

INDIAN STATISTICAL INSTITUTE

Eighteenth Annual Report : 1949-50.

The year under review has been a busy one for the Institute. Old activities have been extended in scope and new lines of activities have been opened up. A short session of International Training Centre sponsored by UNESCO (United Nations Educational, Scientific and Cultural Organization) and the Government of India was held in Calcutta and a special course in Demand Analysis was arranged under the leadership of a visiting professor. The Institute also accepted a proposal from the International Statistical Institute for collaboration in a joint venture for higher training of statistical officers in the countries of South-East Asia. Although prospects were opened up in various directions the question of stabilization of a portion of Institute's activities remained undecided as arrangements with the Ministry of Education, Government of India, could not be finalised.

I. REORGANIZATION OF THE INDIAN STATISTICAL INSTITUTE

As mentioned in last year's report a Special General Meeting of the Institute held on 19 April 1949 adopted certain changes of the rules of the Institute to come into force along with the proposed reorganization. In order to give effect to those changes, they were to have been confirmed at a subsequent general meeting of the Institute. A Special General Meeting of the Institute was accordingly convened on 31 May 1949 to confirm these changes, but a difficulty arose as on confirmation of the proposed changes the Council would immediately cease to exist, while a good deal of time would elapse before the Governing Body contemplated under the new constitution could be formed. The meeting had, therefore, to be adjourned until legal opinion was obtained as to a solution of the difficulty. Legal opinion was sought but no definite solution could be found and accordingly at the adjourned meeting of the Institute held on 16 July 1949 the issue could not be settled. Another lawyer was then consulted who expressed views differing materially from the previous one on certain points. In view of this conflict of opinion, the matter was referred to the Ministry of Education, Government of India, asking for advice as to what line should be taken by the Institute. No reply has however been received yet.

In December 1949, a proposal was received by the Institute that an international educational centre for statistics should be organized in Calcutta under the auspices of the UNESCO, the International Statistical Institute, and the Indian Statistical Institute. For this provision had been made by the UNESCO for a nuclear grant in the budget of the International Statistical Institute. It was proposed that this Centre should be administered by a Joint Committee, or Board of Directors representing the Indian Statistical Institute and the International Statistical Institute.

There were also negotiations with the Government of India in connection with a large-scale national sample survey to be undertaken by them in which it was suggested that the Indian Statistical Institute might play a major role.

It was felt that the revised constitution originally designed to meet the needs of training and research would not be adequate for these new developments and that the constitution most suited to these circumstances would be one of a federal type with separate units of management for the different types of activities. For example, a Governing Body could be established to take charge of the research and training school. Similarly a Board could take charge of the administration of the international education centre for statistics, while a separate Committee could be set up for the administration of large-scale projects.

On 20 January 1950, Prof. Mahalanobis and Mr. S. C. Sen (Joint Secretary of the Institute) had a full discussion with Dr. Tara Chand (Secretary, Ministry of Education) and Mr. Humayun Kabir (Joint Secretary, Ministry of Education) regarding these points and Dr. Tara Chand approved of this idea of a constitution of federal type provided the training and research work were entrusted to a separate Governing Body.

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The Council at its meeting held on 29 February 1950 approved of this plan and decided to make necessary arrangements for the research and training school on the above lines. Negotiations are still in progress with the Government of India regarding the details of the Governing Body of the research and training school.

2. SCIENTIFIC ACTIVITIES

2.1. RESEARCHES

2.1.1. *Multivariate analysis*: Two tests have been proposed to judge the significance of the additional discrimination supplied by some characters used in conjunction with a fixed panel. One is based on the ratio of two D's and the other on their difference. The use of these statistics in various situations has been discussed in a paper published in *Sankhyā*, Vol. 9, Part 4, by C. R. Rao.

2.1.2. *Systematic sampling*: Some special investigations have been undertaken in two dimensional systematic sampling. One of the main results obtained so far is that when the space correlation is a decreasing function of distance and the curve of correlation against distance is concave upwards, the systematic, stratified and random sampling procedures are in decreasing order of efficiency. These results have been discussed by A. C. Das in *Sankhyā*, Vol. 10, Parts 1 & 2.

A list embodying the results of other theoretical and applied research work is given in Appendix 1.

2.2. VISITING PROFESSOR

Professor Herman Wold of *Uppsala* University visited India during last winter at the invitation of the Indian Statistical Institute. He spent the first two months in Calcutta and then visited Madras, Poona, Mysore, Travancore, Bombay, Lucknow, Delhi and other places for lectures on demand analysis and statistical processes.

In Calcutta, besides delivering a course of lectures on the analysis of stationary time series, Professor Wold conducted a series of research seminars in which the Institute staff and some officers on deputation from Bombay participated. In these seminars problems were assigned to interested workers. It is intended to publish the results of their study in a special volume.

One of the important problems under study was the fitting of stationary processes to time series. The tests proposed by Quenouille and Wold for judging the goodness of fit are suited to large samples and it is not known how far they are adequate in small samples. This problem has been examined on the basis of artificial time series constructed for five simple models. It has been found that in small sample it is sometimes difficult to distinguish the different types of stationary processes by the usual tests. But a rule of procedure can be devised by using the sequential discriminant function, which leads to more satisfactory results.

Other problems under consideration are: (1) the generalization of classical tests to auto-correlated series, (2) econometric problems related to the theory and application of indifferent maps, (3) the statistical analysis of systems of economic relationships, (4) evolutive time series, (5) demand for Indian goods etc.

2.3. CROP SURVEY WORK IN WEST BENGAL

The sanction from the Government of West Bengal for carrying out sample surveys for the estimation of area and yield of principal crops in three crop seasons was received as late as 3 June 1949. The preparatory work for Juto-Aus survey could not be started before the first week of June due to this delay.

2.3.1. *Design of the Area Survey*:

(1) *Juto-Aus* area survey: The natural boundaries of Police Stations formed the zones or strata and square shaped sample grids of size 2.25 acres each were located at random in each of these zones independently. The number of grids chosen in each Police Station was proportional to the area of the Police Station at the rate of 2 grids per square mile. These samples were arranged in the form of two interpenetrating sub-samples with some grids common to both. The two sub-samples were surveyed by two independent parties of workers at two different points of time.

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(2) Aman area survey : In this season also, the survey was conducted in the form of two independent interpenetrating sub-samples. The number of grids chosen in each Police Station was at the rate of 1.6 grids per square mile. The method of selection for one of the sub-samples was similar to that of Jute-Aus area survey. For the other sub-sample the method was slightly different.

In this case the villages in each Police Station were grouped according to the proportion (p) of area under Aman Crop at intervals of 0.1. The village proportions were based on the information collected by the Bengal Government during the complete enumeration work conducted by Mr. Ishaque in 1944-45. From each group a number of villages were selected at random and within each selected village a number of grids were located at random in such a way that the density of grids within a village was 4 grids per square mile approximately, the overall density within a Police Station being 0.8 grids per square mile in this sub-sample.

(3) Rabi crop area survey : The design for this survey was exactly similar to that of Aman area survey.

2.3.2. Design of the Harvest Survey for the Estimation of Yield Rate :

(1) Jute-Aus crops : The design was similar to that in the previous years. 20 grids from among the grids selected for area survey were taken from each Police Station. These 20 grids were chosen at random from four approximately equal quadrants of the Police Station. Area survey was carried out again in all the 20 grids whereas crop-cutting work was confined to 60 percent of the grids. In each grid 2 plots with crop were chosen and three concentric circular cuts of radii 2', 4' and 5' 7½" were taken from each of these plots.

(2) Aman crop : In each Police Station 6 villages were chosen from among the villages surveyed during the area survey. About 4 grids per village on the average were chosen for harvest survey. Area survey was carried out again in all these four grids whereas crop cutting was conducted in only three. From each of these grids 2 plots with crop were selected and three concentric circular cuts of radii 2', 4' and 5' 7½" were taken in each plot.

(3) Rabi crop : The design was similar to that in the Aman season.

2.3.3. Field Organization :

The primary data was collected by field investigators each of whom was allotted an area approximately equal to the area of an average Police Station. The investigator surveyed all the grids of one sub-sample in the area allotted to him. The grids of the second sub-sample falling within his area were surveyed by an investigator of an adjacent area while the first investigator surveyed the grids of a second sub-sample of an adjacent area allotted to a different worker.

Usually four investigators were placed under the supervision of one inspector and four inspectors worked under a chief inspector. A chief inspector generally held charge of a district but in the case of Midnapore the charge was divided between two chief inspectors. One chief inspector held charge of the two districts of Howrah and Hooghly while another was in charge of Darjeeling and Jalpaiguri. Three to four districts comprising a range were placed under the supervision of an Assistant Superintendent.

