

INDIAN STATISTICAL INSTITUTE

Fourteenth Annual Report : 1945-46

The Indian Statistical Institute which has now completed fourteen years of work has all along been much more than a scientific society of the academic type. The advancement of statistics in India to which all the activities of the Institute are directed has been interpreted in a very wide and comprehensive sense. The following quotation from *Nature* of 15th December 1945 is of interest in this connexion : "The Institute, as it has now developed has many facets : on the educational side equally as a training ground for computers and routine statisticians, and as a centre of post-graduate research in the most far reaching branches of the mathematical theory of statistics and experimental design ; as a professional institute and learned society bringing together all schools of thought in Indian Statistics ; as an agency employed by departments of Government and advisory bodies, in the essential work of collecting, scrutinising and digesting the facts upon which administrative decisions must depend."

The volume of work which the Institute has to turn out may be seen from the fact that during the year under review the Institute had to employ in the Statistical Branch alone an average of over 400 workers, with a like number in the Field Branch, and that the total expenditure was over 12 lakhs of rupees. It is to the credit of the Institute that the bulk of its grants is directly earned by its productive labour ; the Central Government grants for the general purposes of the Institute never formed more than 10 per cent of its own direct revenue ; in the year under review it was less than 5 per cent. This is perhaps a unique record for a scientific institution, but this state of affairs has naturally left the Institute and its workers in a state of constant anxiety about the future.

FUTURE DEVELOPMENT OF THE INSTITUTE

The need for stabilization of the Institute was recognized by the Government of India and a scheme has been under consideration since 1938. In a letter received in May 1945 the Government made certain definite proposals for the reorganization of the Indian Statistical Institute so as to enable it to fulfil the needs of post-war reconstruction and development. These proposals were carefully considered by the Council of the Institute and a note on this subject prepared by the Hon'y. Secretary was submitted to Government in November 1945 by Sir C. D. Deshmukh, President of the Institute. This note was in general agreement with the Government scheme but pointed out that certain modifications would enable the objects to be attained in a more efficient manner. At a meeting of the Council presided over by Sir C. D. Deshmukh a committee was appointed consisting of Sir C. D. Deshmukh (President), Prof. K. P. Chattopadhyay (Head of the Department of Anthropology, Calcutta University), Prof. K. B. Madhava, A.I.A., (Special Officer, War Transport Department, Government of India), Mr. S. N. Roy C.I.F., I.C.S. (Financial Adviser, Civil Supplies Department and Additional Finance Secretary, Bengal) and Prof. P. C. Mahalanobis (Secretary) to make recommendations regarding future developments and to negotiate with the Government of India and settle details of future reorganization. This Committee met on 18 December 1946 with Sir C. D. Deshmukh in the chair and a scheme was prepared which was approved in principle by the Council on 18 January 1946, and was forwarded to the Government of India. This scheme which is now under consideration by Government embodies proposals for the reconstitution of the Council and the administrative machinery of the Institute ; for opening active centres of work of the Institute at important places like Delhi, Bombay, Madras etc. and for maintaining a Register of Statisticians and regulating the professional status of Statisticians. Sir C. D. Deshmukh discussed the scheme with the Government of India on 23 February 1946, and it is hoped that some final decision would be reached at an early date.

In view of impending changes of a fundamental character and with a view to preserving continuity in negotiations with the Government of India the Council decided unanimously to postpone annual elections of the Council and office-bearers. The scheme which was submitted to the Government of India is also being placed before the Annual General Meeting for the information of members. As soon as some final

INDIAN STATISTICAL INSTITUTE

decision is reached in the negotiations with the Government of India it is proposed to take in hand necessary changes in the constitution and have office-bearers and the Council and other administrative bodies formed in accordance with the new constitution.

