



A NATIONAL SYSTEM OF STATISTICS FOR CANADA

CENTRALIZATION, REORGANIZATION AND ENLARGEMENT OF CANADIAN STATISTICS.

There is perhaps greater need at present than at any previous time for economic guidance of the kind best yielded by an adequate system of statistics. With the end of the war, Canada must assume her part of the greatest reconstruction in history. The burden will be the greater from the fact that when the war began we were in the "backwash" of a boom unexampled for length and intensity, to which the war came, in the first instance, as an actual relief—the relief afforded by the draining off of three hundred thousand men from the labour market and by a huge accession of war orders. The underlying situation, however, though obscured, remains, rendering the problem as a whole one of extreme complexity.

The Government is keenly alive to the necessity of making ready in many directions against the return of peace and the full incidence of this problem. The appointment of the Economic Commission and of the Commission on the railway situation are instances. A third and even more direct effort is the convention of business men called by the Right Honourable the Minister of Trade and Commerce. In announcing this convention the Minister said:—

"Rebounding from two years and more of the most destructive and wasteful war of history, the world will plunge into a trade and economic contest in which forces will assume totally new alignments, when competition will be keener and stronger than ever, and when science and *organization* will play a leading part in any successful role. *For this struggle Canada must gird her loins and make ready her full equipment of preparedness.*"

For the framing of fundamental economic policy, no less than for the treatment of financial, trade and transportation problems, a properly inclusive and thoroughly coordinated system of statistics is indispensable. It is respectfully submitted that of the "equipment" referred to by the Minister no single phase is of greater importance than the statistical, and that in view of the gaps, inequalities and lack of organization that at present prevail, the bringing into existence of a national system of statistics is one of the urgent duties of an hour dedicated, like the present, to "preparedness." Especially is this true in face of the fact that our problems will to a new degree involve our relations with other countries, particularly those of the rest of the Empire and of the Allies, with whose statistical data it is most important that our own should range in scope and quality. Already a conference for the coordination of Imperial statistics has been mooted. In such a conference, our organization being what it is, Canada would find it difficult to take an effective part.

HOW THE EXISTING SITUATION AROSE.

Into the earlier history of our statistical development it is unnecessary to enter. Briefly it comprises: (1) the period of the French and English colonies, whose records,

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unimportant as they are, included the first census of modern times, that of New France in 1666; (2) the period of the United Provinces and the operations under the Census Act of 1847; and (3) the reconstructive period of Confederation, during which the act of 1870 providing for the first census of the Dominion was passed, and various reforms made on the suggestions of Dr. Taché, Government Statistician and author of an able report on Canadian statistics dated 1865.

The modern period of Canadian statistics may be said to date from the Census and Statistics Act of 1879, and to fall into two stages: The first extends to 1905, during which the censuses of 1881, 1891 and 1901 were taken, and most of our present departmental statistics, Dominion and Provincial, saw their first substantial development; a start was also made in the co-ordination of general statistics (the Statistical Year Book dates from 1886). The second and final stage begins with the legislation and readjustments of 1905.

The Census and Statistics Act of 1905, which is the dominant legislation in the statistical field to-day, created a permanent census organization in place of the temporary organizations which had taken previous censuses, and absorbed into it the staff which had been employed on general statistics. Some important new work was undertaken by the amalgamated offices, notably annual statistics of agriculture and quinquennial statistics of manufactures. There was, however, at the first, little or no development in the work of co-ordinating general statistics. The year book was remodelled in 1905, omitting provincial statistics altogether. Meanwhile certain other departments, Dominion and Provincial, from time to time independently enlarged their statistical activities, no attempt at unification being made. It may be noted, however, in passing, that the province of Quebec in 1913 created a central statistical office and reorganized its statistical system.

THE STATISTICAL COMMISSION OF 1912.

It was the situation as thus developed that led, in 1912, to the step which has defined the problem as it stands to-day. It was generally recognized that certain Departmental statistics were good; at the same time the growth of the country and the increasing complexity of its economic questions drew attention to the overlapping of certain branches of statistics, the gaps between others, and the lack of general plan or policy. This culminated in the appointment, in 1912, of a Commission of six "to examine and report upon the official statistics of Canada." In the Order in Council appointing the Commission reference is made to the dearth of statistics of production and distribution, the duplication of effort between Departments, and the absence of co-ordination and collaboration, the Commission being directed to report "a comprehensive system of general statistics adequate to the necessities of the country and in keeping with the demands of the time." From the report of the Commission, which contains a review of the various departmental activities, may be quoted the passage which sums up the Commission's findings as to the general situation:—

"Though many of the statistical reports issued by various departments are of undoubted excellence, 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 should constitute a single harmonious system, with all divisions in due correlation. Under the British North America Act, 1867, the Dominion is

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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. 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. There has been no general 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?