2.3.4. Analysis of Data :

The tabulation of field records was arranged to give periodic estimates based on information received up to 10 days prior to the preparation of the estimates.

Progressive estimates of Jute-Aus survey were submitted to Government on 14 September 1949, 24 September 1949, 14 December 1949 and 10 December 1949. The final estimate was submitted on 22 February 1950.

The progressive and final estimates of area and yield of Aman paddy were submitted to Government on 19 December 1949 and 13 February 1950.

The first estimate of Rabi crops in the crop season of 1949-50 was submitted to Government on 10 March 1950 and the final estimate is under preparation.

The final estimate of acreage and yield of some principal Rabi crops like wheat, barley, gram, sugarcane, in the crop season of 1948-49 was sent to Government on 27 October 1949.

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As in the previous year, a survey of the requirement of seed potato was carried out along with the Rabi crop survey in the 1948-49 season. An estimate of quantity of seed potato used in 1948-49 season and the quantity that is likely to be used in 1949-50 was sent to Government of West Bengal on 12 October 1949.

2.3.5. Special Studies :

During Jute-Aus season a special survey was conducted to determine the ratio of weight of dry jute fibre to weight of green jute plants and to study the possibility of estimating the weight of dry jute fibre from some auxiliary characters like average height of plants, number of plants and diameter of plants. Five centres were chosen for this purpose and the records are being analysed.

During Aman season a special survey was conducted in Asansol Police Station to study the cost and variance functions under the existing physical conditions. In this special study 11 combinations of 4 sizes and 5 densities were used. The grids for each combination were located at random independently. The data are being analysed and studied. In order to carry out some model sampling experiments for determining the form of variance function 220 villages were completely surveyed.

2.4. ALL INDIA POPULATION STATISTICS (Y-SAMPLE)

The work of transferring the information in the Y-sample (2% sample of the 1941 Census slips) to Hollerith cards and processing of the latter to get the age-tables was continued during the whole of the year. At the time of publication of the report for 1948-49 coding was completed for the provinces as they were constituted in 1941. Later the Government of India decided that the areas which have merged with the provinces to form the reconstituted States should also be brought into the process and the provincial tables adjusted accordingly. This has necessitated supplementary coding to the extent of 0.24 lakh slips during the year. Punching of cards for one-third of Madras (two-thirds had been punched during 1948-49), the whole of Central Provinces (Madhya Pradesh), almost the whole of Bombay and about three-fourths of the Punjab (India) was completed during this year. Total number of cards punched was about 14.6 lakhs.

As regards the preparation of age-tables, tabulation for the United Provinces (Uttar Pradesh) started in the previous year was completed. While a very small portion of tabulation for the Central Provinces remains unfinished that for Madras has been completed. Total card-passage through the tabulators during this year was 58.53 lakhs.

Reconstructed age-tables of Orissa, Bihar, U.P. and Madras were submitted to Government. It is expected that the work for the remaining States would be completed by the end of June 1950.

Towards the end of the year Government sanctioned a scheme for the tabulation of Means of Livelihood on the basis of the Y-sample. Preliminary work in this connection has already been undertaken.

Another scheme sanctioned by Government envisages experimental studies on the methods of sampling in Population Census using 1941 Census Enumeration slips of Hazaribagh district which are now stored in our Giridih office; details of the technical programme are being worked out.

2.5. REFUGEE SURVEY

Report on the survey of refugee population in West Bengal was completed and submitted to the Government of India during the year. The report deals with information relating to regional distribution, occupation, income and conditions of employment before and after migration, housing, etc. with regard to the refugee population from East Pakistan.

The refugee population, it was found, had a high percentage of middle class families, the number of cultivators and other groups being comparatively small. The total value of movable and immovable properties left in East Pakistan by the refugees was estimated at Rs. 418 crores. It was also found that a high percentage of the refugee population remained unemployed after migration.

2.6. RANGOON SURVEY

The Institute completed its assignment for the design of the survey and drawing up of sample units by November 1949. Subsequently, Mr. Ailonoff, Statistical Advisor to the Government of Burma, came over to the Institute in December to discuss the technical details. Field work was completed for about 25 percent of the sample units originally proposed. The tabulations done on the initiative of Burma Govern-

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ment by the local authorities were examined by a representative of the Institute who was invited to Rangoo. A modified programme of tabulation was drawn up by him. The advisory work is expected to continue during the ensuing year.

2.7. RURAL SURVEYS

2.7.1. *Rural Indebtedness Enquiry:*

The consolidated report mentioned in last year's Annual Report has been completed and submitted to the West Bengal Government. It deals with various aspects of rural indebtedness in the province such as the extent of indebtedness and volume of debt in different economic strata and in the province as a whole; the economic and psychological aspects of rural finance etc.

The total volume of debt in 1947 was estimated at Rs. 23.6 crores. As compared to the pre-war estimate this shows a reduction, in the total volume, but variations were found in the effects of the war on the indebtedness of different sections.

2.7.2. *Agricultural Labour Enquiry:*

The report which is almost complete is based on a comprehensive enquiry on agricultural labour carried out in different stages. The enquiry covers various aspects of the problem of rural labour in West Bengal. It deals with various categories of agricultural labour families and their relative importance in rural economy. Information was also collected about seasonal variations in employment, wages and family budgets.

2.8. CALCUTTA ECONOMIC ENQUIRIES

The preliminary survey mentioned in connection with these enquiries in the previous year's report has been completed and the data are being analysed. The sample studied consisted of all families in 6000 holdings including botees selected at random from all the 32 wards under Calcutta Corporation.

The information collected related to the number of floors in each holding surveyed, the number of families residing in each floor, their size and community and also the name, occupation, monthly income etc. of the head of each family.

These items of information were taken with a view to give an idea of possible stratification that could be used in planning the second stage of the survey when detailed information about families will be collected.

2.9. WORKING CLASS FAMILY BUDGET ENQUIRIES

An enquiry into the family budgets and social condition of working class families was started at Jagaddal in November, 1948 and completed in May 1949. A random sample of about 1000 families, i.e. 3.37% of total number of families was selected. The field work was arranged in the form of interpenetrating sub-samples. But total number of families actually surveyed was only 850. The processed material is in the final stage of analysis.

It may be mentioned in this connection that data collected in similar surveys conducted in Asansol and Budge Budge in 1941-42 are also being analysed with the object of making a comparative study of the standard of living of industrial labour at different periods.

2.10. FERTILITY AND MORTALITY

Construction of life-tables for Bengal has been completed during the year.

Analysis of data relating to fertility could not be completed as priority had to be given to the construction of age-tables.

Some progress has been made in the study of mis-statements relating to age returns as found in census slips. Interesting results are likely to emerge from this.

2.11. ANTHROPOMETRY

The ethnographic study of the people of the United Provinces was undertaken to interpret the caste and tribal configuration obtained by a pure statistical analysis of the anthropometric measurements taken

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in 1941 under the supervision of Dr. D. N. Majumdar of Lucknow University. There were a few cases where anthropometric evidence was in conflict with the classification obtained by an analysis of physical measurements. Some anthropological observations of a hypothetical nature were given in the basis of anthropometric and ethnographic studies (Sankhya, Vol. 9, Parts 2 & 3).

Statistical analysis of anthropometric measurements relating to castes of Bengal taken in 1945 by Dr. D. N. Majumdar was delayed on a large number of wrong entries were detected during scrutiny of the duplicate records available at Calcutta. These were corrected by a reference to the original records kept in the Anthropological Laboratory in Lucknow and analysis of the data is now proceeding.

2.12. STATISTICAL QUALITY CONTROL

In the Annual Report for 1947-48 an account has been given of the interest created in India in Statistical Quality Control during a visit to this country by Dr. W. A. Showhart. An Indian society for quality control was established in Calcutta. Invited by this society the Indian Statistical Institute had arranged to depute some workers for practical quality control work in manufacturing concerns, the first to be selected being the Indian Electric Works at Behula. Control was sought to be established with the help of charts on percentage defectives and work was also taken up subsequently with charts on averages. With the organization of the quality control section within the factory it was decided that the Institute workers should concentrate their labours nearer home. In the Hollerith section of the Institute and in the printing press associated with the Institute there is ample scope for practical experimentation in quality control. Work has already been started with the output, mistake and wastage factors in the punching section, and machine programmes are also under study. Work in the printing press has been initiated with the output and interruption factors of the different machines.

3. SCIENTIFIC ENQUIRIES

During the year under review a number of statistical enquiries were attended to. The distribution of the most important of them is shown below: West Bengal 8, Delhi 7, U.P. 1, Orissa 2, Bombay 2, Jaipur 1, East Punjab 1, Ceylon 2, Burma 1, Sydney (Australia) 1.

