be worked out in collaboration with the Department of Labour.

(f) *Prices of Securities.*—The fluctuations of stocks and bonds are being recorded weekly for the light thrown on conditions of credit, which apart from its intrinsic interest is frequently an influence profoundly affecting commodity prices. Fluctuations in rates of interest, which are closely associated with security prices, will also be measured. The first report of the Bureau in this connection, covering the past five years, will be issued in 1919.

(g) *Retail Prices.*—The Bureau trenches on Retail Prices in its record of farmers' markets above. The main work on retail prices, however, has been done by the Department of Labour in the connection above explained, a monthly record of the retail prices of some thirty staple commodities being obtained from the correspondents of the Department stationed in the leading centres of population. In addition, records of retail prices are also being collected by the Bureau from the retail trade direct for purposes of check, thus bringing the Labour Department record within the purview of the general scheme of statistics covering the entire range of prices. In the Population Census, the aspect of rentals will be covered along somewhat the same lines as in Australia. In addition, the Department of Labour will make intensive studies from time to time in particular localities where important issues are involved or where the general scheme of statistics is inapplicable.

As already remarked, internal trade offers an almost unlimited field for statistical investigation. It is thought that the work mapped out as above will yield some useful general measurements as well as intensive studies of the more important com-

* See "Wholesale Prices, 1914," Report by the Department of Labour, foot-note, page 2.

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modities—the whole capable of expansion as experience may dictate. Among further suggestions that have been urged upon the Bureau is one for a periodical census of wholesale and retail trading concerns.

Division VIII.—Finance.

A division is under organization for the co-ordination and enlargement of the statistics of finance. The subject falls into (a) public, and (b) private finance.

The Bureau will work along the following lines:—

Dominion and Provincial Finance.—The public accounts of the Dominion and of the provinces are the outstanding documents of Canadian public finance. As issued, they follow forms and arrangements dictated primarily by the requirements of the several Governments and varying considerably from each other. Even where terminology is the same, connotation is frequently different.* The Dominion accounts are necessarily to a large degree *sui generis*. It is very important, however, in the case of the provincial accounts to be able to make clear and accurate totals for the Dominion, as well as clear and accurate comparisons between the provinces, of the leading items of revenue and expenditure. For example, the revenues derived from succession duties, taxation of corporations, sales of public lands, royalties on forest, mineral and fisheries products, etc., should be correlated, as well as the expenditures on such items as agriculture, education, public works, etc. The Bureau will institute such correlation by applying a uniform schedule to the several series of accounts. A preliminary analysis of the kind covering the past three years has been already completed.

Municipal Statistics.—Statistics of municipal administration are required to complete the scheme of public finance; in many public activities (as for example education) the municipality plays the major part. The problem is the same in kind as above, only larger and more complicated. Six provinces publish municipal statistics, and five have Departments of Municipal Affairs. There is, however, little or no uniformity in statistical method, not only as between provinces, but often as between municipalities in the same province. The Union of Canadian Municipalities has devoted special attention to this question and to the underlying problem of uniform municipal accounting. In response to representations from the union and from the Municipal Improvement League of Canada, the Bureau has submitted a scheme of statistical co-operation to the several Provincial Municipal Departments. The main suggestion put forward was the adoption of uniform statistical administration by the provinces, the Bureau to act as clearing house for the resulting data. Such a plan, however, calls for a vast amount of preliminary discussion and organization. Pending its adoption, it was suggested that the Bureau might independently collect statistics for a fixed group of municipalities, say, those of 10,000 population and over, according to schedules and methods of compilation approved by the provinces, and capable of being made the basis in time of the broader scheme.