"(2) Where the statistical activities of several bodies working along similar lines are virtually independent, duplication is inevitable.

"(3) The statistics are unequal in quality and value. The absence of leadership is nowhere more apparent than in the varying extent to which statistical methods have been developed in different branches.

"(4) The restriction of outlook has impaired promptitude in the issue of reports.

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

While the above is the most comprehensive arraignment that has appeared of the present situation, other weighty authorities might be cited as to the embarrassment caused by the lack of a systematized scheme of Canadian statistics. Within the past year alone the Ontario Unemployment Commission passed a strong resolution on the subject, whilst the Civic Improvement League of Canada and the Dominion Economic Commission have drawn attention to fields of the first importance in which existing statistics are inadequate to the country's needs.

THE REMEDY—CENTRALIZATION, REORGANIZATION AND ENLARGEMENT.

As already stated, the report of the Statistical Commission of 1912 represents the point from which our present treatment of the subject must start. The broad remedy which the Commission lays down may therefore be cited:—

"(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, Mr. Bowley wrote:

'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 criticisms, stating accurately and intelligently the purport and meaning of their contents; in other cases, where a department already exists for such publications, there should be co-ordination with a view to carrying out the purposes already indicated.'

"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 our 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 Act."

ACTION ON THE COMMISSION'S REPORT TO DATE.

The first step in carrying out the report of the Commission was taken in 1915 in the creation of the office of "Dominion Statistician" to which were attached the duties of "Controller of the Census." The Commission had sketched at some length in its report the reforms in existing statistics that are most urgently required. Their findings, however, were largely statements of principles rather than instructions as to procedure in detail. The intention of the report, in fact, was 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 of each subdivision shall be collected, compiled and published. On the filling of the office of "Dominion Statistician," accordingly, work was begun on the task of examining the field section by section as recommended by the Commission. It appeared advisable to cover the entire field before reporting on any section, as it is only with the situation as a whole in view that individual divisions can be satisfactorily dealt with. This work has been completed and a series of memoranda have been prepared as follows: (1) Introductory—The Principles and Machinery of Centralization; (2) The Census of Population; (3) Agriculture; (4) Vital Statistics; (5) Immigration; (6) Education; (7) Municipal Statistics; (Wealth, Debt, Taxation and Public Finance); (8) The Industrial Census and Statistics of Production; (9) Foreign Trade; (10) Internal Trade; (11) Transportation; (12) Labour Statistics; (13) Criminal Statistics; (14) Remaining Departmental Statistics—Editorial functions—The Year Book and Monthly Publications. This treatment covers all the important branches falling within a scheme of national statistics, and it aims to give in each case a more or less exact definition of the scope, organization and methods required by centralization.

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The following is a résumé of this detailed treatment, showing the plan as a whole with the several parts in proper relation, and indicating briefly the steps required to carry it into effect.

CREATION OF A CENTRAL STATISTICAL OFFICE.

The creation of a central statistical office, and of a national system of statistics, is a matter of rearranging the relations of existing agencies, *plus* the organization of certain new work. The Census and Statistics Office is by law assigned practically the entire range of statistics, coupled with the most comprehensive powers; it is the only Government Office having the collecting of statistics as its sole administrative function and having its organization defined by law; its subject proper, namely, "demography", is fundamental to all others, and constitutes the most complex of statistical problems; and its general statistical experience and equipment are more complete than those of other branches.* The Census and Statistics Office therefore forms the necessary starting point in the creation of a central statistical office, which should proceed in the first instance by joining on to the Office such other activities as properly fall within the scope of a national system of statistics, and reorganizing the whole as a new entity.†

The general principles upon which centralization should proceed may be defined as follows: The Central Office should be made responsible (a) *directly* or (b) *indirectly* for all statistical publications issued by the Government. (a) The responsibility should be *direct* in the case of statistics which represent information which is collected primarily for its economic significance. These statistics should be compiled and published by the Central Office, and statistical branches at present engaged in such work should be reconstituted as branches of the Office. (b) *Indirect* control should exist in the case of the remaining statistics—those, namely, which are essentially records of administrative processes (i.e. which represent the account which the department in question must give of its activities in carrying out the terms of a particular Act) or which were collected as directly bearing on some administrative function. Here the method of collection and compilation should be viséed and the statistics viséed by the central statistical office, under interdepartmental arrangement, so as to ensure their co-ordination with the general scheme. The interdepartmental machinery involved in the above should take the form of a standing committee or conference consisting of the Dominion Statistician and the heads of statistical branches of the several Departments, which should report annually as to arrangements made or recommended. There would, of course, be no interference with administrative functions; the statistics of such administration, however, would come under the observation and report of the statistical experts of the Government as a body, and any departure from their recommendations would be for stated reasons.