4. EXAMINATIONS

The Statisticians' Diploma Part I examination was held from 28 July 1949 to 1 August 1949 simultaneously at Calcutta, Poona and Delhi. Prof. N. V. Suvani was in charge of the examinations in Poona and Mr. N. T. Mathew in Delhi. The following table gives the distribution of the candidates for the theoretical and practical parts of the examination.

Centre	Paper 1	Paper 2	Papers 3 & 4
Calcutta	2	3	2
Delhi	3	2	2
Poona	12	13	11
Total	17	18	15

A candidate from Poona and another from Delhi absented themselves from the examination.

One candidate qualified for the Diploma Part I, while 2 passed in the first two papers, 4 in the first paper and 2 in the second paper. The list of successful candidates is given in Appendix 5.

The computer certificate examination was held in August, 1949 and the list of successful candidates is given in Appendix 6.

5. TRAINING SECTION

5.1. REGULAR TRAINEES

As mentioned in the previous year's report the training programme has been extended to a two-year course with special emphasis on the application of statistics. Seven students were promoted from the first year to the second year class. Seventeen new students from all over India were admitted to the

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first year class of whom three discontinued their studies. The course of study for the second year has been amended to meet the requirements of present standards. Apart from theoretical lectures and the usual practical classes, students of the second year class have been associated with crop survey and population census projects conducted by the Institute. Some of the students were also engaged on minor problems connected with the projects. Three students of the second year class and one officer on deputation participated in the research seminar conducted by Prof. Herman Wold.

5.2. OFFICERS ON DEPUTATION

There were eight officers on deputation from different States, one of whom joined as a regular student of the training section. Special courses were arranged for others to suit individual requirements.

5.3. ASSOCIATESHIP

Towards the end of the year steps were taken for the admission of suitable candidates to the Associateship of the Institute as a mark of professional competence in statistics. The associateship will be open to trainees of the Institute who have successfully gone through the two years' course and have subsequently worked with the Institute for one full term in a professional capacity. Other qualified persons will also be eligible for associateship on fulfillment of certain conditions.

6. LIBRARY

6.1. RESEARCH LIBRARY

The Central Library of the Institute was still located at Calcutta, with branches at Baranagore and Giridih. Due to shortage of space a portion of the stock of the Central Library was transferred to Baranagore from where a regular service was maintained to cater to the needs of the readers at Calcutta.

During the year under review 497 new books were added to stock including 35 books presented by learned societies and scientists of various countries. An important acquisition was a complete set of the Journal of the Royal Statistical Society received through the courtesy of its President. The library now contains 23,664 volumes excluding offprints and monographs, 469 periodicals and annuals were received; of these 293 were on an exchange basis, 225 gifts from scientific societies and Government Departments and 136 subscribed for.

The number of individuals using the library increased to 245, the corresponding figure for the last year being 206. The total number of books and journals borrowed was 15404 of which 4001 were issued from the Lending Section and 11403 from the Reference Section. The microfilm service was maintained as usual and reinforced by the purchase of a new projector and a reader.

6.2. WORKERS' CIRCULATING LIBRARY

152 English and 237 Bengali books were added to the library. The total number of books including the 380 added during the year now stands at 3071. The number of books issued at Calcutta, Baranagore and Giridih were 1971, 2030 and 1050 respectively.

7. SANKHYĀ : THE INDIAN JOURNAL OF STATISTICS

During the year under review Parts 2 & 3 and Part 4 of Volume 9 and Parts 1 & 2 of Volume 10 were published.

8. PHOTOGRAPHIC SECTION

The Photographic Section made 3888 microfilm copies from books, journals, typescripts and charts and tables. It photographed 628 maps and 261 other large size items. Blue and Ozon prints processed by the section numbered 50, and 41 acre plates were made by it. Bromide enlargements of 120 maps and 453 letters, graphs and tables were also made. Besides these the section handled 5 profile photographs and 1355 photographs intended for identification and other purposes.

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B. ACTIVITIES IN THE LOCAL BRANCHES

B.1. BOMBAY BRANCH

9.1.1. Council: The following office-bearers were elected by the Council: President: Mr. A. D. Shroff; Vice-Presidents: Prof. C. N. Vakil, Dr. V. R. Khanolkar, Prof. L. S. Vaidyanathan and Mr. B. G. Saraiya; Treasurer: Mr. K. M. Premchand; Joint Secretaries: Dr. N. S. R. Sastry, and Mr. B. N. Datar; Members of the Council: Mr. G. M. Sankpal, Mr. M. V. Divatia, Prof. J. J. Anjaria, Prof. M. C. Chakravarty, Dr. R. L. N. Aiyangar, Mr. K. C. Cheriyan, and Mr. K. Sambasiva Rao.

Mr. A. D. Shroff resigned owing to pressure of other work. The Council is making efforts to fill in the vacancy. Mr. M. V. Divatia resigned as he joined the staff of the United Nations at Lake Success. In his place, Mr. V. V. Divatia was co-opted as member of the Council.

9.1.2. Training in Economic Statistics: There were a large number of applications for the training course in economic statistics and several had to be refused admission. 78 candidates were admitted to the course and the fee was increased to Rs. 10/- for the whole course. Messrs. V. G. Pendharkar and V. N. Murti of the Reserve Bank of India and Mr. K. Sambasiva Rao of the Department of Statistics, University of Bombay, conducted the course.

9.1.3. Training in Quality Control: In co-operation with the Textile Association (India) the Bombay Branch conducted this year also a training course in quality control methods for the benefit of technicians employed in different industries in Bombay. 51 students were admitted and certificates were issued to students on the basis of attendance at the lectures. The lectures for the course were delivered by the statisticians employed in the Reserve Bank of India, the Government of Bombay and in commercial firms.

9.1.4. Visit of Mr. Swan: Mr. A. W. Swan, of the United Steel Company paid a visit to Bombay in the third week of December 1949 and the Branch arranged, in collaboration with various other societies, a popular lecture by him. He visited the Kamani Metal Works and gave a talk of the use of statistical methods in manufacturing industries.

9.1.5. Sample Survey Work: The Branch received a further grant of Rs. 1000/- from the Reserve Bank of India for publishing the results of the survey into the diet and health conditions of middle-class families in Bombay city. The report was published in August 1949. A survey into the economic conditions of middle-class families covering the whole of Bombay City was started in June 1949. A total grant of Rs. 22,500/- was sanctioned for this survey, the Reserve Bank of India, the Indian Statistical Institute and the Government of Bombay contributing Rs. 7500/- each. The survey is in progress and it is expected to be completed by September 1950. Mr. K. C. Cheriyan of the Reserve Bank of India is in charge of the survey.

Dr. N. S. R. Sastry was deputed by the Reserve Bank of India to visit several centres of research in U.S.A. and U.K. He attended the Conference of American Society for Quality Control held at Boston, the National Income Conference at Cambridge and the International Statistical Institute Conference at Geneva in September 1949. He has been elected a member of the Working Committee of the International Statistical Institute 'Industrial Section' which will frame the constitution of the Industrial Section.

B.2. POONA BRANCH

9.2.1. Membership: The membership of the branch continued to be 8 life-members during the year under report. Rao Bahadur D. L. Sahasrabudhe continued to be the President and Mr N. V. Sovani, the Local Secretary.

9.2.2. Finance: The balance in the current account of the Branch was Rs. 425-3-0 on 1st March 1949. No expenses were incurred during the year. The amount held as current deposit in the Bank stood at Rs. 425-3-0 on the 1st March 1950.

9.2.3. Activities: The Branch arranged for the examination of Statistician's Diploma Part I at Poona. In all 12 students appeared. Mr. Sovani, Prof. Gadgil and Prof. D. G. Karve constituted the local Examination Committee. The members of the branch were able to take advantage of the discussions in the Statistical Section of the Indian Science Congress held at Poona in January 1950. Some members actively participated in the discussion. Prof. Gadgil was appointed a member of the National Income Committee appointed by the Government of India. Mr. Sovani helped in the planning and design of a fertility inquiry conducted by the economics department of the Kananuk College, Dhulew.

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10. MISCELLANEOUS

10.1. THE STATISTICAL UNIT, CABINET SECRETARIAT

A small working unit of the Institute continued to be maintained at Delhi. In addition to carrying out its normal function it also assisted Prof. Mahalanobis in his work as Statistical Adviser to the Central Cabinet. Besides the Superintending Statistician who was sent last year a senior statistician was deputed to Delhi to assist in the work of the National Income Committee. He was later absorbed in the Ministry of Finance as Secretary to the above mentioned Committee.

10.2. PROF. P. C. MAHALANOBIS'S TOURS AND CONFERENCES

Prof. P. C. Mahalanobis spent nearly 6 months in Europe and the U.S.A. with a short stay of about a fortnight in India. This prolonged absence was due mainly to a serious illness which confined him to hospital in London for nearly two months.