CROP SURVEY WORK IN BENGAL

The sample survey of crops in Bengal entered its ninth year of progress in 1945-46. Yearly sanction was being accorded by the Government upto 1943-44 but in 1944-46 a three years' scheme was sanctioned for carrying out each year a two-season sample survey of Jute, Aus paddy and Aman paddy on an enlarged scale. A sum of Rs. 8,50,000 was received by the Institute for carrying out the survey in 1945-46.

Design of the Survey : The whole province was divided into about 1200 zones of approximately equal size (64 sq. miles) and about 100 grids of size 2.25 acres each were thrown at random in each of these zones for area survey work. The field work was arranged in the form of two interpenetrating networks of sub-samples each with about 54 grids out of the 100 selected at random. The extra 8 grids represented an overlapping of 8 percent of the grids which were common to both networks. The two sub-samples were surveyed by two independent parties of investigators working under different Inspectors. Crop-cutting was done in 720 zones during the Jute-Aus and Aman seasons.

For convenience of field work 16 to 18 contiguous zones were grouped together to form a block. There were 60 such blocks and one Inspector with four field workers had to complete the survey of the grids of one sample in each such block within a prescribed time. One chief Inspector was in charge of 4 such parties of workers and there was one Asst. Superintendent over 2 to 4 such Chief Inspectors' charge.

Field Organisation : Mr. N. C. Chakravorty, M.A., B.C.S., Additional Assistant Secretary, Department of Agriculture, Forests & Fisheries whose part-time services had been lent by the Government for conducting the field operations under the Institute remained in charge of the work for the whole of the season. The field staff under him consisted of one Deputy Superintendent, 5 Assistant Superintendents and on an average 20 Chief Inspectors, 90 Inspectors and 324 Field workers.

Field work : Work for the Jute & Aus season started on the 16 April 1945 in the riverine areas and was continued upto the 15 October as the Aus crop in some parts of Burdwan Division were not ready for harvest before that time. Field work for the Aman season started in September 1945 and continued upto the middle of January 1946. A total of 1,13,000 grids were surveyed during the Jute-Aus season and about 100,000 grids during the Aman season; 3400 samples of Jute and Aus paddy and 2600 samples of Aman paddy (each sample consisting of 3 concentric circular cuts) were harvested during the year.

At the beginning of the 1945-46 season work proceeded quite smoothly but from about the middle of August serious difficulties were experienced due to a large percentage of staff falling ill or deserting due to various reasons. The programme of work was also seriously dislocated this year first by a drought which affected a large part of Western and Northern Bengal and subsequently by unusual floods in certain subdivisions of Eastern Bengal.

Analysis of data : Tabulation of the field material was so arranged that monthly progressive estimates could be submitted to Government on the basis of field records received upto one fortnight previous to the date of report.

Improvement of technique : Intensive crop-cutting work in 4 different centres under the guidance of technical assistants were undertaken for improvement of the technique of crop-cutting experiments. A circular apparatus for crop-cutting work was designed and used during the year.

Preparatory work for 1946-47 : Preparatory work for the survey in 1946-47 was taken up early in 1946 and has made satisfactory progress. Field work for the survey of area under Jute and Aus paddy will start early in May 1946.

ENQUIRY INTO THE ECONOMIC CONDITION OF AGRICULTURAL LABOUR IN BENGAL

A sample survey for studying the economic condition of agricultural labour in Bengal is being carried out by the Institute. A special grant of Rs. 98,000/- was sanctioned by the Government of Bengal for this purpose. Details of about 40,000 agricultural families have already been collected and the field work is still in progress. Tabulation and statistical analysis of the data are being carried out as the field records reach the Laboratory.

ANNUAL REPORT FOR 1945-46

ENQUIRY INTO RURAL INDEBTEDNESS IN BENGAL

A sample survey for determining the total volume of rural indebtedness in Bengal is being organized jointly with the above enquiry. A special grant of Rs. 83,000/- has been sanctioned by the Government of Bengal for this purpose.