* In the United States the taking of the decennial census has been called the "largest single act" of the administration.

† Mr. A. L. Bowley recommends the following procedure: "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."

GENERAL FEATURES OF A CENTRAL STATISTICAL OFFICE.

Before describing how the various departmental statistical activities would be rearranged under such a plan, and how the Central Office would organize the statistical field, certain general features which a policy of centralization would render possible and which would be set in motion at once may be outlined:

(1) *Machinery.*—The use of card punching and electric tabulating machinery has revolutionized the work of statistical compilation. The machines are expensive (those already in the Census Office cost \$75,000) and involve the employment of expert mechanics, but the saving in timeliness and expense of compilation is very great. In Canada thus far machinery has been applied only to the Census of population; its use, however, should undoubtedly be extended, though to do so except under a system of centralization would be very expensive. In the United States the cost of compiling the monthly trade returns is stated to have been reduced from \$200,000 to \$75,000 by the use of machinery and two weeks gained in the issue of the reports. In France a central battery of machines compiles the executive statistics of all the Departments.

(2) *Library.*—A library containing a good collection of works on statistical method, the outstanding statistical documents of the past, and the current statistical publications of the principal governments, is urgently needed in place of the half-dozen small collections duplicative and overlapping each other and for the most part uncatalogued and imperfectly arranged which at present exist. The expensiveness of books and library work makes a policy of decentralization either inefficient or very wasteful. The Census Office has recently appointed an experienced librarian and begun the organization of a statistical library. This should cover the whole field of statistics.

(3) *Staff.*—The two pronounced features of statistical work are (1) the large proportion of mechanical and routine work and (2) its ebb and flow. This is *par excellence* the kind of work in which centralization promotes efficiency and reduces expense, as the experience of all "big business" proves. It does so largely *by increasing the proportion of low-priced employees*. A staff of trained compilers capable of being shifted to points of pressure would be a prominent feature of a central office. Accompanying this would be a cost accounting system which would measure the time spent by each clerk on every job—a system which would have the two-fold result of enabling the exact cost of the job to be reckoned and of keeping a record of each clerk's efficiency.

(4) *Inquisitorial Powers.*—Centralization would permit the proper organization and exercise of inquisitorial powers. These powers cannot be conferred indiscriminately, but only where they are necessary to administration. The Census and Statistics Office being the only branch covering the general field of statistics as an act of administration, general inquisitorial power for its own sake is limited to that office. Under the system of decentralization, however, many inquiries are being made by Departments which have no legal powers to demand a response. This has an unfortunate tendency in two directions: (1), it may lessen the seriousness with which inquiries are begun, and, (2), it inculcates carelessness in the public to which they are addressed.

5. *An Economic Laboratory.*—The main object, however, of a centralized statistical system lies in the extended and related view it affords of economic and social phenomena. The Government is more than a congeries of departments; it is a single agency having as a paramount duty the guiding of economic policy. To fulfil that duty it must have a broad and analytical purview of the current economic trend. This it can not have if its statistics are produced by diverse methods in a series of "water-tight compartments." Very often the causes of a condition in a particular field can be seen to best advantage in another field altogether.* The economic body is one, not several; and its observation must be on that basis.

A system of national statistics would provide the *fundamental data* required by the Government.† But these are by no means all the statistics that are called for. With increasing frequency practical problems arise which require a new angle of approach, and new combinations of data. For their solution we require (1) the fundamentals above referred to, and (2) machinery for their ready correlation, such problems, as just remarked, seldom or never affecting only one division of the field. With the several divisions, however, under central control it would be possible at any moment to superimpose work of the above practical kind with a minimum of difficulty. We would have a national "laboratory" for the observation and interpretation of current economic trends and for the production of monographs on their outstanding features. "Cost of Living" and "Economic" Commissions, etc. would either not be necessary or would find the primary data they require ready at hand.