The itinerary consisted of Bombay (April), Geneva, Paris, and Brussels (May), London (May, June & July), New York and London (July), India (July & August), New York and London (August), Geneva (August & September), London, Ankara and India (October).

He attended a large number of official conferences and meetings of scientific societies the more important of them being meetings of the U. N. Statistical Commission in Geneva, the National Income Committee in Delhi, the U. N. Scientific Conference on the Conservation and Utilization of Resources in New York, the International Conference on National Income and Wealth at Cambridge, the International Biometric Conference in Geneva, the General Assembly of the International Population Union in Geneva, a Session of the International Statistical Union at Bern, and a Session of the U. N. Sub-Commission on Statistical Sampling in Geneva. At all these conferences and meetings Prof. Mahalanobis was present either as a representative of India or of the Indian Statistical Institute, or as an Office-bearer of the organization concerned.

Prof. Mahalanobis also delivered lectures by invitation at the Institute of Statistics in Paris, and the Belgian Society of Statistics at Brussels.

Extensive contacts were established with eminent economists and statisticians of a number of countries in connection with the work of the National Income Committee (India) of which he was appointed Chairman just before his departure. Negotiations were carried on with the authorities of the U. N. and F. A. O. with regard to the proposed establishment of the International Training School in Censuses & Statistics in India. A memorandum on the possibility of arranging an International Education Centre in Statistics in India was prepared by him in connection with the work of the Education Committee of the International Statistical Institute.

On his way back through Turkey Prof. Mahalanobis for the second time acted as Adviser to the Government of Turkey with regard to sampling technique as applied to population and agricultural censuses. In this connection Dr. Ramkrishna Mukherjee who was on his way back to India was appointed to the Central Statistical Office, Ankara, on Prof. Mahalanobis's recommendation.

10.3. SCIENTIFIC CONFERENCES

10.3.1. *Indian Science Congress*: Prof. P. C. Mahalanobis presided over the thirty seventh session of the Indian Science Congress held at Poona in January 1950. S. C. Sen, S. N. Roy, C. R. Rao, S. R. Rao A. Mathai, S. S. Nair, A. C. Das, P. Mukherjee, H. K. Chaturvedi, A. Ghosh, N. C. Dutt, P. K. Chattarjee and C. Bose attended the session as delegates from the Indian Statistical Institute.

10.3.2. *Indian Mathematical Conference*: C. R. Rao and D. B. Lohri attended as delegates the session held in December 1949 in Madras.

10.3.3. *Indian Economic Conference*: A. Ghosh and A. C. Das acted as delegates to the session held in December 1949 in Waltham.

10.3.4. *Indian Society of Agricultural Statistics, Annual Session*: S. N. Roy attended the session held at Poona in December 1949.

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10.3.5. *Indian Society of Agricultural Economics, Annual Conference:* A. C. Das and A. Ghosh represented the Institute at the session held in Madras in December 1949.

10.3.6. *Indian Biometric Conference:* S. R. Rao, S. S. Nair and C. R. Rao attended as delegates the session held in Poona in January 1950.

11. GENERAL ARRANGEMENTS

The major portion of the statistical work was done at the three old centres at Calcutta, Baranagore and Giridih. In addition to these a nuclear staff was posted at Delhi as Prof. P. C. Mahalanobis had to spend a considerable part of his time there in connection with his advisory duties to the Central Cabinet and as Chairman of the National Income Committee. The following table shows the distribution of workers at the four centres as compared to last year.

	Calcutta		Baranagore		Giridih		Delhi		Total	
	31 March 1949	31 March 1950	31 March 1949	31 March 1950	31 March 1949	31 March 1950	31 March 1949	31 March 1950	31 March 1949	31 March 1950
Monthly	92	64	98	100	7	18	2	5	197	190
Piece-rato	4	—	41	4	16	—	—	—	60	4
Total	96	64	139	113	22	18	2	5	257	200

Strike: About 500 workers of the Institute are maintained mainly against year to year grants from the provincial Government for the annual Crop Survey. About 100 of this staff working in the field branch and 87 others working in the statistical branch had to be given the usual one month's notice of discharge in April 1949 as no offer of the 1949-50 survey had been received up till then from the Government of West Bengal and it was understood that the Government contemplated taking up the work themselves. These workers were, however, assured that should the Crop Survey ultimately come to the Institute, all staff required for it would be taken from amongst the staff under notice.

On the 27th April 1949, the Council received a letter from the Secretary of the "Indian Statistical Institute Employees' Union" (consisting of, it was reported, about 200 members out of over 700 employees of the Institute) forwarding a demand for withdrawal of the discharge notice on the 87 workers of the statistical branch together with certain other demands and stating that unless these demands were conceded, the employees would go on strike with effect from the 6th May 1949.

The Council discussed these demands thoroughly and sent a detailed reply explaining how withdrawal of the discharge notice was dependent on circumstances not within its control and how the acceptance of some of the other demands was not feasible at that stage and stating what the Council was prepared to do in respect of the remaining demands.

In spite of this, a section of workers arranged intensive picketing at most of the offices of the Institute at Calcutta and Baranagore from the 6th May 1949 with the result that a large majority of office workers, including many Union members who had no desire to go on strike, were prevented from attending their duties.

The partial strike continued without much untoward incidents till the 27th May 1949 when a majority of the absentee workers resumed work. Sanction of grant for the 1949-50 Crop Survey was received from the provincial Government on the 3rd June 1949 and since then as many as 70 workers working in the statistical branch (on whom notices of discharge had been served) have been taken back in the service of the Institute.

Staff: Prof. S. N. Roy returned from the U.S.A. and resumed his duties at the Institute on 20 September 1949. He worked in the Institute till 24 February 1950 and then left again for U.S.A. on one year's leave to take up an appointment as Professor of Mathematical Statistics at the Institute of Mathematical Statistics, University of North Carolina. Dr. A. N. Bose resigned his post of Assistant Secretary, but he is still associated with the Institute as an honorary worker. Naresh Chandra Dutt joined the Defence Department, Government of India. Sankaran Nair took up an appointment under Orissa Govern-

ANNUAL REPORT FOR 1949-50

ment. Mani Mohan Mukherji who came back to the Institute after about three years' work abroad later joined the Ministry of Finance, Government of India. Dr. R. K. Mukherjee joined the Institute after three years' stay abroad.

Calcutta Office: The Central office, library, photographic section, training and research sections and the section for advanced computation continued to function at Calcutta.

Barranagar Office: Bulk of the computation work connected with the major projects was done at Barranagar. The Hollerith and Cost Accounting sections were also located there.

Giridih Office: Coding work in connection with the Working Class Family Budget Enquiry (Jagadlal 1040) was done at Giridih. With a view to determining the comparative efficiency of different methods of sampling in census operations some preliminary work on model sampling experiments was also done at this centre.

Hollerith Section: The machine section was strengthened with the addition of one collator and two reproducers. It now consists of 3 tabulators, 3 sorters, 3 reproducers, 1 multiplier and 1 collator. Cards of various capacities numbering 18.67 lakhs were punched. Of these 15.80 lakhs were related to population data, 2.35 lakhs to crop survey data and 0.52 lakhs to economic survey data. The three tabulators were worked for a total of 4286 hours and 75.82 lakhs cards passed through them giving an average of 4.6 runs per punched card.

The work audit system introduced in 1947 gave an effective control on verifying operations and improved the quality of punching.

Control chart methods were introduced in the section during the year and improvements in the quality of different items of work was noticed.

Certain new methods in advanced type of calculations on the Hollerith machines were developed, such as methods of handling algebraic signs on the Multiplying Punch and calculation of serial correlations. These methods were put to extensive use as for example in calculating about 3500 serial correlations and making the same number of statistical tests, in connection with small sample experiments in correlogram analysis, conducted by Prof. Wold.

Cost Accounts Section: The section was responsible for the assessment of computer-months spent in each project and on each job. It was also responsible for the valuation of work done by piece-rate workers. It was calculated that out of a total of 984 computer-months 34% was spent on West Bengal Crop Survey project, 39% on Population projects, 8% in Economic projects and 15% on Research projects. The remaining 4% was spent in Cost Accounts work.

The Director's Contribution Fund: The Director's Contribution Fund made up of donations received from Prof. P. C. Mahalanobis from time to time and of contributions received by the Institute in lieu of his services from different sources in connection with project works undertaken by the Institute since 1942, had accumulated to Rs. 1,20,000 by the end of the year 1948-49. This was separated from the general fund of the Institute and its administration was vested in a Board of Trustees by means of a registered trust deed on the 18th April 1949.