Currency and Banking.—Passing to the subject of private finance, banking occupies the most important subdivision. It is so intimately connected with currency that the two are best treated in conjunction. The monthly bank statement issued by the Department of Finance, on a form prescribed by Parliament, keeps record of the operations of the chartered banks. The statistics of Dominion note issues and of the

* For instance, certain provinces charge their entire expenditures on agricultural colleges to "Agriculture"; others include only administration expenses under that heading, charging buildings, maintenance of grounds, etc., to "Public Works." Expenditures on hospitals, charitable institutions and correction schools are in one province dealt with under the item "Public Works," in another under the item "Provincial Secretary" and in another under the item "Attorney General," whilst a fourth divides them between all three.

reserves held against them, as well as of gold, silver, and bronze coinages are published annually by the same department. The relations, however, of the currency and banking systems of Canada *inter se* and with the corresponding systems of the United States are somewhat unique, and though the above treatment furnishes the basic statistics, there is opportunity for analysis and interpretation for the use of those less familiar with the details of financial mechanism. This is supplied in an annual review of the currency and banking statistics of Canada which is published in the Canada Year Book, in which the figures above mentioned are re-vamped, chiefly in the form of monthly averages, (except where this would deprive them of significance) and the necessary descriptive and historical matter added.

Loan and Trust Companies.—Next to the banks, the most important financial institutions are the loan and trust companies, whose business is largely conducted on the security of real estate. The Department of Finance issues licenses to such companies, as well as to building societies, and publishes an annual report of their proceedings. In addition, however, a number of companies operate under provincial charters. It is proposed to issue a summary statement by provinces in the Canada Year Book which will include both Dominion and provincial licensed companies. This will involve, as a preliminary step, the adoption of uniformity in the data collected by the different licensing departments.

Insurance.—Insurance is a very important subdivision of private finance. The Dominion Department of Insurance issues statistics of insurance in two volumes (volume I on fire insurance companies, etc.; volume II on life insurance companies) an abstract being published in anticipation of the final returns. Most of the insurance business of Canada is conducted by companies licensed by the Dominion Government. Jurisdiction, however, is also exercised by the Provincial Governments (five of the provinces having insurance departments), and companies operating under Dominion license must comply with provincial laws where such exist. As each department, Dominion and Provincial, reports only concerning its own licensees, and as the statistics are prepared from different schedules and do not always cover the same details, it follows that the insurance statistics of Canada are incomplete and are incapable under existing conditions of being more than approximately estimated. The procedure contemplated for remedying these conditions is the same as in the case of loan companies above. The same remarks apply to the statistics of Friendly Societies.

Wealth, Income, Debt, and Taxation.—We now pass into a much wider and less clearly defined domain. A project of the Bureau which involves a comprehensive viewpoint and trenches on both public and private finance, is the co-ordination of the statistics bearing on wealth and income on the one hand, and on debt and taxation on the other. Models exist in the excellent work of the census offices of Australia and the United States. On the wealth and income of Canada, various divisions of the Bureau can already be made to yield considerable information by the so-called "inventory" method.* The recent institution of a direct tax on business and other incomes opens the way, with proper organization for co-ordination in such matters as schedules, classification and compilation, to extensive supplementary and corroborative data. Statistics of ordinary taxation will form a part of the scheme for improved statistics of public finance above proposed. So likewise will the statistics of public debt. Private indebtedness is a large subject, partly provided for in the preceding (banking, loan and trust companies, etc.). On general mortgage indebtedness light could be thrown

* Several methods are employed in estimating the national wealth of a country. The two most common are the so-called "inventory" method, which consists of totalling the amounts known through the Census and other inquiries to be invested in agriculture, manufactures, dwellings, etc., etc.; and the method of working back through income tax returns to the capital from which the income is derived. A third method is the estimation of wealth from probate returns. Still another, termed the "Census" method, is based on a canvass of the individual.

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only by a considerable initial investigation in registry offices and the instituting of changes in the method of reporting by registrars.

