

ECONOMIC AND BUSINESS STATISTICS IN INDIA

By H. SINHA

Calcutta University.

An account of Economic and Business Statistics in India may be conveniently given under two heads:—

- (a) collection and presentation of primary data ;
- (b) their analysis and interpretation.

Primary data again may be divided into three broad classes:—

- (1) Statistics of Production, consisting of agriculture, livestock, fisheries, forests, minerals, cottage and small industries, large scale industries, labour statistics other than wages.
- (2) General Statistics other than Production, comprising trade, finance, transport, education, population, vital statistics, migration.
- (3) Statistics of Income, Wealth etc., including not only income but also indebtedness, wages, cost of living, prices etc.

This division which was followed in the Report of the Economic Inquiry Committee has been followed here.

Statistics of Production

AGRICULTURE

The earliest and the most important primary data are those relating to agriculture, the collection of which on a systematised plan dates from 1866. These are collected by the Provincial Governments and States and collated by the Department of Commercial Intelligence and Statistics of the Government of India. The basis of these is generally the "village papers" prepared by the village accountants for the purpose of assessment and collection of land revenue, which forms an important source of revenue for the Provinces and the States. There exists for most of the villages a detailed field to field record. In permanently settled tracts, such as Bengal, Bihar, and parts of Madras, the United Provinces and Assam where no such village staff is maintained, the statistics are based on estimates.

For each individual area, there is available what is called the "normal outturn", "which past experience has shown to be the most generally recurring crop in a series of years; the typical crop of that area; the crop which the cultivator has a right (as it were) to expect, and with which he is or should be content." This is determined by a series of crop-cutting experiments conducted each year and the figures of normal outturn are revised from time to time generally at the end of each quinquennium in the light of fresh data.

In the case of plantation crops such as tea, coffee, rubber etc. where production is more or less organised, returns are obtained from the managers or proprietors of gardens under a pledge of secrecy and these are checked up with consolidated reports obtained through special trade organizations like the Indian Tea Association, Calcutta and the United Planters' Association, Madras etc.

A good account of the method of collecting agricultural statistics in India is available in *Agricultural Statistics of India 1929-30*, specially prepared for the *World Agricultural Census, 1930* (Govt. of India, 1932, No. 2394). A criticism of the methods and lines of reforms are to be found in the *Report of the Royal Commission on Agriculture*, Chapter XVIII, pp. 600-15. A useful summary with some new suggestions for improvement and a description of the principal official publications are given in an article on "Indian Agricultural Statistics" in *J.R.S.S.* Vol. XCVII, Part 1, 1934. Full bibliographical details with regard to these publications are to be found in "A short List of Indian Official Statistical Publications Relating to Agriculture" in *Sankhyā*, Vol. 1, Parts 2 and 3. Several specific suggestions with regard to the improvement of their form and contents were made in the report of the Official Statistics Committee of the Indian Statistical Institute (See *Sankhyā*, Vol. 2, part 3).

LIVESTOCK

Although the collection of livestock statistics dates back from the closing period of the nineteenth century, owing to the absence of an agency to collect the figures as in the case of crop areas in the permanently settled areas, and owing to want of co-ordination of work in temporarily settled areas requiring sometimes 3 to 4 years to complete the census, the figures were far from satisfactory. The first all-India census was held as late as 1919-20 and has since been repeated quinquennially. Even then different dates of enumeration were observed by different provinces. This difficulty was obviated in the census of January, 1930, when a simultaneous enumeration took place. Two provinces, Bengal and Bihar & Orissa, did not, however, participate in the last census with the result that the results of the all-India census 1935 lost much of its value and statistical continuity was broken up. Details of the method actually in use are given in *Agricultural Statistics of India, 1929-30*, referred to above. The Board of Agricultural and Animal Husbandry and the Imperial Council of Agricultural Research have made some useful suggestions with regard to such statistics. But even now they are far from satisfactory. As pointed out in the Bowley-Robertson Report, it is urgently necessary to have some data with regard to the output of milk and its products, honey, meat, eggs, hides and skins, wool, silk, bones etc. and the trade in these products. The need for such improvement was also stressed in the report of the Official Statistics Committee to which reference has already been made.

FISHERIES

From the reports of the Department of Fisheries of Madras, and of Bengal before its abolition as a retrenchment measure, are available some figures relating to fisheries. No systematic endeavour, however, appears to have been made for figures of consumption in large cities through municipalities and railways. Nor has any attempt been made to utilise the revenue agency, the agricultural or the co-operative staff for procuring figures for catches within the country and for consumption in villages. The need for these was pointed out in the *Report of the Indian Economic Enquiry Committee, 1925*, but no improvement seems to have taken place.

FORESTS

The annual reports issued by the Forest Departments of different provincial Governments form the basis of *Statistics relating to Forest Administration in British India* issued by the Government of India. There are two important omissions, forests of the Indian States and private forests in British India, the latter being of minor importance. Another defect is that the wide difference between the final price as actually paid by

ECONOMIC AND BUSINESS STATISTICS

consumers to wholesale dealers in important cities and the price obtained on the spot after cutting, is not clearly recognised. All statistics available are conveniently summarised in the *Quinquennial Reviews*.

Researches carried on by the Forest Research Institute, Dehra Dun, have not so far utilised any statistical method of importance in the same way as those employed by the Cotton Technology Department of the Indian Central Cotton Committee.

MINERALS

We have at present two sources for these viz. *Report of the Chief Inspector of Mines and Review of the Mineral Production in India* issued as one of the Records of the Geological Survey Department of the Government of India. The figures are nearly complete except for some figures relating to indigenous mining and certain small quarries, which may be obtained through revenue agency on the lines adopted by the Chief Inspector of Mines.

CLASSIFICATION OF PRODUCTION STATISTICS

The raw material figures refer to only one branch of Production Statistics. Another and an important branch relates to power resources, for which statistics are almost wholly absent. A third branch is concerned with industrial production, either (a) carried on as cottage industries on small scale, or (b) as factory industries on large scale. It is unhappily true that the statistics regarding production of cottage industries are very meagre and otherwise unsatisfactory. The only reports available are a few special monographs such as *Report on the Survey of Cottage Industries of Bengal, 1929*, *Industrial Survey Reports of each district of the United Provinces (1922-24)*, and the *Report on the Survey of Handloom Weaving Industry in Bengal, 1937*.

Some isolated items of information are available in the series of village surveys (see *post*). Some useful information is to be found in the Census Report for 1921, e.g., number and kinds of handlooms in different districts. There has been no industrial census since that date. The Urban and the Rural Surveys recommended in the Bowley-Robertson Report are yet to come. It is no wonder therefore that the position remains as unsatisfactory as before.