ORGANIZATION OF THE FIELD OF STATISTICS.

We may now briefly indicate the subjects included in a national system of statistics and how they would be dealt with under a system of centralization.

There are two distinct functions to be performed by a competent statistical organization, (a) to maintain a sort of continuous "book-keeping" or accounting, and (b) to conduct a periodical "stock-taking". It is important to note that certain phenomena are best dealt with by the first of these methods and others by the second or by the two in combination. The limitations of each—especially the second—have not always been recognized in our past activities.

It is suggested that the work of the Central Statistical Office be organized in nine divisions as follows:—

DIVISION I. CENSUS OF POPULATION AND AGRICULTURE.

The present Census Act requires that the decennial census cover (1) population, (2) buildings, (3) occupied lands, (4), industrial production (including agriculture,

* For example, the condition of the money market often affects commodity prices, though its influence is indirect and difficult to trace. The transactions of the stock exchange, on the other hand, reveal the credit situation very clearly, and often, therefore, throw a flood of light on commodity prices.

† "Fundamentals" applies also to *methods*. For example: In taking the population census some thirty questions are asked of each individual:—age, sex, occupation, nationality, etc., etc. In compiling the results, the possible combinations of these details are practically unlimited. By hand tabulation only a few could be worked out owing to the expense and time required. By the method of mechanical tabulation, however, the record of each individual is punched on a card and any combination of data may be obtained in a comparatively short time by running these cards through electrical machines set to record the desired result. The more necessary combinations can be made and published with the first issue of the data, but the cards are always on hand for new calculations as indicated by passing events.

fishing, forestry, mining and manufacturing), (5) wage-earnings, and (6) municipal, educational, charitable, penal and other institutions throughout Canada. A quinquennial census of population and agriculture is to be taken in Manitoba, Saskatchewan and Alberta.

The scope of the decennial census as thus defined, it is submitted, is too extensive. The subjects under (6) should be covered for the most part by the method of continuous observation, in co-ordination with the authorities in charge of their administration, and only in certain supplementary aspects by the Census. In the case of the remaining subjects also there is room for differentiation. In an inquiry so large as a census of population only low-paid field investigators can be employed and only comparatively simple questions can be asked. This can be made to serve in the case of population and agriculture (the latter, in view of its great relative importance, in Canada must always be linked with population). An inquiry into organized industry, however, if it is to yield results of value, must be more complicated and must demand considerable experience in the agent. At the same time the field is not nearly so large as that of population or agriculture (there are less than 40,000 industrial concerns in Canada); greater organization from headquarters and the employment of expert investigators are accordingly feasible.

It is suggested, therefore, that in future the decennial census be limited to population (including certain forms of property) and agriculture, and that a decennial "industrial" census be taken in some other year—the latter in the interest of equalizing the flow of work for the office. This would be to follow in essentials the example of Great Britain, Germany, the United States and Australia, and to relieve our census of its greatest fault, namely, its extreme inclusiveness and cumbersomeness through failure to recognize the limitations of the ordinary field enumerator.

The two most important fields with which the Census of population should be correlated are migration and vital statistics. These form the "book-keeping" statistics of population, as the Census forms the "stock-taking." With regard to migration: The Immigration Branch records immigrant arrivals, and the Department of the Secretary of State records naturalizations, but there are no statistics of emigration. The latter should, if possible, be provided, and a scheme of co-ordination between the two Departments and the Census Office drawn up so as to insure collection of proper data by all three and the reduction of the records, which are at present at variance, to harmony. Vital statistics should be made the subject of a new Branch. (See below.)

In the same way statistics of education, which are at present published by the provinces in a form incapable of co-ordination, should be reduced to harmony by conference with provincial Departments of Education, and the inquiries of the Census as to literacy, etc., adjusted thereto. Ultimately we should develop a central branch for the collection and publication of education statistics, as in the United States. The Statistics of Indians published by the Indian Department are easily capable of co-ordination with the Census.

Division II.—Vital Statistics.

Vital statistics are not only necessary in facilitating the transfer of property, in preventing crime, and in promoting the security and moral tone of social life, but they lie at the basis of sanitation and public health, and afford a measure of national

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efficiency from a most important point of view, namely, the biological (reproductive force, vitality, etc., of the people). They are of little value unless taken on a broad basis.