ENQUIRY INTO THE FAMILY BUDGETS OF MIDDLE CLASS EMPLOYEES

This is another scheme of the Government of Bengal which has been entrusted to the Institute. The enquiry is being conducted by the Crop Survey staff in collaboration with the field staff of the Provincial Statistical Bureau. The field work is likely to be completed by the end of April 1946.

CROP SURVEY WORK IN BIHAR

After the *Rabi* season of 1944-45, the Bihar Government decided to terminate the sample survey scheme. The work of statistical analysis of the material collected during the survey already conducted was continued with the Institute's own resources. The crop-cutting material has been fully analysed and the results are being incorporated in a comprehensive report which is under preparation on all crop-cutting experiments conducted by the Institute.

POPULATION DATA WORK

Bihar Census Slips : A special grant of Rs. 15,000/- was sanctioned by the Population Data Committee (Government of India) to conduct sampling experiments on the 1941 census slips of Bihar. This work is now being conducted mostly at the Giridih Branch. The material for Hazaribagh District has been taken up in the first instance and a note on the preliminary experiments conducted so far has been submitted to Government. The work is proceeding slowly due to lack of space for housing the voluminous body of census material.

All India Population Statistics (Y-sample slips) : The proposal which was under consideration by the Government of India for transferring to Holaridh cards the information on the Y-sample slips was approved and a block grant of Rs. 2,41,00 was sanctioned by the Home Department of the Government of India for this purpose. The material consisting of nearly seven million (forming two per cent of all) original census slips are now housed at the Baranagar Branch. Sorting and other preliminary work has made good progress. Punching would start as soon as the punching code lists which have been submitted to Government are approved.

A SAMPLE SURVEY OF AFTER-EFFECTS OF THE BENGAL FAMINE OF 1943

This enquiry had been started in April—May 1944 under the guidance of Prof. P. C. Mahalanobis in collaboration with Prof. K. P. Chattopadhyay of the Calcutta University and was later expanded with a grant-in-aid of Rs. 25,000/- from the Government of Bengal. Originally it had been intended to complete the field work in May, June and July with the voluntary help of college students etc. Owing to the delay in receiving financial assistance from the Government, the time programme was upset and the field survey had to be extended from the end of July 1944 to early February 1945. Owing to the setting in of rains and other difficulties expenses had increased very considerably. The field survey had therefore to be curtailed to some extent for lack of funds and the analysis of the material was delayed for the same reason. A report giving certain results based on a statistical analysis of a portion of the data has been published under the joint authorship of P. C. Mahalanobis, Ramkrishna Mukherjee and Ambika Ghosh. Much material however still remains to be analysed.

The survey covered about 18,000 families from 386 villages spread throughout Bengal, and showed that during the famine nearly 15 lakhs of families (about one fourth of the number who had owned paddy land before the famine) had either sold in full or in part or mortgaged their land during the famine period. The net loss of plough cattle was about 10 or 11 lakhs (about 13%) during the famine period which must seriously affect agricultural operations in future. About 7 lakhs of families in rural Bengal (consisting of about 38 lakhs of persons) had suffered a lowering of economic status with consequent decrease of earning power. The number of destitute persons, which normally is about 4 lakhs in Bengal, increased during the period of war and famine to nearly 11 lakhs. The incidence of these changes has been different in different occupations, economic classes and geographical regions.

Even in the pre-famine period (January 1939 to January 1943) the proportion of families suffering economic deterioration and destitution was much higher than the proportion who had improved their

INDIAN STATISTICAL INSTITUTE

position. About 8.84% of families had suffered economic deterioration as against 3.32% who had improved their economic level while the position of 1.07 was not clear. This shows conclusively that economic deterioration had set in definitely in the pre-famine period and that the famine itself was its culmination.

During the famine period, rates of change became more rapid. Improvement during the famine period was relatively twice as great as that in the pre-famine period; but this was set off by a three times greater rate of economic deterioration and twelve times greater rate of destitution. Roughly 86% of families, however, succeeded in maintaining their status quo showing that a large degree of economic inertia persisted even under famine conditions.