LARGE INDUSTRIES

As stated above, at the time of the census of 1921, an industrial census was taken, the results being incorporated in the census reports. This information was not brought up to date. Nor has there been any Census of Production on the lines suggested by Dr. Bowley and Mr. Robertson. The only information collected on a systematic basis for a long series of years now available is given in *Large Industrial Establishments*, a biennial report issued by the Department of Commercial Intelligence and Statistics of the Government of India giving the names of the factories and the number of employees. On account of imposition of cotton excise duty in 1896, accurate statistics are available from that date for quantities of yarn and woven goods produced in the *Monthly Statistics of Cotton Spinning and Weaving in Indian Mills*. Very recently other production figures have been published in respect of the following industries:—

Cement, Coal, Iron & Steel, Jute manufactures, Kerosene Oil, Petrol, Matches, Paper, Sugar, Heavy Chemicals, Distillery Products, Wheat flour and Paints.

Except coal, for which earlier figures are available in a special annual report published on it, statistics for others have been published regularly since April, 1932 in

the *Monthly Statistics of Production of certain Selected Industries of India* and in the *Monthly Survey of Business Conditions in India*.

INDEX OF PRODUCTION

It is open to serious question if an index number of agricultural production will be of much use. But there is no reason why there should not be an index number of industrial production. The only difficulty is that in the absence of a regular census of production which alone can give us "net outputs" of different industries, that is, their contributions to the national income, we cannot get a system of proper "weights" for combining the different industrial production figures into an index number.

LABOUR

One important branch of Industrial statistics refers to Labour Statistics. On account of the absence of well organised trade unionism, figures usually published by trade unions in other countries are not available for our country. The employers' organisations also do not publish much information of value with regard to labour. Thus the only statistics at present available are those issued by Government departments such as the *Note on the Working of Indian Trade Unions Act* by the Department of Industries and Labour and published in the *Statistical Abstract*. The whole position was reviewed by the Royal Commission on Labour in India (1937) in Chapter XXIV of their Report, pp. 443-452. A number of valuable recommendations were made with regard to their form and content as well as the speeding up of publication.

General Statistics other than Production

TRADE

These may be divided into the following classes:—

- (a) foreign sea-borne ;
- (b) foreign land-borne ;
- (c) internal

A detailed bibliography of most of the official publications relating to these is to be found in *Sankhyā*, Vol. 1, Part 1, pp. 106-8. Since the publication of this bibliography, there have been issued monthly *Accounts relating to the Inland (Rail and River-borne) Trade of India*. These were previously issued but were subsequently discontinued as a retrenchment measure in 1923. *Review of the Trade of India*, although mentioned among other sources of primary data, contains an exceedingly useful summary with analysis and interpretation of trade statistics available in other bulky publications. The introductory section "General" contains valuable information with regard to the economic condition not only of India but of other countries in so far as they affect Indian trade.

FINANCE

The chief sources of statistics relating to finance, currency and banking in India are described in detail in *Sankhyā*, Vol. 3, part 1, pp. 93-96. That list has to be supplemented by a mention of the *Report on Currency and Finance* issued by the Reserve Bank of India for 1935-36, 1936-37 and 1937-38 and promised for successive years in order to keep up the statistical continuity of the tables previously issued in the *Reports of the Controller of the Currency*. Recently, in the *Monthly Survey of Business Conditions in India*, two index numbers of prices of securities are available, one with fixed yield and the other with variable yield, the base of both being the year 1927-28.

ECONOMIC AND BUSINESS STATISTICS

In spite of such additions and improvements, the need for more and better statistics has not yet been fully met. To give only one instance, a serious attempt should now be made for estimating the movement of private capital in connection with India's Balance of Payments, which figures are of great importance in any discussion with regard to the question of the exchange rate, now engaging public attention. Another suggestion made in the Howley-Robertson Report may also be mentioned in this connexion. Every half year there should be issued by the Reserve Bank a consolidated statement containing analysis of advances made by scheduled banks according to their purposes. In view of the large seasonal swings in all Indian economic series, it will be of great help if such figures are available quarter by quarter.

TRANSPORT

The relevant statistics may be divided as follows:—

(a) railways, (b) shipping, (c) other transport, (d) roads and navigable canals and (e) posts, telegraphs and telephones.

The report entitled *The Railway in India* issued annually by the Railway Board in two volumes gives detailed information with regard to railways. The whole position has been recently reviewed in the *Report of the Indian Railway Committee, 1937*, Chapter VI pp. 56-61. Many important suggestions have been made. One of them is that commercial statistics should be brought in line with the present operating statistics. Several useful recommendations have also been made with regard to domestic statistics, and their analysis and interpretation.

SHIPPING

The entrances, clearances, nationalities and other details of shipping statistics are not separately available. They are all included in the returns for sea-borne trade, annual and monthly, referred to in the bibliographical article in *Sankhyā*, Vol. 1, Part 1.

OTHER TRANSPORT

A census of carts is taken along with cattle census referred to above. No figures are however available for motor and other forms of transport. The Road Development Board and the National Airways Board may remove these deficiencies.

ROADS AND NAVIGABLE CANALS

The reports of the Public Works Departments of the various provinces including also the Irrigation branches give figures for metalled and unmetalled roads maintained by them and also by some local authorities. Some information is also to be found therein with regard to navigable canals. They are not, however, collated at present in the form of a consolidated all-India report. Only a table showing the length of roads and communications maintained by the Public Authorities in the different provinces is contained in the *Statistical Abstract*.

POSTS, TELEGRAPHS AND TELEPHONES

The annual reports of the Posts and Telegraphs Department of the Government of India give details of postal traffic viz. letters, packets, parcels, money-orders, value payable articles etc. and telegraph traffic such as length of telegraph lines, number of messages etc. Telephone and wireless messages, however, need more attention. Savings Bank and postal cash certificate statistics contained in these annual reports are of value in connexion with the financial statistics of the country.

EDUCATION

The Provincial Governments publish annual reports of their Education Departments containing useful information regarding primary, secondary, college and university education. A consolidated report known as *Education in India* is issued by the Education Committee with the Government of India. Information about libraries, museums, zoological and botanical gardens and learned societies is meagre and scattered over a large number of publications. Some details about newspapers, periodicals etc. are to be found in the *Statistical Abstract for British India*. It is desirable that these data may be utilised for an annual all-India education report.

POPULATION

The decennial census reports contain valuable demographic information. But there is room for improvement. For instance, in an article in *Sankhyā*, Vol. 3, part 1, a number of items have been mentioned, pointing out the need for a sample survey along with the next census of 1941. Similarly, if there is no census of production as recommended in the Bowley-Robertson Report, it will be clearly desirable to have an industrial census along with the general census of 1941 and the scope should be somewhat more extended than that for the industrial census of 1921.

VITAL STATISTICS AND MIGRATION

The extremely unreliable nature of birth and death figures in India is well-known. Either this defect should be removed or we should have quinquennial instead of decennial censuses. Even now the statistics are available in a number of publications, and that not on a uniform basis. The present sources are:—

- (1) *Annual Report of the Public Health Commissioner with the Government of India*;
- (2) *Annual Report of the Provincial Directors of Public Health or Sanitary Commissioners*;
- (3) *Provincial Reports on Hospitals, Asylums etc.*

Statistics of Income, Wealth Etc.