In conclusion, it may be pointed out that for many aspects of finance, the statistics must of necessity accrue indirectly. There is for example the problem of throwing light on the state of credit and its expansion and contraction. The statistics of security prices and of interest and exchange rates (collected in the prices section of the Internal Trade Division as already described), together with the accompanying records of stock exchange transactions, reflect the condition of the money market and of the prevailing state of credit rather closely. Similarly, the statistics of commercial failures, apart from their immediate purpose, are of value as reflecting business confidence—an important factor in credit. Under the Bankruptcy Act, passed at the 1919 session of Parliament, a report covering the more important details of each commercial failure must be made to the Dominion Statistician. Another feature which in a "new" country like Canada is frequently of far-reaching influence on the general financial situation is the scale of capital importations. Certain Canadian bond houses and other private investigators have maintained valuable records in this connection, but there has been no official attempt up to the present to measure Canadian borrowings abroad. A means to the same end, it may be pointed out, is the interpretation of the trade balance, i.e., the investigation of the "invisible" items contained in the import and export statistics.* This at present involves an overwhelming amount of estimate, and doubtless must always remain obscure; nevertheless the need should be kept in mind and every effort made to increase the helpfulness of official statistics.

Division IX.—Administration of Justice.

The collection and publication of Criminal Statistics was authorized by special Act as early as 1876 ("An Act to make provision for the collection and registration of the Criminal Statistics of Canada," 39 Vic., c. 13). Originally administered by the Department of Agriculture, the Act is now incorporated in the Statistics Act. Under it, a direct return is received annually by the Bureau from every court or tribunal administering criminal justice; these returns were originally supplemented in the case of the remoter districts of the West by reports from the Royal N.W. Mounted Police. The statistics as published show for each judicial district (148 in number): (1) the

* Among these items are:

Exports.

- (1) Payments of interest and sinking fund sent abroad.
- (2) Payments of dividends on Canadian securities held abroad.
- (3) Remittances of immigrant residents.
- (4) Expenditures of Canadians abroad (including in recent years expenditures on the Canadian expeditionary forces).
- (5) The export of capital which accompanies emigration.
- (6) Payments to foreign insurance companies.
- (7) Payments to foreign ships and railroads engaged in the handling of goods for Canada.
- (8) Canadian capital sent abroad for investment.

Imports.

- (1) Capital brought into the country by immigrants, including Chinese head tax.
- (2) Earnings on Canadian capital invested in other countries (including call loans in New York).
- (3) Expenditures in Canada of travellers from other countries.
- (4) Remittances to Canada by friends of residents.
- (5) Insurance payments to Canada.
- (6) Earnings of Canadian ships engaged in foreign commerce.
- (7) Canadian borrowings abroad.

indictable and (2) the non-indictable offences that have been committed, analysed to indicate the nature of the offence, the age, sex, occupation, civil condition, birthplace, etc., of the convicted and the sentences imposed. The Act also provides for the collection of the statistics of penitentiaries, prisons, reformatories, and jails as complementary to the above. Statistics of pardons are obtained through the Department of the Secretary of State, and the record is thus rendered comprehensive.

It is the intention to organize the statistics of civil justice so as to show at least the broader tendencies of litigation. The Canada Year Book will provide a vehicle for their publication.

Division X.—Education.

This division was under organization at the end of the year, and only an outline may be given of its purpose. The need of the fullest possible information on a problem of such national importance is obvious and has been emphasized by the war.* The well-known Federal Bureau of Education of the United States, it may be recalled, devoted its first activities to the systematizing of the statistics of State education, its annual reports appearing in two series of which the first is purely statistical. In Canada, there is urgent need for similar foundational investigation. The Provincial educational systems, which control elementary education, have developed independently of each other, and considerable differences in structure and method have been the result. For example there are differences between Province and Province in the school year; the distinction between elementary and secondary schools is not sharply drawn in all the provinces; and on a multitude of points both in elementary and in normal and model schools, such as the recording of the age, sex, etc., of pupils and teachers, the grading of pupils, the description of school accommodation, marked differences in method exist. Moreover, private schools and higher education lie beyond provincial departmental statistics. The decennial census in the past, in addition to the usual questions regarding literacy and language, devoted rubrics to school attendance, the cost of higher education, the value of school buildings, etc., with the object of affording a general and uniform view of these phenomena. But for certain of these inquiries the machinery of the Census is not well adapted, and there has been a distinct lack of relation between Dominion and Provincial statistics. In the year 1916, the Bureau assembled, for publication in the Canada Year Book and for reprint as a separate brochure, as complete statistics of Canadian education in comparative and summary form as the available materials permitted, but the results tended primarily to emphasize the blanks and discrepancies that must prevail under existing conditions.