12. VISITORS

During the year a large number of distinguished visitors came to the Institute among whom may be mentioned:

Symeon Lander D. N. Ganjoo, Air Head Quarters, New Delhi; Dr. Herman Wold, University Institute of Statistics, Uppsala; Dr. Maurice Hansen, Sampling Division, U. S. Bureau of Census, Washington; Mr. A. W. Swan, Statistical Division, United Steel Co Ltd., Sheffield; Prof. G. Morgenstjerne, Oslo; Mr. A. Aidunoff, Government of Burma, Rangoon; Dr. F. W. Lindor, U. N. Statistical Office; Sir Robert Robinson, President, Royal Society, London; Lady Gertrude M. Robinson, London; Prof. J. D. Bernal, Birbeck College, London; Dr. E. U. Condon, Bureau of Standards, Washington; Mme. Irene Joliot Curie, Institute of Radiations, Paris; Prof. Frederic Joliot, College of France, Paris; Prof. W. Engelhardt, Pavlov Institute of Physiology, Moscow; Dr. V. Butrov, Moscow; Dr. George K. Strode and Dr. C. J. Watson, International Health Division, Rockefeller Foundation, New York; Prof. Ralph E. Turner, Yale University, New Haven and U. Kyaw Khino, Government of Burma, Rangoon.

INDIAN STATISTICAL INSTITUTE

Indian Statistical Institute : Receipts and Payments Accounts for the Year ending 31 March, 1950

RECEIPTS		EXPENDITURE	
To Opening Balance, Cash in hand	1,568-12-0	By Bank account overdraft in last year	2,390-9-7
" Membership fees	3,201-14-0	" Salaries and allowances	44,285-15-0
" Training fees and other receipts:	2015-10-6	" Donor's allowance	12688- 6-0
" Miscellaneous receipts	4305- 0-0	" Contribution to Provident Fund	18400- 8-0
" Examination fees	4915- 0-0	" Debit and allowance (Field Branch), 3355-11- 8-0	14,411-11- 8
	11,325-10- 6	" Contribution to Provident Fund " 411-12- 0	10,68,460- 7- 9
" Block grants: Government of India:	4,50,000- 0- 0	" Travelling allowance	27,424-11- 6
Ministry of Education: General Grant .. .. .	.. .. .	" Books and Journals	11,133- 6- 8
Ministry of Home Affairs: Population Census Scheme	6337- 0- 6	" Laboratory equipment	86,611-11- 0
Account 1948-49	233500- 0- 0	" Stationery, postage, advertisements, telephone, electric charges, motor contingencies, purchases, repairs and maintenance of motor vehicles etc.	94,376-11- 6
Account 1949-50	2,77,797- 0- 6	" Bank charges and interest	6,785- 7- 0
" Block grants: Government of West Bengal: .. .. .	.. .. .	" House rent	37,571-12- 8
Department of Agriculture:	865000- 0- 0	" Workers' Rs. 2100/- less Field Branch share Rs. 1200/-	1,307- 8- 6
Department of Crop Survey:	42000- 0- 0	" Workers' Circulating Library	7,065- 4- 0
Institute's supervision fee .. .. .	.. .. .	" Office Bus	2,358- 7- 3
" Contribution from National Institute of Science for Sanskhyas	500- 0- 0	" Examination remuneration .. .. .	.. .. .
" Contribution from National Institute of Science for Sanskhyas .. .. .	.. .. .	" Hire and maintenance of Hollerith Machines and other scientific instruments and cabinets	1,01,017-10- 6
" Circulating library—contribution from .. .. .	.. .. .	" Bengal Crop Survey (Field Branch) other expenses	121118-15- 9
" Field Branch	500- 0- 0	" Suspense C/O for adjustments .. .. .	.. .. .
" Darjeeling Branch	2,080- 7- 0	" in 1950-51	41829- 4- 0
" Old Suspense account	50,452-10-10	" Jagadkhal Labour Enquiry and tabulation of family forms	4,003- 4- 0
" " (Field Branch)	2,500-13- 0	" Other small enquiries	803-10- 3
" " (Prof. K. P. Chattopadhyay)	3,492- 4- 3	" Multi-purpose National Sample Survey (advance)	10,946- 3- 3
" Ban account overdraft	20,332- 4- 1	" Training Professor	15,700- 4- 0
	1,32,333-10- 6	" Development Society type of activities	4,433-14- 0
	.. .. .	" Transfer to Supervision Fee Fund	42,000- 0- 0
	.. .. .	" Suspense accounts: Calcutta, Baranagar, Giridih and Delhi office	56,412- 8- 4
	.. .. .	" Closing Balance: Cash	1,854- 0- 6
	.. .. .		Rs. 17,30,562-12- 8
	.. .. .		Rs. 17,30,562-12- 8

Examined and Found Correct
P. C. N. S. Ghosh, Auditor
Chartered Accountant.

6, BANERJEE STREET, CALCUTTA,
The 26th May 1950.

ANNUAL REPORT FOR 1949-50

Indian Statistical Institute: Receipts and Payments Accounts for the Year ending 31 March, 1950

RECEIPTS		PAYMENTS	
<i>Statistical Workers' Provident Fund</i>			
To Opening Balance:			5715- 4-0
Government papers at cost	36173- 11-2	By withdrawal of workers' own contribution to payment of Institute's contribution to their accounts	1700-15-0
Cash at Imperial Bank	3062-10-6	.. Payment of interest to workers' withdrawing their account	249- 9-0
.. North Bank		.. Loans outstanding with workers (net amount)	347- 0-0
.. Workers' own contribution to the Fund	18400- 8-0	Closing Balance:	
.. Institute's contribution (Fehl Branch)	18902- 4-0	Government papers at cost	84475-13-4
.. Interest on investments	530- 4-0	Cash at Banks	77372- 3-8
.. Interest received against loans given to workers	430-13-0		161846- 1-0
	Rs. 169046-13-0		Rs. 109846-13-0
To Government of West Bengal (Crop Survey) by transfer from General Account	42000- 0-0	Supervision Fee Fund	42000- 0-0
	Rs. 42000- 0-0		
<i>India Government Account (Ministry of Education)</i>			
To Bank grant	4,50,000- 0-0	By Salary and allowances	227346- 7-0
.. Training fees	3,261-14-6	.. Travelling allowance	11576- 0-3
.. Printing fees	4,305- 0-0	.. Books and Journals	11079- 0-3
.. Examination fees	4,915- 0-0	.. Laboratory equipment	60146- 3-0
.. Other receipts	822-10-8	.. House rent	11200- 0-0
.. National Institute of Science for Santhya	500- 0-0	.. Stationery, postage, printing, and other contingencies	21588-10-9
	Rs. 4,63,804- 9-0	.. Maintenance of Hollarth equipment	27854- 0-0
		.. Examination expenses	2772-11-0
		.. Other enquiries	506-14-3
		.. Interest on deposits and interest	462- 0-0
		.. Visiting Professor	16700- 4-0
		.. Society type of activities	5825- 0-0
		.. Dis-employment at Director's discretion	4432-14-0
			4,00,164-14-0
			Rs. 4,03,804- 9-0
<i>Delhi Unit</i>			
By Salary and allowances	21657- 2-0		
.. House rent	2420-11-0		
.. Other contingencies	1030- 2-0		
.. Office car	9500- 0-0		
.. Closing Balance	22,216-11-8		
	Rs. 4,03,804- 9-0		

Indian Statistical Institute: Receipts and Payments Accounts for the Year ending 31 March, 1950

RECEIPTS

To Unspent balance of last year	..	..	..
" Suspense account (Field Branch)	..	..	..
" Block grant:	..	..	..
Crop Survey	8,65,000-	0-4	
Institute's fee	42,000-	0-0	

Total Budget (Crop Survey) (three accounts)

..	1,35,480-	14-9	
..	2,500-	13-0	
..	0,07,000-	0-9	

Field Branch

..	489,027-	11-0	
..	12,118-	15-9	
..	4,1829-	4-0	
..	
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Rs. 10,45,050-11-9

Population Census (Home Ministry, Government of India)

To Block grant
" Advance from general account
..
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Rs. 3,26,048-13-9

PAYMENTS

..	10840-	1-0	
..	53834-	5-9	
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Rs. 2,52,283- 6-9

..	489,027-	11-0	
..	12,118-	15-9	
..	4,1829-	4-0	
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Rs. 10,45,050-11-9

..	10860-	2-9	
..	13265-	0-6	
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Rs. 3,26,048-13-9

6, HASTINGS STREET, CALCUTTA.
The 26th May 1950.

Examined and Found Correct
P. C. SAXENA & Co., Auditors,
Chartered Accountants.