INCOME

Let us now pass on to a description of the publications relating to estimates of income, wealth etc. It will be convenient to discuss the official and non-official publications together, and to give some idea not only of raw data but also their analysis and interpretation so far effected.

As agricultural incomes are exempt from taxation, they are not included in the income-tax returns. Nor are there to be found incomes less than Rs. 2000/- a year, although they represent by far the most important portion of the aggregate income. The need for surveys in rural and urban areas is clearly indicated.

INDEBTEDNESS

For indebtedness also, the available figures are very meagre viz. those available in the records of the Co-operative Societies, in the reports of the Provincial Registration Departments and in *Land Revenue Administration Reports*, so far as figures of mortgages and transfers are concerned. Figures of value are also to be found in Settlement Reports. Special monographs such as Darling's *The Punjab Peasant in Prosperity and Debt* (1925) may be mentioned in this connexion. The Banking Committee Reports of the various

ECONOMIC AND BUSINESS STATISTICS

Provinces and States attempt estimates of indebtedness, whether temporary, intermediate or long-term. When all this is said and done, the need for surveys is as urgent for a study of indebtedness as for a study of incomes.

VILLAGE SURVEYS

Unfortunately, the modern method of random sampling has not been attempted except only in a few cases, e.g., the weaving survey of the Bengal Board of Economic Enquiry. The nature of the surveys so far made, may be inferred from the following account.

The pioneer work on the subject was Major J. C. Jack's *Economic Life of a Bengal District*, published in 1916. The notes he made as the Settlement Officer of Faridpur were utilised. This was followed by Dr. H. Mann's *Land and Labour in a Deccan Village*; No. 1 having been issued in 1917 and No. 2 in 1921. In the meantime several other village surveys had appeared, e.g., Dr. Gilbert Slater's *Some South Indian Villages* in 1918, and Dr. E. D. Lucas's *Economic Life of a Punjab Village* in 1920.

Indian States have also not lagged behind. To give only one recent instance, the following villages have been surveyed by Cochin: *Antikkad, Chundal, Eruttampadi, Nayarambalam, Pallancheri, Tirubaliyad, Vadama, Vallattam, Venchallur*.

All the surveys had been carried on during the years 1933 to 1936. In each of the above cases, a full and satisfactory account has been given of the areas surveyed, but the results obtained hold good for them alone. There is no attempt to show to what extent they are true for other areas within the province or outside.

WAGES

It is well known that statistics of wages are meagre and otherwise unsatisfactory. The report on *Prices and Wages in India* was suspended from 1924, partly as a retrenchment measure but also because the figures published were not of much value. The only information now available has to be gleaned from the factory administration reports of the various provinces, tariff board reports, and agricultural wage census reports. Even these are of little use. To give only one instance, operatives are not properly graded up, with the result that there is a wide gap between the maximum and minimum wages, e.g., Rs. 6 to Rs. 17-8 in the case of carpenters employed in non-textile factories in Bengal. For an effective improvement in the present position, there must be sample surveys on approved principles with the help of well thought out schedules and trained investigators.

COST OF LIVING

While it may not be necessary to construct different index numbers of cost of living for families with different incomes in different parts of India belonging to different communities, it is certainly desirable to have different index numbers for different towns. We say towns advisedly, for apart from the difficulty of computing index numbers for rural areas, they will not be of much value as some of the transactions there are not on a cash basis at all. We have at present fairly satisfactory index numbers for average working class families for Bombay, Ahmedabad, Nagpur, Sholapur and some other towns. In this case also the fundamental basis is accurate information with regard to a number of family budgets—sufficiently large in number to allow for any possible divergence of expenditure. Here also the method of random samples is clearly applicable. The second requirement is that there should be a systematic collection of statistics of retail prices actually paid by the consuming families. But the practical difficulties of such sample

investigations are considerable, as pointed out in the *Report on an Enquiry into the Family Budgets of Industrial Workers in Madras City* (p. 2).

PRICES

With the discontinuance of the Prices and Wages returns, we have now to fall back upon diverse sources of statistics of prices *e.g.*

(1) Harvest prices available in agricultural returns, such as *Agricultural Statistics of India* and provincial *Season and Crop Reports*. Recently, a new series is being published from time to time in the *Indian Trade Journal*.

(2) Prices published in un-official returns such as the *Bengal Chamber of Commerce Prices Current*.

(3) Prices published in trade and financial journals such as *Capital*.

(4) Prices published in the *Indian Trade Journal* and in other official publications and in special reports as listed in the bibliographical article in *Sankhya*, Vol. 1, part 4, pp. 440-446. The whole position was reviewed in the Bowley-Robertson report and several important recommendations were made. The matter was considered also by the Official Statistics Committee appointed by the Indian Statistical Institute (See *Sankhya*, Vol. 2, part 3, p. 360). From the figures considered in the "Ratio Question" in *Sankhya*, Vol. 3, part 2, pp. 125-142, it appears that the years 1927-28 and 1928-29 formed a recent period of comparative stability. It is therefore desirable to reconstruct an all-India index number of wholesale prices with these two years as the base period. If weights are chosen according to the importance of the commodities as determined by their contribution to national income by a census of production, it is clearly unnecessary to have separate indices for different parts of India as suggested for the cost of living index number. The objects of the two are entirely different. The latter is required for interpreting the money incomes of families in terms of goods and services and thus judging the case for or against any increases in nominal wages in connexion with trade disputes. But the former is intended to serve national purposes in connexion with a study of currency, exchange, movement of prices abroad and so on.

PRESENT DEFECTS AND THEIR REMEDIES

From the above account of primary data, it is clear that although much is being collected there are some serious gaps and defects largely because modern approved statistical methods have not been fully utilised. There is also unfortunately an urgent need for co-ordination, several instances of this having been given in the *Report of the Official Statistics Committee in Sankhya*, Vol. 2, part 3, p. 261. Two other defects may also be mentioned here:—(a) delay in publication and (b) lack of information with regard to the scope and significance of published statistics. These need not be stressed here, for they were thoroughly threshed out by the Official Statistics Committee referred to above.

Agencies

Several agencies for collection and presentation of primary data have already been mentioned such as the Provincial and Central Government Departments, the Chambers of Commerce, the trade associations etc. It is, however, necessary to mention specially a few of the most important agencies.