ENQUIRY INTO THE ECONOMICS AND STATISTICS OF ROAD DEVELOPMENT

The work on this project which was undertaken on behalf of the War Transport Department of the Government of India, was continued during the year under report. Professor K. B. Malhava, whose services had been loaned by the Government of India from the Mysore Government were placed at the disposal of the Statistical Institute until December 1946. In January 1946 he became Special Officer in the War Transport Department itself, but it was arranged that his services on an honorary basis would be still available to the Institute. Mr. C. R. Bose, Engineer-Economist, supervised the field operations. In May, June and July 1945 a pilot survey of traffic was made in eight different centres in Bengal namely (1) Sadarhat near Burdwan (2) Bankura-Raniganj Road near Bankura (3) Bankura-Raniganj Road in Mejhia village (4) Bolpur (5) Contai Road, (6) Bogra (7) Gaibandha (8) Baranagar. In September and October 1945 a pilot survey of traffic was made at eight different centres in Bihar namely (1) Mohania (2) Shergathi (3) Gaya (4) Jehanabad (5) Sitamarhi (6) Bihar Sharif (7) Hanka (8) Itariarpur. From December to March 1946 the survey was continued at 5 Centres in Bihar namely, Mohania, Shergati, Jehanabad, Sitamarhi, Bariarpur and two centres Bolpur and Topoi in Bengal. The tabulation and analysis of the field records are being done with the Hollerith equipment and periodic reports are being submitted to Government.

ENUMERATION OF POSTAL TRAFFIC

In a discussion at Delhi on 6 March 1945 in which Professor R. A. Fisher, F.R.S. and Officials of the Communications Department (Posts and Telegraphs) had participated, the question of improvement of the methods of enumeration of postal articles was raised. It was decided to explore the possibilities of using sampling methods in this connexion. Professor Mahalanobis who was present at the Delhi discussion agreed to take up the work from the Institute. Some preliminary material was gathered from the General Post Office Calcutta in July 1945 and on the results of analysis of this data an enlarged programme of work was decided upon. A worker from the postal Department has been deputed to help in this scheme and further work is proceeding. Discussions were also held in the Communications Department in New Delhi in September 1945 and again in February and March 1946.

OTHER PROJECTS AND SPECIAL ENQUIRIES

U. P. Anthropometric Survey : The analysis of the data (measurements of 12 characters on about 3000 individuals belonging to 23 castes) collected by Dr. D. N. Majumdar of Lucknow University during the census of 1941 was completed and a full report is being prepared. The total cost of analysis was about Rs. 12,000 out of which Rs. 4,000 was received from Government and the rest was met out of Institute funds.

The statistical analysis has been carried out without reference to the social and cultural history or ethnographic characteristics of the different groups. A new method of classification by the use of specially constructed variates was employed and the classification thus arrived at has been found to be in broad agreement with findings based on the socio-cultural and ethnic history of various tribes and groups.

Diet Survey of Middle Class Families in Calcutta, 1945 : Family budgets were collected from about 2000 middle class families, selected at random from the different wards in the municipal area of Calcutta, the numbers chosen from each ward being roughly in accordance with the density of middle class families in the ward. The field work was carried out using the part-time services of a number of the Institute workers. The survey was arranged in three independent sub-samples. One of these sub-samples has been analysed and tables showing the consumption patterns of middle class families have been prepared.

Bengal Labour Enquiry 1941-45 : During the period December 1944 to March 1945 a survey of labour families was carried out in Jagaddal using the same design as was used in the previous surveys in 1941

ANNUAL REPORT FOR 1945-46

and 1942. The region of survey was divided into five geographical blocks, and five different investigators worked in each of the blocks in such an order as to ensure that no two investigators worked in the same block at the same period of time. Altogether 761 family budgets were collected in 1946.

Studies on the precision of estimates were continued during the year under review, making use of the material collected in 1941, 1942 and 1945. It was found that variations due to differences among investigators were not significant in comparison with the variations among different families.