* An interesting side light on the economic importance of education in view of problems created by the war has been thrown by Professor Cudmore of Toronto University. Using United States statistics as basis, Professor Cudmore notes that 8.8 per cent of the national income is represented by economic rent, 16.8 per cent by interest, 46.9 per cent by wages, and 27.5 per cent by profits. In other words, rent and interest (which may be designated as "property income") make up 25 per cent of the total, whereas wages and the return to organizing ability known as profits (which may be designated as "service income") make up the remainder, or no less than 75 per cent. If the rapid and effective increase of the national income be desired, the field which offers the largest scope is therefore "service income," or the return made to personal efficiency. And personal efficiency can be most effectively increased by education—that is, by giving to every child in the country, first of all, a reasonably good general education, and supplementing this by a specialized training in the vocation for which the child is best fitted. Professor Cudmore adds: "'Property income' cannot be increased with anything like the same speed as 'service income.' It in the main originates in surplus income converted into capital, but what that surplus income is or whether there is a surplus at all depends mainly upon the personal efficiency of those who receive it. 'Property income' in other words, is derivative, arising chiefly out of the 'service income' of the past. If we desire, as we must, to increase the real income of the people (as distinguished from mere money income) the very best way is, therefore, to increase their personal efficiency through a better and more universally enforced educational system, which will maintain its hold of all its pupils until they are intellectually awake or have shown themselves impossible to awaken."

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At the time of preparing the matter just referred to a memorandum was drawn up in which an analysis of the points of difficulty encountered was made and a scheme of statistical reform sketched involving the modification of certain provincial practices, the delimitation of Dominion and provincial inquiries, and co-operation between the Bureau of Statistics and the Provincial Education Departments in a nation-wide scheme of educational statistics. The memorandum was submitted to the Provincial Departments and was later personally discussed with them, the result being that the feasibility of a scheme of statistics covering the main points of educational progress in Canada was established, standardization rather than uniformity to be the goal. The matter was also discussed with representatives of the Dominion Education Association, which, by resolution in 1918, endorsed the plan of action contemplated by the Bureau. An appointment to enable the Bureau to proceed with the work was pending at the end of the year.

Division XI.—General—The Canada Year Book, Etc.

An important function of a central statistical office is the issuing of abstracts of general statistics. Not only do such publications render available in conveniently accessible and summary form the chief comparative statistics of the Dominion, but they afford an opportunity for indicating the general trend of social and economic progress and the correlation of various activities that are often regarded as independent. The Canada Year Book is the chief organ of the Bureau devoted to this object, and its preparation and editorial supervision constitutes a distinct phase of the work. The need for a publication of the kind was felt immediately after Confederation (see footnote, page ...), but it was not until 1886 that the work came under official direction, when the Department of Agriculture began publication of the "Statistical Year Book of Canada." As originally projected, the Year Book consisted of two parts, a "Record" and a "Statistical Abstract," the latter embracing all the principal official statistics of Canada whether published by Dominion or provincial authority. The work was continued annually upon the same lines until 1905, when it was remodelled and issued under the title "The Canada Year Book, Second Series," its contents being restricted to tabular abstracts of the statistics of the Dominion Government, preceded by a general review of the "Events of the Year." This series lasted until 1912, when the volume was again re-arranged, provincial government statistics were readmitted, the tables were accompanied by explanatory letterpress, and several other new features were introduced, including the use for the first time of maps and statistical diagrams. Further progress along the same lines was made with the edition of 1913, when a specially designed cover improved the outside appearance of the book, and when the policy was adopted of including special monographs on different subjects suitably illustrated. The latter feature has added considerably to the popularity of the work. In succeeding editions, articles by competent authorities have appeared on Canadian History, Constitution and Government, Local Government, Education, Geology, Fauna and Flora, and Natural Resources. The series as planned will include in future issues articles on the administration of justice and public health and on the growth and development of Canadian industry in its various phases. Permanency is given to the series by the republication of selections from articles which are not repeated *in extenso* from previous issues, and a cumulative index renders the whole readily accessible. The 1918 edition of the Year Book constitutes a jubilee volume and includes articles on the Story of Confederation, on Fifty Years of Canadian Progress and on the Climate of Canada. Meanwhile, increased attention has been given to the arrangement of the tabular matter of the various sections, and to their accompanying letterpress. On many points, the Year Book represents the only information pub-