DEPARTMENT OF COMMERCIAL INTELLIGENCE AND STATISTICS

History—The development of the Department of Commercial Intelligence and Statistics under the Government of India has been brought about by a succession of events

ECONOMIC AND BUSINESS STATISTICS

which are closely connected with the administrative needs. Prior to 1871, this department, like similar organizations of many other governments in their early days, had no separate existence, each department of the Government of India having been used to publish statistics relating to subjects under its control. In 1871 the post of the Director General of Statistics was created, but the collection and tabulation of the data received from the local authorities, continued to be the function of the Central Departments until 1895, when a Statistical Bureau, which might be regarded as a nucleus of the present Department of Commercial Intelligence and Statistics, was formed under the Director General and the responsibility of reviewing and publishing statistics of the departments of the Government of India, under the general guidance and control of the department concerned, was entrusted to him. In 1905, however, the Statistical Bureau was merged in the new office of the Director-General of Commercial Intelligence and Statistics. A few years later it was felt that the Departments of Statistics and of Commercial Intelligence could not, consistently with efficiency, be placed under a single officer, and accordingly the Department of Statistics was separated from that of Commercial Intelligence in 1914. But this separate arrangement did not last long, for in 1922, as a measure of retrenchment, the Department of Statistics was again amalgamated with the Commercial Intelligence Department and placed under the Director-General of Commercial Intelligence and Statistics. This arrangement practically continues till the present day, except that in July, 1938 the Statistical Research Branch of the Department of Commercial Intelligence and Statistics was established at the headquarters of the Government of India for the analysis and interpretation of economic and statistical facts and for carrying on specialised statistical investigations. The Branch was subsequently separated from the Department (February, 1938) and has since been continuing as a separate organization under the Economic Adviser to the Government of India.

2. *Organisation*—The office of the Director General of Commercial Intelligence and Statistics is located in Calcutta, and the Director General is aided by a Deputy Director of Commercial Intelligence and a Deputy Director of Statistics.

3. *Functions of the Department*—Generally the work of the Department falls under two main divisions, *viz.*, statistics and commercial intelligence. On the statistical side, the main functions are:—

Collection and publication of statistics relating to—

Agriculture :

1. Forecasts of crops.
2. Area and yield of crops.
3. Agricultural statistics.
4. Tea.
5. Coffee.
6. Rubber.
7. Cotton-pressing factories.
8. Returns of cotton pressed.
9. Live-stock.
10. Quinquennial report on the average yield per acre of crops.

Prices :

11. Prices and index numbers of prices.

Finance and Industry :

12. Cotton spinning and weaving in Indian mills.
13. Banks in India.
14. Joint Stock Companies.
15. Coal.
16. Factories and other large industrial establishments.
17. Co-operative societies.
18. Production of certain selected industries of India.

Trade :

19. Import, export and re-export trade.
20. Movement of treasure and shipping.
21. Exports of Indian Artware and Sports Goods.
22. Customs and excise duties, refunds and drawbacks.
23. Trade at stations adjacent to Land Frontier Routes.
24. Coasting trade.
25. Internal movements of raw cotton.
26. Inland (Rail and River-borne) trade.
27. Weekly arrivals and despatches of principal commodities at the important trade centres.
28. Trade statistics relating to the Maritime States in Kathiawar and the State of Travancore as also the trade across the Virangam Dhanduka land customs line.

Besides the above, statistics relating to movement of population, demography, public health, administration, education, finance, coinage and currency, railway, post office, telegraph, meteorology, irrigation, industrial census, patents and designs, mineral production, etc., are compiled from departmental reports and published in the *Statistical Abstract for British India*. Maps relating to cotton and other important crops are also published from time to time. The Commercial Intelligence Branch is responsible for the collection and dissemination of commercial information and forms a convenient link between the commercial public and the Government of India. It publishes a weekly journal known as the *Indian Trade Journal* and issues periodically a Directory of the principal exporters and manufacturers of Indian produce. It answers trade enquiries, effects trade introduction and deals with such technical matters as inland and foreign tariffs, annual revision of tariff valuation, etc.

Broadly speaking, the functions of the Department of Commercial Intelligence and Statistics are threefold : firstly, to compile and publish all-India statistics ; secondly, to advise Government on commercial matters and act as an intermediary between the Government of India and the commercial public ; and thirdly, to undertake collection and dissemination of commercial information with a view to the promotion of Indian trade, specially on the export side. In the discharge of all these functions the Director-General is required to undertake tours in order to maintain close contact with commercial opinion and ideas. He works in close co-operation with the provincial Directors of Industries and the Collectors of Customs at the principal ports and other Government departments in India. He is also in close touch with the chambers of commerce and trades associations. Further, through the medium of Indian Overseas Trade Commissioners, British Consular Officers and British

ECONOMIC AND BUSINESS STATISTICS

Overseas Trade Department Officers, he keeps himself informed about trade developments of interest to India, in foreign countries.

4. *How the Department disseminates statistical and commercial information*—The information that is in possession of the Department is disseminated through the medium of—

1. Correspondence, the number of outgoing communications being steadily on the increase ;
2. Publications, most of which have been mentioned above ;
3. Commercial Library in Calcutta, which has over 20,000 volumes consisting of books on economic, commercial and industrial subjects, Indian and Foreign statistical publications, and over 400 technical and commercial journals and market reports. The library is open to the public and arrangements have been made to make the books available on loan throughout India on deposit of value.
4. Personal contact—Letters of introduction and necessary advice are given to persons or firms interested in Indian trade in order to enable them to have their business requirements dealt with more expeditiously and effectively in India or abroad.

BOARD OF ECONOMIC ENQUIRY, PUNJAB.

The Board came into being at the instance of the Government of the Punjab in 1919 and has a membership of 21, half being non-officials. It has done a good deal in guiding economic investigations and co-ordinating the results. The nature of its work may be inferred from the many reports that have been issued. These reports may be roughly divided into the following groups :—

1. Village Surveys—Beginning with Bairampur in the Hoshiarpur District, there have been twelve other surveys, the last being that of the village of Durrana Langana in the Multan District. The general plan of work is available in "Questionnaire for Economic Inquiries" (Publication No. 3).
2. Farm Accounts. The aim of this series, which started with the records of two holdings in 1924-5 and has steadily expanded, is to find out the income from, and expenditure on, cultivation. Due allowance is made for interest and depreciation on cattle, implements, etc. ; since 1928-29 a section has been added to find out the comparative cost of irrigation by using bullocks, oil-engines and electric pumps. Publication No. 33 summarises the cost of production of crops, such as cotton, wheat, *toria* (rape), *gur* (unrefined sugar), etc.
3. Family Budgets of Cultivators. This is a subsidiary series to the above and gives the total family income and expenditure of agriculturists. The first volume (Publication No. 40) dealt with the budgets of four tenant-cultivators in 1932-33 and the number of families has been steadily increased.
4. Urban Working Class Cost of Living Index Numbers. This series started in 1936 and records the monthly price level of articles of consumption at five centres in the Punjab.
5. Food Prices of a long series of years dating from 1841, now being brought forward to 1938. (Publications No. 7 and 13).
6. Food Consumption in rural tracts. Studies of some rural families in the Attock District and records of consumption of 71 tenant families at Khanewal in the Multan District. (Publications No. 6 and 29).