Cost of living indices for the years 1942 and 1945 were calculated using the 1941 consumptions as base, for each of the 25 groups of budgets collected by the 5 different investigators in 5 different blocks. This provided a basis for estimating the standard error of the cost of living index, which appears never to have been attempted earlier. It was found that the over-all index based on 570 family budgets had a variability below one per cent.

Further work is proceeding on this project. It may be recalled that the Bengal Labour Enquiry was started in 1941-42 at the instance of the Government of Bengal, was postponed in 1942 as the sanctioned grant was not received, and was revived in 1945 at the expense of the Institute.

Bengali Word Index : Studies on the frequency distribution of words in different types of Bengali literature have been in progress for a number of years at the Statistical Laboratory, Calcutta. The work was frequently interrupted and kept in abeyance for long periods due to various reasons. This year an attempt was made to prepare an exhaustive index of a portion of the works of Italinidranath Tagore. At first the work was organised on a voluntary basis with the help of college students who were interested in it. At present Institute workers are devoting a few minutes every day to this work.

Family budget enquiry of Calcutta Corporation Labourers : The preparatory work for this enquiry was done in the Statistical Laboratory. A sample of about 400 labourers was selected at random from the Corporation registers stratified according to jobs, and the field work was conducted by Professor K. P. Chattopadhyay of the Calcutta University.

Bengal Anthropometric and Blood Group Survey : The services of Dr. D. N. Majumdar of the Lucknow University were secured on loan by the Institute for a province wide anthropometric and blood group survey. Observations were made on about 4000 persons.

Enquiry into the possibility of developing a formula for predicting crop yields in Bengal from data of rainfall : A sum of Rs. 20,000 has been sanctioned for this enquiry by the Government of Bengal. Daily rainfall data records in the different rainfall recording stations in the province have been tabulated for 40 years, and fifth order parabolas are being fitted to the rainfall series for each year. The next step is to try out regression formulas with relevant rates of yield of jute and paddy. But this portion of the work is being delayed as necessary crop-cutting records have not yet been received from the Agricultural Department.

Analysis of crop-cutting material : A comprehensive scheme of analysis of the material collected in the course of the different crop-cutting experiments conducted by the Institute in Bengal, Bihar, and United Provinces, was taken up this year. Analysis of crop-cutting data relating to experiments conducted by Sir C. D. Deshmukh in the Central Province during 1928-30 is also proceeding.

MISCELLANEOUS STATISTICAL ENQUIRIES

During the year under review a number of miscellaneous statistical enquiries were attended to as usual. The distribution of the more important items by provinces are shown below.

Bengal 11 ; Bombay 3 ; Delhi 6 ; Punjab 2 ; United Provinces 6 ; Others 6 ; Total 34.

THEORETICAL RESEARCHES

Design of Experiments : Researches in the design and analysis of field and biological experiments were carried out by It. C. Bose, C. R. Rao and H. K. Nanji. A convenient representation of all practically useful balanced incomplete block designs was reached by the use of difference sets. All the possible non-isomorphic solutions were found and further attempts are being made to find the non-isomorphic solutions in all cases. A simplified method of reaching confounded designs in factorial experiments has been worked out, and use has been made of combinatorial arrangements known as hypercubes of 'strength d' in obtaining designs possessing some optimum properties.

Multi-variate tests : S. N. Roy continued his work on multivariate analysis of variance and other multivariate tests of significance; he presented two papers to the Indian Science Congress held at Bangalore

INDIAN STATISTICAL INSTITUTE

in January, 1946 on (i) "Further studies in multivariate analysis of variance" (ii) "The power functions of the different p statistics for testing the equality of the dispersion matrices for two multivariate normal populations". This practically completed and rounded off the work he had been doing in this line for the last seven years.