The Census Act provides for (a) a decennial record of deaths in the census year, and (b) the collection of vital statistics in co-operation with the province.* Attempts to carry out (a) have resulted in failure; a record of the kind in fact cannot be obtained by census methods and even if practicable would cover only a part of what is desirable. Under (b) nothing has been done, largely because provincial statistics are in some cases either wholly lacking or are very incomplete, and in other cases follow methods so divergent that combination is impossible.

What is needed is an arrangement between the provinces and the Dominion for (1) the adoption of a uniform scheme of legislation and administration by the provinces, and (2) the engagement on the part of the Dominion (a) to secure certain necessary data in the population census, and (b) to act as a centralizing agency in collecting and publishing the data from a national viewpoint. A plan including a model bill and order-in-council suitable for laying before a conference of Dominion and provincial officials in this subject has been drawn up. Action along this line has been very successful in the United States, and its details are such as to hold out practical inducements for the co-operation of all concerned.

It may be pointed out that the question of public health and the vital condition of the people, always important, has been rendered more so by the war and that already in European countries new statistical work is being formulated to meet the situation. At least a beginning should be made at an early date in Canada.‡

Division III.—Agriculture.

As already stated, the census of agriculture must be taken at the same time and by the same agents as the census of population. This census offers opportunity for covering fully (decennially for the whole of Canada, quinquennial for the western provinces) all aspects of agriculture. In view, however, of the paramount importance of agriculture in Canada, *annual* intercensal statistics of crops and livestock are imperative. The present situation is not satisfactory. The Census Office through its crop reporting branch covers the whole of Canada annually; in addition each province publishes statistics for its own areas. The methods of these all differ *inter se* and are at variance with the principles enunciated by the International Statistical Institute, the International Agricultural Institute and other authorities. Reliability is defective and the issue of divergent figures tends to discredit the system as a whole. Reform lies in the establishment of a nationally co-ordinated system of annual statistics of agriculture through co-operation of the census and the provincial governments,

* "Whenever in any province or territory any system is established or any plan exists for collecting agricultural, commercial, criminal, educational, manufacturing, *vital* or other statistics, the Minister may, under authority of the Governor in Council, arrange with the Lieutenant-Governor in Council of such province or territory, or with the organization possessed of such a system or plan, for the collection and transmission of such information as is required by schedules prepared by the Office under direction of the Minister and approved by the Governor in Council for the procuring of such statistics."—Census Act, Section 29.

‡ Professor Bateson has expressed the view that, having regard to the Mendelian theory of heredity, whichever nation after the war elects to develop some practical application of eugenics will necessarily become the dominant one. Whether this be true or not, it throws a strong light on the importance of the scientific study of the nation's man-power.

achieving: (1) concurrence in the methods and results of the decennial and quinquennial census; (2) the collection annually in June of statistics (not estimates as at present) of the areas sown and the numbers of live stock; (3) a system of monthly reports on the condition of crops, etc., by a co-ordinated staff of correspondents; (4) records of marketing processes and of stocks; and (5) co-ordination of the methods of securing the annual production of butter and cheese factories so as to permit the issue of an annual Dominion statement.

In March 1914 a conference between Dominion and provincial authorities took place and disbanded on resolution that the Census Office should draw up a comprehensive and definite scheme for discussion at a subsequent conference. The first part of this resolution has since been carried out, and a scheme of organization involving the Census Office and the provincial Departments has been drawn up, accompanied by a full discussion of the statistical methods involved. The plan proposed would necessitate some strengthening of the staff of the section of the Census Office now employed on this work, and it would seem fitting as well as necessary that a matter so important should employ a distinct division. This division would, of course, work in collaboration with the census of population and agriculture, preparing the agricultural forms, editing reports, etc., and keeping in touch with the several branches of the Dominion Department of Agriculture.

The "Census and Statistics Monthly" established in 1908 when the work of crop reporting was begun, has been the vehicle of these statistics almost solely ever since. It is suggested that the Monthly in future be made a compendium or digest of general statistics (See Division IX below) and that the monthly agricultural statistics be issued separately under a title indicative of their character.

Division IV.—The Industrial Census—Annual Statistics of Production.

The reason for separating the industrial census from that of population and agriculture has been already briefly stated.

A proper scheme of industrial statistics involves (a) a comprehensive inquiry covering all phases of industry once every ten years; and (b) an annual postal inquiry in intercensal years, limited in the main to production and designed to keep the figures of the industrial census up to date.