7. Marketing Reports. These deal with marketing practices in the Punjab *mandis* (markets), marketing of wheat, factors affecting the price of wheat, and the cost of ginning and pressing cotton.
8. Rural Industries. Examination of the *gur*, lac and leather tanning industries.
9. Mortgage Inquiries. Two reports, one for the Perozepore District and the other for the Rawalpindi District. (Publications No. 5 and 14).
10. Size and Distribution of Holdings. Both owners' and cultivators' holdings were studied. (Publications No. 4 and 11).
11. Milk Products. Survey of milk supply of Lahore and Lyallpur, and cost of production of milk at the Agricultural College Dairy and by the Gujars in the Lyallpur town.
12. Miscellaneous Reports. These include *Sales of Land* (Publications No. 23 and 57), *Condition of Weights and Measures* (Publication No. 42), *Sales of Gold and Ornaments in 120 villages* (Pamphlet 1), *Agricultural Statistics of the Punjab since 1901* (Publication No. 52 and Pamphlet 2), etc., etc.

These reports are largely descriptive and their interest lies more in the information contained than in the methods adopted. Elementary statistical methods are generally employed although somewhat advanced methods are used in Publication No. 49 dealing with wheat prices. The application of technical statistical methods is more often than not hampered by lack of initial data. Advanced methods have been employed in working out the results of an inquiry to find out the relationship between human fertility and economic and social status—the data refer to about 25,000 rural families—but the report is still in preparation.

THE INDIAN CENTRAL COTTON COMMITTEE

The Indian Cotton Committee of 1917-18 recommended the establishment of the Indian Central Cotton Committee, which was set up in April, 1921, and worked in an advisory capacity until 1923, when the Cotton Cess Act was passed and its duties and responsibilities were greatly enlarged.

A brief account of the work of the Committee in connection with statistics is given below:—

The Committee has, almost from the time of its inception, devoted close attention to the question of improving the accuracy of the all-India cotton forecasts and a special Sub-Committee has been appointed which conducts annually a *post-mortem* examination of the cotton forecasts each season. As a result, several sources of errors have been discovered and remedial measures suggested. From 1935-36, the results of these examinations have been published for general information. Financial assistance has also been given to certain provinces and states for the purpose of carrying out investigations having a bearing on the problem of the improvement of the accuracy of the cotton forecasts.

The Committee also compiles and publishes periodically statistics of general interest to the cotton industry. Statistics of the import of American cotton into India are published weekly and those pertaining to the consumption of Indian cotton in Indian mills monthly. Information regarding the estimated production of Indian cotton classified according to staple length is published annually. Other publications issued annually deal with exports by sea of Indian raw cotton, stock of raw cotton held in India by the mills and the trade, and receipts at mills in India of raw cotton, classified by varieties.

ECONOMIC AND BUSINESS STATISTICS

These statistics are obtained on a voluntary basis through the kind co-operation of exporters, mills and the trade.

BOMBAY LABOUR OFFICE

1. Budget inquiries. The first report on *Working Class Budgets in Bombay City* (1921-22), was issued in 1923, which has been followed by several others, such as the *Report for Middle Class Families in Bombay* (1922-24) published in 1928, that for *Cotton Mill Workers in Sholapur City* (1925) issued in 1928, that for *Working Class Families in Bombay City* (1932-33) published in 1935, and those for working class families in Ahmedabad (1926) and (1933-35), the first one having been published in 1928 and the second in 1937.

2. Wages, Hours of Work and Conditions of Employment. The earliest report was for wages and hours of work in cotton mills during 1921 and was issued in 1923. A second census was carried out for August, 1923. A third census based on the principle of direct information from the Muster Rolls, viz., detailed figures regarding number of days worked, production, rates, monthly earnings, deduction for fines, etc., bonuses for good work or better attendance and net earnings per each individual worker for selected representative cotton mills in Bombay, Ahmedabad and Sholapur was carried out in 1926.

A General Wage Census covering all perennial factories in Bombay Province was carried out in 1934. The first report of this census which deals with the Engineering Industry was published in 1935, the second report which deals with the Printing Industry was published in 1936 and the third one dealing with the Textile Industries (Cotton, Silk, Wool and Hosiery) was published in 1937. A report on the General Wage Census covering seasonal factories in the Bombay Province which was carried out in 1936 is in the press and will be published shortly. An enquiry into the wages, hours of work and conditions of employment in the retail trade of some towns in the Province was made in 1935-36 and a report based on its result was published in 1936. A report on the wages of agricultural workers in the Bombay Presidency during the years 1900 to 1922 based on the data obtained from the office of the Director of Agriculture, Poona, was published in 1922. A report on an enquiry into middle class unemployment conducted in 1926 was published in 1927. Besides these, special investigations into other matters concerning labour have also been made.

3. Bombay Labour Gazette: In a class by itself stands the *Labour Gazette* in which are published statistics of the movement of wholesale prices in Bombay and of comparative retail prices of 17 food articles in Bombay, Ahmedabad, Sholapur and Poona. It also publishes many other facts concerning labour in the Bombay Presidency such as information relating to the causes and duration of industrial disputes, a full and systematic account of the existing trade unions, employment situation bearing on the supply of labour and statistics of absenteeism in the Textile and Engineering industries in Bombay City, Ahmedabad, Sholapur, Virangam and Broach, and a summary of the details of the proceedings of the cases under the Workmen's Compensation Act, 1923. Several interesting items are reproduced from the publications of the International Labour Office, Geneva, and of the Labour Offices or Departments of other countries, such as the movement of prices in other countries, for comparative purposes.

PATNA COLLEGE CHANAKYA SOCIETY

As its name implies, it is pre-eminently a society of Patna College students. The idea of starting the society in 1909 was to develop an organization of young men who could acquire a first hand knowledge of the economic conditions of the province by

cultivating habits of scientific enquiry and patient research. The Society collects statistics on different aspects of the economic life of the place in the study of which they are interested and tries to analyse and interpret them. In this work, the students are assisted by their teachers.

The nature of activities will appear from the following list of papers published in the 23rd annual report for 1936-37 :

1. Weights and Measures of Capacity in Bihar.
2. Production of Betel in Chandanpore.
3. The Industrial Possibilities of Bihar.
4. Various Problems of Milk Supply.
5. Government Agricultural and Dairy Farms as described and indicated in Kautilya's *Arthashastra*.
6. Finance of Bihar under the new constitution.
7. The Weavers' Co-operative Society, Fittwa.
8. A General Survey and Population Problems of Baghi, District Muzaffarpur.
9. Land Tenure in Baghi, District Muzaffarpur.
10. Indebtedness in Baghi village.
11. Marketing in Bihar.
12. A brief summary of the Report of Family Budget Enquiry made in Baghi in October, 1936.
13. A survey of the village Lavi, District Gaya.
14. Milk Consumption at Patna.
15. *Dari* (rope) Industry in Patna.

The accounts are largely descriptive. Technical statistical methods have been employed neither in analysis nor in interpretation.