Model Sampling Experiments : Extensive studies were conducted this year under the supervision of J. M. Sengupta on two dimensional patches in random binomial fields and satisfactory results have been obtained for the mean number of patches and also its variance for different levels of 'p'. Fields measuring 100×100 units were constructed and digits 0-9 in random sequence were posted into the 10,000 cells. Binomial fields with different proportions 0.1 to 0.9 were constructed by hatching different digits. The total number of patches together with the number of patches fully embedded in one or another of the patches, were counted. The mean number of patches less than that of the embedded agreed very closely with the theoretical value given by R. C. Bose. While the distribution of the patch number has not yet been theoretically worked out, empirical tables showing the frequency characteristics, variance and fiducial limits were constructed which would be of great help in the ranking of observed fields in order of randomness. The work was laborious, but an expenditure of over 300 man-months was fully justified by the results.

SANKHYA : THE INDIAN JOURNAL OF STATISTICS

During the year under review parts 1 and 2 of volume 7 have been issued ; part 3 is nearly ready, and part 4 is also expected to be published at an early date.

TRAINING AND EXAMINATIONS IN STATISTICS

Training in General Statistics : Seven students were admitted this year for the regular one year's course of training in general statistical theory and methods which the Institute has been conducting for several years.

Training in Industrial Statistics : A new course of training in Industrial Statistics was started in August 1945, with the help of a grant of Rs. 12,000 from the Board of Scientific and Industrial Research Government of India. The great demand for such a course may be noted from the fact that nearly 200 applications were received from all parts of India, though we could take in only about 13 candidates, most of whom were already working in industrial concerns. The lectures and practical work of this new course were conducted at the Statistical Laboratory, Presidency College, Calcutta.

Training in Computation. Classes for the training of computers were conducted this year in the Laboratories at Calcutta, Baranagar and Giridih.

Institute Examinations in Statistics. No examinations were held during the year under report. Arrangements have already been made to hold these examinations in May 1946.

ARRANGEMENTS IN THE STATISTICAL LABORATORY

As in previous years the Statistical Laboratory had to function at three places, namely, Calcutta, Baranagar and Giridih. The staff at Calcutta were housed at the Presidency College, at 122A Central Avenue, at Albert Hall, at 210 Cornwallis Street, and at Circular Road, the last two places being set apart for women workers. This gave rise to a good deal of organizational difficulties, which can be avoided if a central place large enough to house the entire staff could be obtained.

Number of workers. The number of workers employed at the different branches on 1 April, 1945 and 31 March, 1946 is given in the following table.

	Calcutta		Baranagar		Giridih		Total	
	1 April 1945	31 March 1946	1 April 1945	31 March 1946	1 April 1945	31 March 1946	1 April 1945	31 March 1946
Piece-rate	63	56	84	89	100	43	247	188
Monthly pay	123	83	78	82	78	33	270	198
Total	186	139	162	171	178	76	517	386

The average number of workers for the year as a whole was about 400 for all branches together, 65 for Giridih, and 305 for Calcutta and Baranagar taken together.

ANNUAL REPORT FOR 1945-46

Institute staff. J. M. Sen Gupta, acted as Superintending Statistician, Giridih from April 1945 to January 1946; and later worked at Calcutta and Baranagar. N. T. Mathew was Superintending Statistician, Calcutta and Baranagar from April to December 1945, and was later stationed at Baranagar. Satya Brata Sen joined the Institute Staff as Assistant Secretary and Anil Kumar Bhattacharya rejoined the Institute in December 1945 as Superintending Statistician, Calcutta. C. R. Rao, K. C. Cheriyan, Moni Mohon Mukherjee, R. P. Bhargava, R. K. Mukherjee, Tarapala Chowdhury, S. J. Pati and Chidendra Das Gupta and Mrs. Charnoli Bose worked mostly at Calcutta. Praasad Banerjee worked at Giridih till October 1945 and later at Calcutta. R. C. Bose and S. N. Roy, whole-time lecturers in the Calcutta University continued as the part-time workers in the Institute. Birendra Nath Ghose, Purnendu Bose, Harikinkar Nandi, Monindra Nath Ghose, and Nirmal Kumar Chakravarty resigned from the Institute in November 1945, and Durgadas Bose and Prafulla Bhowmic left during the year on securing posts elsewhere. Among the old workers Suthir Kumar Banerjee, Horamba Chandra Ghosal, Subodh Chandra Das Gupta, Jibananda Saha, Jatindhar Sarma, Naresch Chandra Mukherjee, Susanta Ranjan Guba, Gayanath Adak, Sarat Chandra Mitter, Debabrata Dutta, Sukumar Hazra and Purna Chandra Ghose looked after various sections in Calcutta, Baranagar and Giridih.