ANNUAL REPORT FOR 1940-50

APPENDIX I. LIST OF PAPERS PUBLISHED IN 1940-50

1. CHATURVEDI, H. K. AND GHOSH, A. (1950): Methods of stratification of rural population. *Proc. Thirty-seventh Ind. Sci. Cong., Part III.*
2. DAS, A. C. (1940): Two dimensional systematic sampling. *Science & Culture*, Vol. 15.
3. DAS, A. C. (1950): On systematic sampling. *Proc. Thirty-seventh Ind. Sci. Cong. Part III.*
4. DAS, A. C. (1950): Two dimensional systematic sampling and the associated stratified and random sampling. *Sankhyā*, Vol. 10, Parts 1 & 2.
5. DAS, A. C. AND BANERJEE, B. (1950): Response of *Mimosa Pudica* leaves to its organ-extract. Read at the Indian Biometric Conference. (To be published shortly.)
6. DAS, A. C. AND GHOSH, A. (1950): Problem of submarginal farming in West Bengal. Read at the Annual Conference of Indian Society of Agricultural Economics. (To be published shortly.)
7. DUTTA, N. C. (1950): Some studies into the size of family in West Bengal. *Proc. Thirty-seventh Ind. Sci. Cong., Part III.*
8. GHOSH, A. (1950): On stratification with competent indices. *Proc. Thirty-seventh Ind. Sci. Cong., Part III.*
9. GHOSH, A. (1950): Economic classification of agricultural regions in Bengal. *Sankhyā*, Vol. 10, Parts 1 & 2.
10. MAHALANOBIS, P. C., MAJUMDAR, D. N. AND RAO, C. R. (1940): Anthropometric survey of the United Provinces, 1941: A statistical study. *Sankhyā*, Vol. 0, Parts 2 & 3.
11. MAHALANOBIS, P. C. (1950): Why statistics? General President's address to the Thirty-seventh Indian Science Congress. *Proc. Thirty-seventh Ind. Sci. Cong., Part II.*
12. MATHAI, A. (1950): On certain charts useful in quality and efficiency control methods. *Proc. Thirty-seventh Ind. Sci. Cong., Part III.*
13. MATHAI, A. (1950): On methods of handling algebraic signs on the Hollerith multiplier. *Sankhyā*, Vol. 10, Parts 1 & 2.
14. MATHAI, A. (1950): On sampling on successive occasions and allied problems. Read at the Thirty-seventh Indian Science Congress.
15. MATHEW, N. T. (1950): Non-response bias in mail enquiries. *Proc. Thirty-seventh Ind. Sci. Cong., Part III.*
16. MUKHERJEE, P. K. (1950): Suggestions regarding the questionnaire form for the 1951 Census. *Proc. Thirty-seventh Ind. Sci. Cong., Part III.*
17. NAIR, N. S. (1950): An investigation into age bias in census returns. *Proc. Thirty-seventh Ind. Sci. Cong., Part III.*
18. RAO, C. R. AND SLATAR, P. (1940): Multivariate analysis applied to differences between neurotic groups. *British Journal of Psychology, Statistical Section*, Vol. 2.
19. RAO, C. R. (1940): On some problems arising out of discrimination with multiple characters. *Sankhyā*, Vol. 0, Part 4.
20. RAO, C. R. (1950): Theory of fractional replication in factorial experiments. *Sankhyā*, Vol. 10, Parts 1 & 2.
21. RAO, C. R. (1950): The non-null distribution of $D_{p,q}^2 - D_p^2$, the difference of D^2 's based on p and $p+q$ characters. Read at the Indian Biometric Conference. (To be published shortly.)
22. RAO, S. R. (1950): Normal curves as an approximation to statistical distributions. Read at the Indian Biometric Conference. (To be published shortly.)
23. ROY, S. N. (1950): Univariate and multivariate analysis as problems in testing of composite hypotheses—1. *Sankhyā*, Vol. 10, Parts 1 & 2.

*Communicated to the Thirty-seventh Indian Science Congress.

INDIAN STATISTICAL INSTITUTE

APPENDIX 2. LIST OF REPORTS SUBMITTED

1. *Crop survey, West Bengal, 1948-49:*

- (a) First estimate of acreage under Rabi crops, 21 April 1949.
- (b) Second progressive estimate of the acreage and yield of Rabi crops, 9 June 1949.
- (c) Final estimates of the acreage and yield of Rabi crops, 26/27 October 1949.

2. *Crop survey, West Bengal, 1949-50:*

- (a) Provisional estimate of acreage under Jute and Aus paddy, 14 September 1949.
- (b) Second progressive estimate of acreage of Jute and Aus paddy, 24 September 1949.
- (c) Estimate of acreage and yield of Jute and Aus paddy, 14 December 1949.
- (d) Revised estimate of acreage of Jute and Aus paddy, 19 December 1949.
- (e) First estimate of acreage of Aman paddy, 19 December 1949.
- (f) Final estimate of acreage and yield of Aman paddy, 13 February 1950.
- (g) Final estimate of yield of Jute and Aus paddy, 22 February 1950.
- (h) First estimate of acreage of Rabi crops, 10 March 1950.

3. *Estimate of seed requirements:*

Estimate of requirements of seed potato in West Bengal for 1949-50, 11/12 October, 1949.

4. *Population project (Y-slips):*

- (a) Age-tables based on the Y-sample of Orissa, 31 May 1949.
- (b) Do. Bihar, 22 Oct. 1949.
- (c) Do. Bihar (Modified), 19 Nov. 1949.
- (d) Do. U.P., 21 Feb. 1950.
- (e) Do. Madras, 30 Mar. 1950.

5. *Refugee survey, 1948:*

Report on the survey of refugee population in West Bengal, 17 December 1949.

APPENDIX 3. LIST OF OFFICERS-ON-DEPUTATION, 1949-50

1. BHAT, M. D., (*Reserve Bank of India, Bombay*).
2. DANGAYACH, K. B. (*Director of Industries, Jaipur*).
3. DAS, S. C. (*Director of Public Instruction, Orissa*).
4. MURTI, V. N. (*Reserve Bank of India, Bombay*).
5. PATNI, G. C., (*Maharaja's College, Jaipur*).
6. RAO, K. S., (*Bombay University, Bombay*).
7. ROY, J., (*Bureau of Economic Research, Kanpur*).
8. SASTRY, A. S. R., (*Economic Research Department, Hyderabad, Deccan*).

APPENDIX 4. LIST OF TRAINEES, 1949-50.

- First-year class:* 1. AGGARWAL, R. L. (*East Punjab*), 2. BHATTACHARYYA, A. K. (*West Bengal*)*, 3. DAR, S. N. (*Kashmir*), 4. GHORF, R. K. (*West Bengal*)*, 5. JOHAR, D. S. (*East Punjab*), 6. PANESAR, B. R. (*U.P.*), 7. RAO, P. V. S. (*Madras*), 8. SARMA, D. V. N. (*Madras*), 9. SHARMA, G. L. (*Rajasthan*), 10. SHETTY, B. S. (*Madras*), 11. SINGH, B. N. (*U.P.*), 12. SINGH, M. (*East Punjab*), 13. SINGH, S. N. (*U.P.*), 14. SINGH, N. C. (*West Bengal*)*, 15. SUBRAMANIAN, N. (*Madras*), 16. VERMA, S. K. (*U.P.*), 17. Das S.C. (*Orissa*).
- Second-year class:* 1. Bhubhri, S. N. (*U.P.*), 2. JAMUNATHAN, M. V. (*Myore*), 3. KANAN, M. R. (*Madras*), 4. KIRISHNAMACHARI, V. R. (*Madras*), 5. MATIUB, G. P. (*U.P.*), 7. Venkataraman, R. (*Madras*).

*Discontinued.

ANNUAL REPORT 1949-50

APPENDIX 5. STATISTICIAN'S DIPLOMA PART I EXAMINATION, 1949.

Name of the candidate	Paper in which the candidate passed
1. CHITRE, GOVIND SADASHIV (Poona)	Paper I
2. CHOUDHURY, PRASANTA (Calcutta)	Paper II
3. DATAR, RAVIBHUSAN ANANT (Poona)	Paper II
4. DESHPANDE, GANGADHAR PANDURANG (Poona)	Paper I
5. DHATALE, SHALINI (Poona)	Paper I
6. GOKHALE, SADASHIV RAMCHANDHA (Poona)	All the four papers
7. PRODHAN, KUBUM RAMARAO (Poona)	Papers I & II
8. HONWAD, VISHWANATH SHANKAR (Poona)	Paper I
9. VAZE, HARI VISHNU (Poona)	Papers I & II

APPENDIX 6. COMPUTER'S CERTIFICATE EXAMINATION, 1949.

Part 1A : Section I.

Sixty-nine applied of whom fifty-three appeared. The following eighteen candidates have been declared to have passed.