The entire field of industry (fishing, mining, lumbering and manufacturing) should be included in the plan so as to insure uniformity and prevent overlapping. (For example, smelting, fish-canning and sawmilling are "manufacturing" processes under the census; at the same time they are regarded as pertaining to "mining," "fishing" and "forestry" respectively by the several departments concerned.) Not less than 25 different departments, Dominion and provincial, at present publish statistics of industrial production; in mining alone seven provincial and two Dominion departments are in the field, so that in certain years no less than three official figures of the output of certain products are published for the several provinces. These should be co-ordinated into a single harmonious system. In the case of provincial departments publishing industrial statistics under powers of administration, we should endeavour by conference to arrange a plan whereby the statistics would be available for a general scheme. The Dominion departments involved should co-ordinate their activities on the basis of unifying the broader economic statistics, leaving inquiries

involving the technique or science of industry to the branches immediately concerned. The plan also provides for co-ordination in such matters as wages and employment between the Labour Department and the Census.

In statistics of industry two principles of method should in future be insisted upon: (1) the employment of expert agents for the field work; in a considerable number of cases these might be government officials, e.g., mines inspectors, fishery overseers; (2) the use of a form containing (a) a general section applicable to all industries, and (b) a supplementary section which should take a different form for radically different industries. In the past the returns from cotton mills, steel plants, etc., have been made on the same form, though obviously different details are desired. The classes of industry which would require differentiation in this way and the agents best adapted for covering them in each case are set forth in the memo on this branch of the subject.

Division V—Statistics of Trade and Commerce.

At present we have no statistics of internal trade—though the need in a country so extended and so diversified is great—and a very unusual situation exists in statistics of foreign trade.

Foreign Trade.—Three distinct branches are engaged in the analysis and presentation of foreign trade statistics—the Customs Department, the Department of Trade and Commerce and the Census. The situation as between the two first mentioned departments is highly anomalous. The Customs Department originates the statistics and issues monthly and annual reports. The same statistics are then republished in different arrangements and groupings and with added comparative data in monthly and annual reports by the Trade Department. It has been said that because each of these series contains analyses which are necessary and which are not in the other that this method of publication is justified. This is not the case. Not only is 30 per cent of pure repetition involved in the dual series of reports, but the final result is to give the statistics, considered as a whole, an illogical and confusing arrangement. What is called for is unification which will allow the adoption of a single series of reports and a simple and intelligible plan of presentation. Briefly, the unified reports (annual and monthly) should consist of three main sections: (1) introductory and broadly historical, (2) current detailed statements by articles with figures for immediately preceding periods to illustrate present trends, and (3) supplementary analyses of these current statistics. Certain changes in method might be suggested, including provision for the periodic revision of the list of articles and their classification (which should be as comparable as practicable with the Census of production and the trade figures of foreign countries). As new features, an index number of import and export values and an analysis of fluctuations by quantities and values might be suggested. The change in administrative control suggested is the establishment of the present Trade and Commerce foreign trade statistics branch as a division of the central statistical office under an arrangement whereby the Customs Department will carry out the collection and first compilation of the data, and the analysis, interpretation and publication be made by the central office. This would bring the statistics of trade into a position where they could be influenced and directed by the Department having to do with the promotion of trade, at the same time serving the interests of the Department having to do with the collecting of customs. An annual conference between the Central Statistical

Office and the Customs Department (as in Great Britain between the Board of Trade and the Customs) for the discussion of methods would be particularly fruitful. The initial conference should go fully into present methods on the model of recent action in the United States where the Trade Department prepares the instructions under which the statistics are collected. The course above advised is that followed in practically every country whose example is applicable to Canada, including Great Britain, the United States, Germany, Australia, and several lesser European countries, the scale of whose administrative organizations is similar to that of Canada. In no country is the method of Canada employed, and it cannot be regarded as permanent. At the present juncture when we are undertaking a great campaign for the winning of foreign trade, it is most opportune that statistical methods so cumbersome should be revised.

Internal trade.—Coincidentally with the above reorganization a beginning should be made in the systematic accumulation of data on Canada's internal trade. The divergent trade interests of the four great economic areas into which the Dominion is divided (the Maritime provinces, the St. Lawrence basin, the Prairies, and the Pacific Slope) are urgently in need of study. A sub-branch of the Trade division of the central office for this purpose is advised. This branch should work largely in collaboration with several others, utilizing (1) statistics of railway and canal traffic, (2) the production census, (3) foreign trade statistics, particularly exports, (4) the marketing statistics of the Grain Commission, Fisheries Branch, etc., and (5) wholesale prices; the last mentioned work to supplant in time by arrangement the similar work of the Department of Labour in so far as the trade aspect is concerned, leaving the cost of living aspect of prices and wages as the subject proper of that Department. Prices of securities (stocks and bonds) should be included in the survey, for the light thrown thereby on credit and monetary conditions as affecting trade.