In the computing Section Jitendra Nath Talukdar and Arun Kumar Ganguly were in charge at Baranagar assisted by Nirmal Kumar Banerjee, Bimal Kumar Bhattacharyya, Bistu Pada Paul and others. Sambhu Nath Halder was in charge of the computing section at Calcutta and on his transfer to the Hollerith Section Shyam Sundar Bose was placed in charge. Haribhajan Chowdhury was in charge of the work at Giridih assisted by Dhirendra Nath Sarkar, Rajen Roy and others. Dhirendra Nath Sarkar was later transferred to Baranagar to help in the work of the cost account section which is being organised as a separate unit in close relation to the account section. A number of trained workers from the computing section left the Institute to join the Provincial Statistical Bureau. The operation staff in the Hollerith Section consisted of Keshab Chandra Foddar assisted by Bibhuty Chakravarty, Pankaj Paul and others.

Women's Section in Calcutta. The total strength of the women's section during the year was about fifty. It is proposed to reorganise the women's section as an integral part of the computing section, along the same lines as at Giridih.

BRANCH LABORATORY AT BARANAGAR

As in the preceding year the main bulk of the computational work in the Bengal Crop Survey, and several other projects was carried out in the computing section located at Baranagar. During the year under report the entire Hollerith equipment including Tabulating and Multiplying machines, and punching units was transferred to Baranagar. This facilitated the work in projects like the Population Data Enquiry, the Enquiry into the Economics of Road Transport, the Bengal Crop Survey, the Bengal Rehabilitation Survey, the Calcutta Diet Survey, The Bengal Labour Enquiry, and several other socio-economic enquiries. The number of computer months turned out were 3256; this is exclusive of the work turned out by using the Hollerith equipment which would be equivalent to over 1500 computer months during the year.

Mr. J. M. Sen Gupta, Superintending Statistician is in charge of the work in the Hollerith Section, and Mr. N. T. Mathew, Superintending Statistician was placed in charge of the rest of the work at Baranagar Branch from the end of February. This was done because it was found that more careful supervision was needed at Baranagar than can be managed by the Superintending Statistician stationed in the Calcutta Branch.

The rapid expansion of work during the current year at Baranagar made it necessary to increase the working space by some new construction. About 900 sq. ft. of space is being added this year. Arrangements were also made to acquire a plot of land adjoining the present premises occupied by the Institute, but possession of this land has not yet been obtained.

Housing Scheme. Three different workers' messes are being maintained at Amrapali (87, B. T. Road), at 88½ B. T. Road and at 4 Institute Lane. Besides these messes, four houses have been rented for residential use of the workers. Altogether we have this housed about 50 workers and families of 7 of these workers. A large number of workers have still to come daily from Calcutta. The Institute is providing a bus for conveying these workers to and fro, but more facilities in this direction are needed, and could be arranged only if a larger supply of petrol is obtained.

Welfare & Amenities: The medical welfare scheme and the workers' sports clubs are continuing to function, as also the tiffin club managed on a co-operative basis by the workers themselves with the support of the Institute.