1. BANDYOPADHAYA, DILIP KUMAR	10. MUKHERJEE, DHIREN KUMAR
2. BANERJEE, ASHUTOSH	11. NAG, ADHIR CHANDRA
3. BARAL, BIPIN BIHARI	12. NAG, DHIRENDRA NATH
4. BASU, SANTOSH KUMAR	13. PAUL, BHOLANATH
5. CHAKRABARTY RAI CHOWDHURY, CHIRANJIB	14. ROY, DHIRENDRA NATH
6. CHATTERJEE, SANTI RANJAN	15. ROY, RADHARAMAN
7. CHAWLA, DEBRAJ	16. SANYAL, DHIRENDRA LAL
8. DAS GUPTA, LEELA	17. SARKAR, ABINASH CHANDRA
9. DE, NUROD RANJAN	18. SOMADDER, SUDHIR KUMAR

Part 1A : Section II.

Seventy-nine applied of whom sixty-one appeared. The following thirty-two candidates have been declared to have passed.

1. BANDYOPADHAYA, DILIP KUMAR	17. MUKHERJEE, SACHINDRANATH
2. BANERJEE, DHIRENDRA KUMAR	18. NAG, ADHIR CHANDRA
3. BARAL, BIPIN BIHARI	19. NAG, DHIRENDRA NATH
4. BASU, SANTOSH KUMAR	20. PAUL, BHOLANATH
5. BHATTACHARYYA, GOPALDHAN	21. PAUL, BHISNUPADA
6. CHAKRABARTY RAI CHOWDHURY, CHIRANJIB	22. PRASAD, BADRI NARAYAN
7. CHAKRAVORTI, SABITA	23. ROY, DHIRENDRANATH
8. CHATTERJEE, NAKTI PADA	24. ROY, PARESH CHANDRA
9. CHAWLA, DEB RAJ	25. ROY, RADHARAMAN
10. DAS, PHANBANDHU	26. SANYAL, DHIRENDRA LAL
11. DE, NIBHU RANJAN	27. SARKAR, ABINASH CHANDRA
12. DUTTA, GOUB BENOUE	28. SEN, AJIT KUMAR
13. GOBWAMI, KARTIC CHANDRA	29. SENGUPTA, GOKUL CHANDRA
14. MAJUMDER, CHITTABONJON	30. SENGUPTA, GOORANOA
15. MAJUMDER, SUBIMALKANTI	31. SIKHAR, RANJIT LAL
16. MOFI AHMED	32. SOMADDER, SUDESH KUMAR

INDIAN STATISTICAL INSTITUTE

Part 1B : Section I

Sixty applied of whom fifty-two appeared. The following twenty-two candidates have been declared to have passed.

- | | |
|---|------------------------------|
| 1. BASU, SANTON KUMAR | 12. DEY, CHITTARANJAN |
| 2. BARAL, BIPIN BIHARI | 13. GHOSH, DIBAKAR |
| 3. BHATTACHARYYA, GOPALDHAN | 14. GHOSH, SUDHINDRANATH |
| 4. CHAKRABARTY RAI CUOWDHURY, CHIRANJIB | 15. MAJUMDAR, CHITTARANJAN |
| 5. CHAKRAVORTI, SABITA | 16. MUKHERJEE, DURDA PADA |
| 6. CHATTERJEE, BEJOY KUMAR | 17. MUKHERJEE, SACHINDR NATH |
| 7. CHOWDHURY, SUREKMA | 18. NAG, DBIRENDRANATH |
| 8. DAS, GOPI CHAND | 19. PAUL, BHULANATH |
| 9. DAS, PRANBANDHU | 20. SAHA, GESTA |
| 10. DAS GUPTA, LEELA | 21. SARKAR, ABINAV CHANDRA |
| 11. DE, BIMALKUNDU | 22. SENGUPTA, PRABIR CHANDRA |

Part 1B : Section II

Fifty-five candidates applied of whom forty-one appeared. The following twelve candidates have been declared to have passed.

- | | |
|-----------------------------|------------------------------|
| 1. BANERJEE, ASHUTOSH | 7. MUKHERJEE, DHIREN KUMAR |
| 2. BHATTACHARYYA, GOPALDHAN | 8. NAG, DBIRENDRANATH |
| 3. CHATTERJEE, RANJIT KUMAR | 8. PAUL, BHULANATH |
| 4. CHATTERJEE, SANTI RANJAN | 10. PRASAD, BADHINARAYAN |
| 5. DAS, GOPI CHAN | 11. SARKAR, ABINAV CHANDRA |
| 6. GHOSH, SUDHINDRANATH | 12. SENGUPTA, PRABIR CHANDRA |

Part 1C : Section I

Thirty-six candidates applied of whom twentynine appeared. The following two candidates have been declared to have passed.

- | | |
|-------------------------|----------------|
| 1. MUKHERJEE, DURDAPADA | 2. DE, NISAKAR |
|-------------------------|----------------|

Part 1C : Section II

Thirty-two candidates applied of whom twenty-four appeared. None passed.

INDIAN STATISTICAL INSTITUTE
ANNUAL GENERAL MEETING

**Proceedings of the Annual General Meeting of the Indian Statistical
Institute held on 31st May 1950**

The Annual General Meeting of the Indian Statistical Institute was held at 5-30 p.m. on Wednesday, the 31st May 1950, at the Presidency College, Calcutta.

In the absence of the President Dr. S. K. Banerjee, Vice-President, took the chair.

Other members present: Messrs. N. C. Chakravarti, S. C. Sen, S. K. Banerjee, J. M. Sengupta, S. Sengupta, P. R. Ghose, S. C. Dasgupta, J. N. Taluqdar, H. Ghosal, Shyam Sundar Bose, P. K. Chatterjee, C. Baroi, S. C. Chakravarti, S. C. Dhar, H. D. Baroi, A. Matthai, C. R. Rao, S. Raja Rao, Amalendu Ganguly, T. Chaudhury, K. C. Banerjee, A. Burmanray, D. M. Ganguli, P. K. Banerjee, R. N. De, N. C. Banerjee, B. Mukherjee, B. Gopo, A. Mazumdar, P. K. Majumdar, J. B. Chaudhury, A. Banerjee, M. N. Chakravarti, K. C. Poddar, D. Sarkar, Rajan Roy, J. N. Padmanabhan, Harabillash Banerjee, Pankaj K. Doy, and K. N. Chakravarti.

1. *Annual Report and Audited Accounts*: Prof. K. N. Chakravarti, Joint Secretary, moved for the adoption of the Annual Report together with the Audited Accounts for the year 1949-50 as approved by the Council of the Institute. He stated that the Report and the Audited Accounts had already been circulated to the members of the Institute. He pointed out that there was an omission in the Annual Report, viz., that the results of Computers' Certificate Examinations Part I (Section I) and II (Section II) had not been included therein. He assured the members that those results would be incorporated in the Annual Report before it was finally printed after adoption by the Annual Meeting.

Mr. N. C. Chakravarti seconded the motion.

The Chairman invited discussion on the draft Annual Report and Audited Accounts from the members. As, however, no member raised any point for discussion, both the Annual Report and the Audited Accounts for the year 1949-50 were unanimously adopted subject to the incorporation of the results of Computers' Certificate Examinations as pointed out by the Joint Secretary.

2. *Election of Office-bearers and members of the Council*: The Chairman stated that in accordance with Bye-law 4 of the Institute relating to elections, a list of persons nominated by the Council for election as Office-bearers and members of the Council for the year 1950-51 had been circulated to members on the 30th March 1950. No other nominations had since been received by the Secretary and as such the persons nominated by the Council should be considered as having been duly elected. He then declared the following persons duly elected as Office-bearers and members of the Council of the Institute for the year 1950-51.

President

Sir C. D. Deshmukh, C.I.E.

Minister for Finance, Government of India.

Vice-Presidents

Prof. S. N. Bose, M.Sc., F.N.I.

University of Calcutta.

Prof. D. R. Gadgil

Oakhale Institute of Politics & Economics, Poona,

Sir Birendranath Mookerjee

Martin Burn Ltd., Calcutta.

Dr. S.P. Mookerjee, M.A., B.L., D.Litt., Bar-at-Law

Calcutta.

Sir Shri Ram

Delhi Cloth & General Mills, Delhi.

Sir B. Rama Rau

Governor, Reserve Bank of India.

Sri B. K. Rohatgi

India Electric Works, Calcutta.

The Hon'ble Mr. Justice T. J. Y. Roxburgh, I.C.S.

Calcutta.

Dr. J. C. Sinha M.A., Ph.D.

Calcutta.

INDIAN STATISTICAL INSTITUTE

Treasurer

Dr. Satya Churn Law, M.A., B.L., Ph.D.
F.Z.S., M.B.O.U.

Calcutta.