Division VI. Transportation.

The Railway Statistics Branch publishes annual statistics of railways, tramways, express companies, canals, telegraphs and telephones. Statistics of shipping with foreign countries and of coasting shipping in waters contiguous to the United States are published by the Customs Department and republished by the Department of Trade and Commerce annually, the situation as between the two departments being essentially the same as that above described in the case of foreign trade statistics. Other shipping statistics are those of the Marine Department on the registration of vessels, steamboat inspection, operations of harbour commissions, wrecks and casualties, etc.

It is suggested that the Railway Statistics Branch be constituted the "transportation division" of the Central scheme to deal with the above statistics. It would continue to issue the annual statistical reports on railways, tramways and express companies. It would also combine and issue in a separate volume the annual navigation returns of the Customs and Trade Departments following the principles of combination above enunciated for foreign trade statistics. Incorporated in this volume might be the statistics of canals and certain statistics of the Marine Department.

The statistics of railways, tramways, express companies and canals, in so far as traffic returns are concerned, should, as above pointed out, be closely co-ordinated with the work of the Internal Trade Statistics Branch. They should also be co-ordinated

with the decennial and annual censuses of industry: locomotive and car building shops, repair shops, power houses, etc., represent manufacturing processes as well as railroading, but there is no necessity on that account of having them covered twice by different agencies and by different methods. Telegraph and telephone statistics might be merged with the Industrial Census, to be covered fully every ten years by special agents, and less comprehensively each year. (In the U.S. the census of manufactures deals with "electrical industries" including electric railways, light and power plants, telephones, telegraphs, signal systems, etc., quinquennially.) The methods in all these reports should be co-ordinated with those in other divisions, so that on, say, wages, capitalization, etc., information would be uniform. More comprehensive treatment of freight rates and coasting statistics might be suggested. As the Department of Railways deals mainly with the location of railways and the operation of Government-owned railways (the operation of privately-controlled-railways being under the Board of Railway Commissioners) much of the data published by the Statistical Branch is not a by-product of administration but falls within the category of information collected for its own account, i.e., "economic" statistics. In Great Britain railway statistics are issued by the Board of Trade; in Australia and Germany by the Central office.

Postal Statistics are largely an administrative record.

The above plan would give an adequate review of transportation (land and water) and communications, co-ordinated with the rest of the statistical system, i.e., framed to give light both on the technique of transportation, and on trade, finance and other related subjects.

Division VII. Municipal Statistics—Wealth, Debt, Taxation, Public Finance.

Improved statistics of public finance are called for. On municipal finance little or no materials exist and these are incapable of co-ordination. Other municipal activities should also be recorded and co-ordinated for the value of the comparisons thereby rendered possible. The first duty in this field is to bring a system of municipal statistics into existence, in co-operation with the provinces, and to extend the work over the whole field of public incomes and expenditures, adjusting the statistics to census investigations in the same field. The demands for information of this kind, in view of the increasing importance of Canada in the money markets of the world, have been frequent of late. The Union of Canadian Municipalities and the Municipal League of Canada have urged strongly that action to the above end be taken. The plan submitted is based largely on that of the United States Census and the Local Government Board in Great Britain. Private finance (banks, insurance and loan companies, etc.) should come under the editorial supervision of this branch.

Division VIII. Criminal Statistics.

There is already a branch attached to the Census which issues an annual report on criminal statistics. The scope of this branch should be enlarged so as to include the co-ordination of all statistics with regard to the administration of justice (more particularly the co-ordination of statistics of jails, prisons and penitentiaries with present statistics of convictions).

Division IX. Editorial Branch. The Year Book and the Statistical Monthly.

The editorial study of administrative statistics in Departmental hands and the abstracting, condensing and re-arranging of general statistics (including those of other agencies and of the Central Office itself) should be regarded as a distinct feature. To this branch would fall the compilation of the Year Book, which is an annual digest of all the statistics of the country. Added to this should be a "Census and Statistics Monthly" containing the latest official statistics highly summarized and co-ordinated for the guidance of trade and industry, constituting a comprehensive barometer of economic change from month to month in every section of the field, and combining all into a definite analysis of the current trend as a whole. As previously pointed out, the present Census and Statistics Monthly is virtually a "crop reporter." The reconstituted Monthly would go far towards meeting the demand for such agencies as those of Brookmire and Babson in the United States.