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lished by the Bureau. It will be readily understood that extreme care is necessary to ensure that such digests include all essential and significant features, in their proper setting of comparative and retrospective data, and that the descriptive matter is thoroughly expert and reliable. Hence the policy has been to have the different divisions of the Bureau supervise the matter of the Year Book pertaining to the subjects with which they deal. It will have been noted in the foregoing that for certain features of the work of the divisions, the Year Book is the only vehicle of publication. The Year Book thus enters in the most intimate way into the work of the Bureau in all its phases, and in fact affords the means by which the latter rounds out its treatment of statistics. It is in charge of an editor and has an independent staff of compilers. The same staff administers the library of the Bureau and handles inquiries for foreign and general statistics not originating in the Bureau.

As previously remarked, the Year Book, especially in its introductory summary, affords a general and related view of progress. There is need, however, for a more frequent summing up of at least the main movements of production, trade, finance, immigration and the like, providing the basis for an analysis of the interdependence of such activities and the throwing of dominant tendencies into relief. The success of several private statistical agencies in catering to this demand is an indication of its urgency and of the usefulness which a compendium of scientifically chosen and up-to-date statistics has for those requiring data of a barometrical character. Plans have been drawn up for a quarterly or monthly journal which would meet such requirements and which would provide a medium for informing the public promptly of the activities of the Bureau in matters of current moment.

Conclusion.

As will be evident at many points, the organization of the Bureau is still in process, though the outline has been traced and certain sections filled in. Especially will it have been remarked that the Bureau has been concerned thus far rather with the scope of the statistics to be secured and the means of securing them, than with the methods of presentation and publication. Prominently in mind also has been the point of view so strongly emphasized during the war that statistics are not merely a record of what has been but are for use in planning what shall be—that is the duty of a statistical organization to assist directly in the day-to-day problems of administration, as well as to provide their theoretic background. Work of this kind can never achieve finality, for the field is too enormous and the need of adjustment to changing conditions is constant. It is believed, however, that the Bureau now embraces the fundamental subjects of what might be termed a national system of statistics, organized to meet the ordinary requirements of the Government and at the same time permitting—as a matter of logical expansion and with the minimum of derangement—the superimposing of such new approaches or new directions of development as occasion may dictate. This preliminary and foundational organization, it is hoped, will be completed during the year 1919-20, so that the census of 1921 may proceed from a sound basis.

Perhaps the culminating advantage in a centralized statistical system lies in the related view it permits and encourages of economic and social phenomena. The social and economic body is one, not several—often conditions in a particular field can be illumined best through another field altogether—and its observation should be on that basis. The Government is more than a congeries of departments vested with a series of administrative functions; it is a single agency for the direction of national policy, to fulfil which duty a broad and analytical outlook upon current trends is indispensable. Such outlook a central statistical bureau from the amplification of experience which it promotes is especially adapted to provide. The organization of the "General

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Economic Department" of the United Kingdom Board of Trade and the activities of certain universities in endowing economic research are suggestive here. There is need for a national "laboratory" for the observation and interpretation of economic and social phenomena on behalf of the Government and the production of monographs on features thrown from time to time into prominence. It is noteworthy that recent tendencies in scientific thought are away from purely deductive reasoning and strongly in the direction of the testing of such reasoning by inductive verificatory data. On no foundation could such a service be better built than on that which is now provided by the Bureau of Statistics.

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