Secretary

Prof. P. C. Mahalanobis, F.R.S.

Statistical Laboratory, Calcutta.

Jt. Secretaries

Prof. K. N. Chakravarti
Sri S. C. Sen

Calcutta.

Calcutta.

Members of the Council

Dr. S. K. Banerjee, D.Sc.
Sri Sudhir Kumar Banerjee
Sri G. Basu
Srimati Chumeli Bose, B.Sc. (Lond.)
Sri Nihar Chandra Chakravarti, M.A.

Sri Nistarani Chakravarti, M.A. (Cantab.)

Sri Mohanlal Ganguli, B.Sc. (Lond.)
Prof. H. C. Ghosh, M.A., P.R.S.

Sri K. P. Goenka
Dr. K. Kishen, M.A.Ph.D.

Prof. K. B. Madhava, M.A., A.I.A.
Dr. K. R. Nair, M.A., M.Sc., Ph.D. (Lond.)
Dr. U. S. Nair, M.A., Ph.D. (Lond.)
Sri Pitambar Pant, M.Sc.
Sri S. N. Ray, C.I.F., I.C.S.
Dr. N. Sundararajama Sastri, M.A., M.Sc.,
Ph.D. (Lond.)

Dr. V. K. R. V. Rao, M.A., Ph. D.
Sri Sadasiv Sengupta, B.Sc. (Lond.)
Sri A. R. Sinha, M.A.

Dr. P. V. Sukhatme, Ph.D., D.Sc. (Lond.)

Calcutta.
Statistical Laboratory, Calcutta.
Chartered Accountant, Calcutta.
Statistical Laboratory, Calcutta.
Asst. Secretary to the Govt. of West Bengal,
Dept. of Agriculture.
Director, Provincial Statistical Bureau,
Government of West Bengal.
Statistician, Indian Jute Mills Association, Calcutta.
Director of Industrial Statistics, Govt. of India,
Simla.
Calcutta.
Chief, Statistician, Department of Agriculture,
Govt. of U.P., Lucknow.

Mysore
Statistician, Forest Research Institute, Dehra Dun.
University of Travancore, Trivandrum.
New Delhi.
Chief Secretary, Govt. of West Bengal.

Director of Statistics, Dept. of Research & Statistics,
Reserve Bank of India, Bombay.
Delhi University, Delhi.
Statistical Officer, E.I.R., Calcutta.
Deputy Director General, Commercial
Intelligence & Statistics, Govt. of India.
Statistical Adviser, Indian Council of Agricultural
Research, New Delhi.

3. *Recommendation from the Council.* The Joint Secretary stated that he had been desired by the Council to place the following recommendation before the Annual General Meeting :-

"The Council invites the attention of the members of the Institute to the Section I of the 18th Annual Report (1949-50) regarding reorganization of the Indian Statistical Institute, in which the present position of the negotiations with the Government of India has been explained, and recommends that having regard to the facts and circumstances stated therein the General Meeting of the Institute accord their approval of the policy and line of action taken the Council in this respect."

Mr. Sadasiv Sengupta desired a little more clarification of the general policy with regard to the various recommendations regarding reorganization. Mr. N. C. Chakravarti on behalf of the Council explained that in certain earlier general meetings of the Institute the question of reorganization had been reported for approval. Since then certain changes in the situation had taken place which necessitated the Council's

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taking a somewhat different line of action resulting in some deviation from the policy reported to earlier General Meetings. These had briefly been described in the report referred to. The Council wanted the General Meeting to indicate if these changes had their approval.

Mr. Ranon De enquired if the reorganization of the Institute could be expected to be a permanent feature, i.e. whether it could be taken that the grant from the Government of India would be a regular one.

Mr. N. C. Chakravarti stated that the question of reorganization of the Institute was still under discussion with the Government of India. The grant from the Government of India has initially been sanctioned for three years. It was to be expected that this would be renewed in future. This would become necessary because the Institute's cost was likely to increase annually, at least on account of the time-allow increments in pay and a fixed permanent grant could not serve the purpose. Though arrangements with Government of India have not been finalized, he felt that the grant would be more or less of a permanent nature.

The meeting unanimously accepted the recommendation of the Council in respect of the reorganization of the Institute.

4. *National Sample Survey*:—The Joint Secretary stated that he had been directed by the Council to report to the General Meeting of the Institute the following facts:

Towards the close of the last financial year the Government of India sanctioned a grant of Rs. 20,000/- to the Institute for drawing up a detailed scheme for a multi-purpose National Sample Survey to be carried out in the whole of the Indian Union. A rough plan for the purpose was drawn up by the Honorary Secretary of the Institute and submitted to the Government of India. Since then the Government of India has sanctioned the scheme of multi-purpose National Sample Survey at an estimated cost of Rs. 29.5 lakhs inclusive of a contribution from the Government of West Bengal for integrating the West Bengal Crop Survey with the proposed National Sample Survey. The Government of India have also requested the Institute to take up certain pre-survey and post-survey statistical work in connection with the National Sample Survey at an estimated cost of about Rs. 4.8 lakhs. Apart from the great importance of the work in the scheme of National planning this work is likely to afford the Institute important facilities for practical research in certain socio-economic and agro-economic sectors of statistics. The Council have accepted the responsibility of carrying on this work.

The Chairman stated that the Joint Secretary had just placed before the members a statement regarding the National Sample Survey. The Institute had been called upon to play an important role in a work of great national importance for which the Government of India have decided to place certain funds at the disposal of the Institute. The Council sought the general approval of the General Meeting for the action taken by them.

As no dissentient opinion was expressed the Chairman stated that he took for granted that the report made by the Joint Secretary was accepted by the General Meeting.

5. *Appointment of Auditors*: The meeting resolved that Messrs. P. V. Nandi & Co., Chartered Accountants, who are at present Auditors of the Institute be reappointed Auditors of the Institute for the year 1950-51.

The resolution was proposed by Mr. Sagniv Sengupta and seconded by Mr. Sudhir Kumar Banerjee.

6. *Miscellaneous*: Mr. N. C. Chakravarti asked permission of the chair if he could move a resolution for which he had not given any previous notice. The Chairman referred the matter to the general body of members who were present, and the meeting having agreed, Mr. N. C. Chakravarti moved the following resolution:—

This General Meeting of the Indian Statistical Institute recommends that having regard to the fact that in the proposed reorganization of the Institute it would be possible to utilize the services of only a limited number of high level statistical workers of the field and non-field branches, and to the fact that the Institute has, during the last 15 years, trained up for socio-economic surveys and other kinds of statistical work a large number of workers who are likely to be of great service to the country in its ever increasing need of trained statistical personnel, the Council of the Institute should make all possible attempts by approaching the Government of India and in other suitable ways to secure for those workers greater security of service, if not actual permanent employment, at the earliest possible time. The meeting would like

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to stress that if the Institute is not separately provided with means, after the reorganization, to maintain this large trained personnel, not only would great hardship be caused to those persons who have loyally served the interests of this pioneering work in statistics for many years but the results of 15 years continuous training and experience would be lost to the country.

In moving the resolution Mr. Chakravarti stated that in connexion with the reorganization, conduct of the National Sample Survey and other kinds of work the Institute has been using a certain number of workers who have been working in the Institute for a long time without getting anything like security of service. Now that the Government of India and other authorities were increasingly realising the need of reliable statistics, the time has come when the Institute could convince the Government of India and other authorities about the need and justice of ensuring security of service to the workers so that the country may benefit by their long and varied experience in different branches of econo-statistical work and also give them the reward for their long and loyal pioneer work.

Mr. Sadasiv Sengupta seconded the resolution which was carried unanimously.

In rising to move a vote of thanks to the Chair, Mr. Sadasiv Sengupta deplored the complete lack of enthusiasm that was noticeable at the meeting that day. He expressed the hope that the members, especially the younger section, would take greater interest in the activities of the Institute whose activities were growing apace. Alluding to the role of criticism, he said that there could be no serious difference of opinion that genuine criticism originated from a spirit of enquiry and that when well informed and well directed, it could help better conduct of affairs. He then proposed a vote of thanks to the Chair which Mr. S. C. Sen seconded.

The Chairman stated that the Institute started with a very modest budget and it had now come to a stage of spending something like Rs. 17 lakhs a year as would be noticed from the Audited Statement of Accounts. This also was expected to go up further in near future. This is a development of which any organization should feel justly proud. The Institute should congratulate themselves also upon having Sir C. D. Dashmukh as its President. He was been closely associated with the work of the Institute as its President for the last five years, and has recently been appointed as Finance Minister, Government of India. He was confident that the Institute had a great future before it. With these remarks, the Chairman declared the meeting closed.

S. K. BANERJEE
Chairman.

K. N. CHAKRAVARTI
Joint Secretary