ACTION NOW SUGGESTED.

It may be repeated that the above suggestions have been made both as statements of principle and after careful examination of the situation and of what is practicable in each case, including the formulation of details. The steps now to be taken to set the plan in motion are two:

(1) The adoption by the Government of statistical centralization as a policy, and the passing of certain amendments of the Census and Statistics Act. Apart from details, the chief addition to the act required is a clause enabling the central office to confer its inquisitorial powers, by arrangement, upon officials of other Departments. The Office could achieve a measure of centralization by carrying out the work assigned by the act as at present, (some of which is being done by other Departments without legal powers), but it would be better to do so in accordance with a general plan and a definitely conceived and concerted policy.

(2) The holding of a series of conferences between the central office and the several Departments for the ratification of arrangements incidental to centralization. A programme showing the order in which the interdepartmental arrangements might proceed so as to effect the reorganization in the best possible manner has been drawn up.

CONCLUDING REMARKS.

Statistical centralization is not a counsel of perfection or an impractical ideal. It has been adopted by several countries; in large part though not with absolute comprehensiveness by others; and the tendency towards it may be said to be general. The countries whose action is of special significance to Canada may be arranged in four groups:

(1) The smaller countries of Europe whose administrative operations are comparable in scale with those of Canada have (from motives purely of efficiency and economy) established central statistical offices. Those of Sweden, Norway, Holland, Belgium, Switzerland and Hungary are highly developed; those of Portugal, Bulgaria and Rumania only less so.

(2) Germany admittedly stands very high among nations for thoroughness of administrative organization. The Imperial Statistical Office of Berlin is perhaps the

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most fully equipped statistical department in the world. It is practically a clearing-house for all the statistics of the Empire, other Departments publishing only administrative records, and these being in charge of officers trained in and appointed from the Central Office. Its chief function is the advising of the government on matters of economic policy. The Austrian system follows close behind. France and Italy are less centralized, but both have Statistical Commissions charged with broad powers of co-ordination. Russia is less advanced but has a Commission.

3. In Great Britain, the census and vital statistics stand by themselves, but the general statistical system largely centers under the Board of Trade. Further consolidation, it may be said, is backed by weighty opinion* and the argument from economy is, of course, less powerful where large offices are involved. In the United States, though centralization has made greater strides than in Canada, it has had to meet the fact that appointments to the higher positions are matters of patronage.

4. But perhaps the most interesting example is that of Australia, which may be placed in a class by itself. The confederation of the Australian colonies a few years ago threw the original statistical system into the melting pot, making it necessary to create a Commonwealth system and leaving the Government free to adopt the plan which was adjudged the most efficient. The system adopted was that of centralization. In Australia the Central Statistical Office has since 1906 controlled and published all the statistics of the Commonwealth.

As remarked at the outset, the future will make demands of a new and heavy kind upon the administrative equipment of the Dominion, and especially upon the equipment which is required for successful economic competition. Of such equipment statistics are the corner stone—the basic organization without which the endeavour to meet new situations will be very seriously handicapped. Unquestionably one of the greatest lessons of the war is that organized co-ordinated effort is essential to progress, if not to national existence itself.

It may be of interest therefore in conclusion to note what in Germany—the country whose experience of the methods herein advocated has been the most ample and who is the rival with whom our strength is chiefly to be measured—is regarded as the main weapon for the coming contest. "In these days," says an eminent economist and parliamentarian in a book which has just appeared (*Mittel-europa*, by Frederick Naumann), "every Government office, every party and every society is pulling out its notebook and putting down ideas for improvements after the war. I would wager that three-quarters of these notebooks contain the words *Better Organization*. Fichte and Hegel nod approval from the walls. The German ideal is and remains organization, not random impulse; reason, not a blind struggle. It is with this that we shall have our great period of history, like other people in other times with other arts and excellences. It is our period that is dawning."

R. H. COATS,

Dominion Statistician and Controller of Census.

CENSUS AND STATISTICS OFFICE,
OTTAWA, October 1, 1916.

* As, for example, that of the late Sir Charles Dilke who said (1907): "The most pressing need is that we should hand over to a Statistical Department those statistics which are collected by various Departments in the course of administrative work, and of which the publication is not necessary for the purposes of administration. This Statistical Department should arrange such statistics (except those purely administrative) as are collected by the other departments."