RESERVE BANK OF INDIA

The Statistical Section of the Reserve Bank of India, started in 1937, collects valuable information bearing upon the banking activities of India. It is engaged continuously in the collection and classification of statistics of scheduled and non-scheduled banks operating in this country. Financial and money market statistics including weekly or monthly returns of important foreign central banks, exchange rates between principal financial centres, prices of gold and silver in India and abroad, prices of Indian and British Government securities, etc., are also recorded in this Section. It compiles a monthly *Statistical Summary* containing details of the Reserve Bank's operations in Treasury Bills, purchase of sterling, etc., as well as certain financial and trade statistics. In addition the Section publishes a yearly report on *Currency and Finance* dealing with currency circulation, money conditions, public debt, bullion, foreign trade, exchange, etc., during the financial year under review.

THE EAST INDIA COTTON ASSOCIATION LTD.

The existence of the above association may be traced to the recommendations of the Indian Cotton Committee, known as Meckma Committee (1917) although the association was registered in October, 1921. It took over the functions of the Cotton Contracts Board when it ceased to exist on the 1st of June, 1922. The association publishes the following statistical reports (1) *The Bombay Weekly Statistics*, (2) *The Bombay Bi-weekly Statistics* and (3) *The Indian Weekly Statistics*. The first two give the movements of

ECONOMIC AND BUSINESS STATISTICS

cotton in Bombay whereas the third gives the imports and exports of cotton into and from the chief ports of India. It also publishes annually *The Bombay Cotton Annual* which contains statistical tables of crops, exports, imports, prices, stocks, consumption, etc. It is designed to meet the requirements of all those who are interested in the production, distribution and consumption of Indian and foreign cotton, yarn and cloth. The data for the above publications are collected from various bodies, viz., the Indian Central Cotton Committee, Chambers of Commerce, Railways, Port Trusts and various Government Departments.

INDIAN CENTRAL JUTE COMMITTEE

The functions of the Indian Central Jute Committee, among others, are the improvement of the jute forecast and statistics. Information and jute statistics of different countries are being collected, published in the form of a monthly bulletin and circulated among people who are interested in jute. Available jute statistics are analysed to get new information on various points such as production of jute in different Indian provinces, consumption of jute in India, etc. Regarding the improvement of the jute forecasting, small scale surveys were conducted in order to determine whether a random sampling method can be used with accuracy to forecast the jute crop and the exact method of procedure which will have to be adopted.

BENGAL BOARD OF ECONOMIC ENQUIRY

The Bengal Board of Economic Enquiry was constituted in 1934. It has, during the last 4 years, collected data of considerable importance and volume on the income, expenditure and debt of agricultural families and of the families engaged in handloom weaving as a part or full time occupation. The present Bengal Agricultural Debtors' Act is based on the Board's report on the results of the first of the above enquiries. It helped in the framing of the policy of and preparing the rules for the co-operative Land Mortgage Banks now working in Bengal. The Board also advised Government in the matter of development of the fisheries in Bengal and regarding consolidation of the agricultural holdings. It has now been enquiring into the possibility and desirability of (1) increasing the cultivation of bamboo for use in the Paper Industry, (2) developing the manufacture of sugar as a Cottage Industry in Bengal, (3) the sufficiency of Bengal's supply of its staple food crop (rice) and has collected valuable statistical data on these subjects. Some of the results of the statistical and other enquiries have already been published and others are under publication.

MARKETING SURVEYS

The Royal Commission on Agriculture stressed the importance of marketing surveys. A memorandum of the marketing of agricultural produce in Bengal was compiled for the use of the Commission by the Registrar of Co-operative Societies in Bengal in 1926. A series of surveys regarding the marketing of cotton was carried out by the Indian Central Cotton Committee. The first all-India report on the Marketing of Wheat in India was issued in 1937. Results of investigation with regard to other commodities will also shortly be published.

Analysis and Interpretation

The earliest pieces of work of analysis and interpretation were those bearing on the national income of India, beginning with Dadabhai Naoroji's *Poverty and Un-British Rule in India*, and ending with Mr. G. Findlay Shirras's *Poverty and Kindred Economic*

*Problems in India.** All of these are not of equal value, for most of them are written with a definite bias and without a proper appreciation of the underlying theory and technique of estimation. It is a regrettable but an undoubted fact that the last twenty-five years have coincided with a strong nationalistic movement in India which has necessarily influenced most of the economic writings of the period making them emotional and not scientific, nationalistic and not critical. It is only during the last decade that a school of writers have tried to make a dispassionate study of economic problems, but their number is not large as it must be in such a period of political unrest, unfulfilled desires and vague expectations.

It is neither possible nor necessary to give a detailed work of the investigations made during the past few years. Some village studies, special monographs, Census and Settlement reports, etc., have already been mentioned. It now remains to refer to some articles, etc., not with the view so much to give an exhaustive list as to indicate their nature. To start with, we shall mention articles which are mainly descriptive, and do not employ any technical statistical method.

FOOD SUPPLY, ETC.

One of the earliest pieces of critical work was that by Mr. D. S. Dubey (now Dr. D. S. Dubey) on the "Indian Food Problem" under the inspiration of Prof. H. Stanley Jevons, published in the *Indian Journal of Economics*, Vol. 6, pp. 1-52 and by Prof. Brij Narain with his paper on "Eighty years of Punjab Food Prices 1861-1920" in the same volume of the *Indian Journal of Economics*, pp. 397-466. A study on food supply proper is available in "Food and Food Requirements of the Indian Labourers" by Prof. Radha Kamal Mukherjee in the *Indian Journal of Economics*, Vol. 12, pp. 254-264.

AGRICULTURE

Dr. B. N. Ganguly studied the economics and statistics of double cropping in his paper on "Double Cropping in Certain Regions of Over-population" in the *Indian Journal of Economics*, Vol. 8, pp. 247-262. To the same issue was contributed, "The Agricultural Regions of the Ganges Plain" by Prof. Radha Kamal Mukherjee, who surveyed the relation between cultivation and water-supply. He followed this up with another article on "Agricultural contrasts in the Bengal Delta" in the *Indian Journal of Economics*, Vol. 9, pp. 25-44.

An elaborate article in this series is on "Agricultural Cycles and Sunspots", also by Prof. Radha Kamal Mukherjee, in the *Indian Journal of Economics*, Vol. 10, pp. 259-310. Dr. B. N. Ganguly's analytical work on this subject is mentioned in a later section. Here it is only necessary to mention his article on "Agricultural Productivity in Relation to Density of Population in the Middle Ganges Valley" in the *Indian Journal of Economics*, Vol. 15, pp. 243-260 in the course of which he quotes some statistics for the purpose of illustration. Belonging to this section is a group of articles connected with jute published in *Capital* in August and September, 1929. The first was an address on "Jute Forecast" by Prof. J. C. Sinha before the Jute Importers' Association, Dundee, in which the methods of forecasting jute were described and several improvements were suggested. There were four articles by Dr. H. Sinha on the different aspects of marketing of jute in Bengal embodying the results of investigation in important markets in the moussil

*One little known but useful calculation was made by Prof. H. A. Horne in *Bengal Economic Journal*, January, 1918, pp. 74-89. Probably the best work on this line was made by Shah and Khambata in their *Welfare and Taxable Capacity of India*. A recent work on the subject is Prof. D. C. Karve's *Poverty and Population in India*.

ECONOMIC AND BUSINESS STATISTICS

as well as in Calcutta. Mr. P. D. Nair contributed an article on "The Marketing of Agricultural Produce in C. P. and Berar" in the *Indian Journal of Economics*, Vol. 12, pp. 149-176. Prof. D. R. Gadgil's work on the marketing of fruits about Poona also deserves mention. More strictly statistical are two articles in *Sankhyā*, Vol. 1, Part 4, the first on "Varieties and Yields of Rice in Henuria Mauza" by Dr. H. A. Ali assisted by Messrs. T. K. Bose and J. Talukdar (pp. 359-372) and the second on "Thirty-eight years of Rice Yields in Lower Birbhūm" by Dr. H. A. Ali assisted by Mr. T. K. Bose (pp. 373-389). The latter contains an "Editorial Note" by Prof. P. C. Mahalanobis in which technical statistical methods have been employed.

CURRENCY AND EXCHANGE

Dr. B. N. Kaul is responsible for an article on "Economic Depression in India and 15. 6d. Sterling Exchange" in the *Indian Journal of Economics*, Vol. 13, pp. 453-466. A similar article was by Dr. H. Sinha on "Indian Gold Exports" in the same volume of the same journal on pp. 685-694 in which the causes of gold exports have been studied with the help of figures. Dr. B. V. N. Naidu studied various kinds of statistics of "The Co-operative Movement in the Madras Presidency" in an elaborate article in the *Indian Journal of Economics*, Vol. 14, pp. 418-448. One recent work on the subject is by Prof. J. C. Sinha and Dr. H. Sinha being an article on "The Ratio Question" in *Sankhyā*, Vol. 3, Part 2, pp. 25-142 in which the authors have tried to prove that the ratio fixed by the Hilton-Young Commission was not too high but stabilisation was effected during a period of instability. In the *Indian Journal of Economics*, Vol. 18, Part 2, there are two articles. The first is by Prof. Benoy Kumar Sarkar on "The Problem of Correlation between Exchanges Rates and Exports" on pp. 129-142 in which he has shown that high exchange has not necessarily meant less exports. The second is by Dr. H. Sinha jointly with Mr. S. N. Sen on "Should the Rupee be Devalued?", pp. 155-162, in which some statistics have been quoted in order to show whether the rupee was overvalued or undervalued during recent years.

Recently, Prof. P. J. Thomas contributed an article on "Indian Currency in the Depression" to the *Economic Journal*, London, for June, 1938. A fuller study, covering a much longer period is available in *Indian Currency Problems in the last decade (1926-1936)* by Prof. J. C. Sinha, Delhi University (Sir Kikabhai Readership Lectures, 1938).

INDUSTRY

A careful and detailed account of the effect of protection on Indian Steel Industry 1924-27 was given by Prof. H. L. Dey in his article on the subject in the *Indian Journal of Economics*, Vol. 9, pp. 1-24. There are similar articles, e.g., another on the tin plate industry by the same author, but they are omitted here as they are not predominantly statistical.

LIVE-STOCK

Mr. L. L. Sundara Ram contributed an article on "Indian Pastures and Fodder Supply" in the *Indian Journal of Economics*, Vol. 9, pp. 153-187. This is a problem no less important than the question of human food supply mentioned above. Probably more so, for with the growing industrialisation of India it may be possible for us to export our manufactures in exchange for food that we may require in addition to what we normally produce. Obviously fodder cannot be imported in this way. Recently the whole position has been reviewed in Wright's *Report on the Development of Cattle and Dairy Industries in India*. Prof. Radha Kama Mukherji contributed an article on the

"Relations between Human and Bovine Population Pressure in India" to the *Indian Journal of Economics*, Vol. 17, 1936-37, pp. 249-263.

POPULATION, VITAL STATISTICS, ETC.

Prof. Radha Kamal Mukherjee studied the concentration of population in Eastern Bengal in his paper on the subject in the *Indian Journal of Economics*, Vol. 9, pp. 144-152. He is also responsible for another article on "Optimum and Over-population" in the same journal, Vol. 10, pp. 407-424. Mr. S. R. Deshpande and Dr. G. S. Ghurye jointly contributed a paper on "A Study of some Vital Problems Relating to the Working Class Population of Bombay" in the *Indian Journal of Economics*, Vol. 12, pp. 161-170. Another article by the same authors is available in *Bombay University Journal*, Vol. 13, Part 1, on "Fertility Data of the Indian Census of 1931" in *Marriage Hygiene*, 1936 there is an article on "Marriage and Widowhood in India" derived from a study of 3,400 middle class marriages. The subject of "Population Pressure and the Migration Problem of Asia" was studied by Prof. Radha Kamal Mukherjee in the *Indian Journal of Economics*, Vol. 14, in two articles, the first on pp. 11-28 and the second on pp. 145-166. A similar survey is available in his paper on "The Broken Balance of Population, Land and Water" in the same volume on pp. 255-264. Prof. Benoy Kumar Sarkar studied "The Trend of Indian Birth Rates in the Perspective of Comparative Demography" also in the same volume on pp. 577-626 and in the next volume on pp. 24-59, by quoting statistics from India as well as other countries. There are available two articles in the *Indian Journal of Economics*, Vol. 15. The first is on "Is India Over-populated?" by Dr. H. Sinha, pp. 712-718, in which he has tried to show that the average real income per head has not diminished with an increase in population. The second, a more elaborate one, is on "Population and Production (1920-21)", by Prof. P. J. Thomas, pp. 736-747, in which he has studied production statistics for recent years in relation to the population at those times. Mr. G. F. Shirras contributed an article on the "Population Problem in India" to *Economic Journal*, March, 1933, in which he has given some results of the 1931 census. Mr. J. H. Hutton spoke on the "Census of India, 1931; marital conditions, caste and race" before the Royal Society of Arts in 1933.

PRICES, COST OF LIVING, ETC.

Mr. S. R. Bose is responsible for two articles on "Cost of Living Index Numbers" in the *Indian Journal of Economics*, Vol. 15, pp. 141-166, 275-294. "Indian Prices during the Depression" were examined by Dr. H. Sinha and Mr. S. N. Sen in *Sankhyā*, Vol. 1, Part 1, in which the repercussions of the depression on individual prices as well as different groups of prices in the form of index numbers have been studied. Mr. S. J. Saksena contributed an article on "Cost of Living Index for Industrial Labour at Cawnpore", to *Sankhyā*, Vol. 2, Part 4, pp. 429-442, giving the results of a survey.

TRADE

An early article on this subject was by Dr. H. Sinha in *Capital*, March 8, 1928, entitled "Indian Purchases of British Cotton Goods", in which statistics have been given for a long series of years for the market of cotton goods in India. Jointly with Mr. J. R. Guha Thakurta, he analysed "Indian Imports" in a series of articles in *Capital*, April, 1932, showing the change in value and in direction during recent years. One important paper is by Sir H. A. F. Lindsay on "Recent Tendencies of Indian Trade" in the *Journal of the Royal Society of Arts* for 1933. A survey of "India's Trade and Industrial Statistics" by the same author is available in *J. R. S. S.*, 1934. The various official publications containing such statistics were briefly described and some improve-

ECONOMIC AND BUSINESS STATISTICS

ments were suggested. "Indian External Trade" formed the subject-matter of another address before the Royal Society of Arts in 1936 by Sir D. B. Meek, who was the Director-General of Commercial Intelligence and Statistics in India before his appointment as the Indian Trade Commissioner in London. Sir T. Ainscough spoke before the East India Association on "Our Export Trade with India" in 1936, his speech having been reported in the Journal of the Association for April, 1936.

Analytical Work

As already mentioned, most of the works of a statistical interest do not employ any technical method. It is quite recently that a school of writers have begun researches on these lines. One of the earliest of them is by Prof. K. B. Madhava on "Business Forecasting" in the *Indian Journal of Economics*, Vol. 9, pp. 663-667. The technique employed in other countries and its application to India form the subject matter of "Economic Barometers" by Mr. B. Tirumalacha in the *Indian Journal of Economics*, Vol. 10, pp. 331-354. Dr. B. N. Ganguli showed the relation between productivity and population in his article on "Indices of Productivity in relation to the Problem of Population" in the same volume of the Journal on pp. 553-573. Prof. K. B. Madhava contributed two articles in the *Indian Journal of Economics*, Vol. 7, the first on "Trade Unionism" pp. 226-249 and the second on "Analysis of Trade Disputes" pp. 250-275, in both of which he made use of statistical methods. Two other of his articles on "Analytical Study of Features of Absenteeism and Migration in Indian Labour" are available in *Calcutta Review*, 1931, pp. 50-65 and pp. 193-209. Jointly with Mr. V. N. Poomajregua, Prof. K. B. Madhava contributed a paper on "A further analysis of Statistics of Trade Unionism and Trade Disputes" in the *Indian Journal of Economics*, Vol. 12, pp. 1-32. Mr. Murlidhar Joshi is responsible for a paper on "Some Conclusions concerning the inter-relationship of birth rates, death-rates, prices and rainfall in the United Provinces" in the *Indian Journal of Economics*, Vol. 14, pp. 412-417. Prof. Hari Charan Ghosh contributed a paper on "The Correlation between Agricultural Production and the Stability of Population in the Bengal Districts" to the *Indian Journal of Economics*, Vol. 14, pp. 398-411, in which he made use of Pearsonian Correlation Coefficient. In two issues of the *Indian Economist*, dated July 29 and August 12, 1935. Messrs. Brojo Mohan Chatterjee and Gopal Chandra Roy studied cyclic fluctuations, the first in "Note Circulation in India" (pp. 593-94) and the second in "Percentage of Gold to Note Circulation in India" (pp. 666-667).

There are a series of studies on agricultural prices in India published in *Sankhyā*, among which may be mentioned the following:—

1. "Indian Cultivators' Response to Prices" by Amulya Ratan Sinha, Haris Chandra Sinha and Juan Ranjan Guha Thakurta in Vol. 1, pages 153-165.
2. "The Statistical Law of Demand for wheat in the United Provinces" by Amulya Ratan Sinha in Vol. 1, pages 166-172.
3. "A note on Cotton Prices in Relation to the Supply Factor" by Juan Ranjan Guha Thakurta, Vol. 1, pp. 186-88.
4. "Elasticity of Demand for Wheat in India" by Amulya Ratan Sinha in Vol. 2 pages 55-64.

A number of other articles have also appeared in *Sankhyā* in which technical statistical methods have been employed, some of which are listed below:—

1. "The Case for the Restriction of the Output of Coal in India" by Mr. J. R. Guha Thakurta in Vol. 3, part 3, pp. 225-232.

2. "A Study of Indian Official Jute Forecast", by Mr. A. R. Sinha in Vol. 3, part 4, pp. 413-420.

3. "Indian Foreign Trade (1933-37): Its Relation to the Exchange Rate", by Mr. H. K. Dutta and Dr. H. Sinha in Vol. 3, part 4, pp. 405-412.

Another interesting group of articles analysing and interpreting Indian data is to be found in the *Review of Economic Studies* Volume 5 (1937-38), viz. :—

1. Measuring the Power of Undervalued Currency to Stimulate Exports—I by Messrs. V. G. Edelberg and A. Krishnaswami, pp. 1-16.

2. The Power of Undervalued Currency: A Methodological Comment, by Mr. W. Malenbaum, pp. 143-151.

3. A Reply I, by Mr. V. G. Edelberg, pp. 152-157.

4. Measuring the Power of Undervalued Currency to Stimulate Exports—II, by Dr. V. G. Edelberg, pp. 195-217.

5. The Power of Undervalued Currency: Further Considerations, by Mr. W. Malenbaum, pp. 218-233.

Analytical work in official publications bearing on the Census, trade etc. of India has already been mentioned. Among non-official publications may be mentioned "Pareto's Law and the Distribution of Income" by Mr. G. F. Shiras in the *Economic Journal*, London, for December, 1935. A rejoinder by Messrs. Adarkar and Sengupta to the above pointing out that Pareto's Law is not inapplicable, is to be found in the next issue of the *Economic Journal*. A valuable paper on "Some Measures of Economic Activity in India" by Sir D. B. Meek has been recently published in the *Journal of the Royal Statistical Society*, Vol. C, Part 3, pp. 363-395. It was criticised by several speakers during the debate following the address, but its value and importance as pioneer work are beyond question. Mr. S. R. Bose of Patna also carried out an investigation on the same line, the result having been published in the *Indian Journal of Economics* for July, 1937, Vol. 18, part 1, pp. 25-39. Quite recently, "Capital" Calcutta has compiled an "Index of Business Activity", published for the first time in the issue for March 17, 1938.

CONCLUSION

From the above account, it is clear that there is a growing recognition of the importance of statistical methods in intensive studies of Indian economic problems. Unfortunately, much spade work is called for, before any rapid advance is possible.

Reference has been made to the strongly seasonal character of Indian economic data. Unfortunately, however, no seasonal indices have yet been worked out, enabling a study of monthly figures for purposes of analysis. It has been pointed out above that the two years 1927-28 and 1928-29 have been established as a period of comparative stability in the article on the "Ratio Question" (*Sankhyā*, Vol. 3, part 2) which may therefore provide as the base. But sufficient data have not yet been accumulated for estimating seasonal fluctuations. One difficulty is that the monsoon which is the ultimate cause of seasonal fluctuations, breaks in on different dates in different years with the result that January of one year is not strictly comparable with that of another. These difficulties are recognised. At the same time, it has to be remembered that unless there is more systematic analysis and interpretation, the gaps and defects in our primary data about which so much has been said above are not likely to be removed. It is to be fervently hoped therefore that the members of the Indian Statistical Institute who have achieved so much within the short time of its existence will bend their energies in the direct line of analytical studies and of improvement of the primary data.