INDIAN STATISTICAL INSTITUTE

HOLLERITH SECTION

The Hollerith section was first opened in March 1944 at 210 Cornwallis Street and was subsequently transferred to Amrapali, 37 Barackpur Trunk Road and was fully organised only in November 1946. The section rapidly expanded in its activities and possesses at present two 80-column sorters, one tabulator, one multiplier, 16 key punches and 13 verifier punches. In addition to the above, 40 hand punches and an automatic summary punch have been ordered. A total of about 3 lakhs of cards were punched and verified hundred per cent. Total sorting consumed 1413 machine-hours, tabulating 1294 hours and multiplication 458 hours involving sorting of 125 lakhs, tabulation of 84 lakhs and multiplication of 6 lakhs of records. This represents a huge amount of tabulation under complex classifications and additions thereof, equivalent roughly to 720 man-months of manual computation. Considering the accuracy guaranteed in the system, this may easily be equated to a duplicated total of 1440 man-months. Contrary to apprehensions among certain sections of workers that the Hollerith machine would to a large extent eliminate manual computations, it was found that new and detailed studies which could not be formerly undertaken could be now handled without difficulty so that the demand of trained computers in the later stages was on the increase. In addition to the routine projects undertaken from time to time, special studies such as the mechanical solution of determinants, construction of tables, fitting of orthogonal polynomials, etc. were conducted.

BRANCH LABORATORY AT GIRIDIH

The Giridih Branch of the Institute though started as an evacuation measure in 1942, rapidly expanded during 1944 mainly because of the Bihar Crop Survey Scheme which was started by the end of 1943. The strength of the staff reached a total of more than 200 in October, 1944. With the termination of the Bihar Crop Survey Scheme, the strength naturally contracted slowly to the level of about 80 at the close of the present financial year. Moni Mohan Mukherjee, Statistician, was in charge of the branch upto May 1945 and J. M. Nen Gupta, Superintending Statistician, was in charge upto 21st January. During the remaining part of the year Harishhajan Choudhury was Worker-in-Charge under the guidance of J. M. Nen Gupta who went to Giridih from time to time as necessary.

Bihar Crop Survey : Progressive estimates on Rabi Crop Survey which were submitted to the Bihar Government from the close of the last financial year, continued at regular intervals until finally a report based on the full material was submitted by the middle of July, 1945.

Population Census : In accordance with arrangements made by the Population Data Committee all the population census slips of Hazaribagh district have been brought to Giridih and housed in the Statistical Laboratory. Important studies on the selection of samples have been carried out and further work is in progress. Lack of accommodation however stands in the way of collecting together all the census slips of the 10 districts which would require about 6500 sq. ft. of housing space.

Besides work on these projects, extensive work on Model Sampling and a number of other projects and special enquiries was carried out during the year.

Women's Section : Work in the women's section was carried on smoothly during this year.

Club & Amenities : The workers-games-club, the tiffin club, and the medical welfare section functioned as in the previous year.

Puja Camp at Giridih : The Honorary Secretary and a number of senior workers from Calcutta worked at Giridih during October 1945.

Land Acquisition : Mr. Y. A. Godbole, C.I.E., I.C.S., Advisor to H. E. the Governor of Bihar visited the Laboratory in January in connection with the acquisition of land for the Institute. After his departure the Land Acquisition Officer made a formal enquiry on the spot in February 1946, but no further action has been taken so far.

SUMMER CAMP AT MONOPOO

A camp laboratory was set up in the Government Cinchona Plantation at Mungpoo during May and June 1946. P. C. Mahalanobis, Samarendra Nath Roy, C. R. Rao and a small group of computers and field workers stayed at the camp, and carried out theoretical researches and also field work on the estimation of yield of bark from cinchona plants.

ANNUAL REPORT FOR 1945-46

STATISTICAL LIBRARY

The Institute now has a Central Library at Calcutta and two branch libraries at Giridih and Baranagar. The main stock of books is still at Giridih where the whole library had been removed as an evacuation measure early in 1942.

The new card catalogue, (classified with Author and Title index in Dictionary form) is now ready for use in the Central Library.

The total number of Volumes added to the library during the year was 863 of which 59 were received as gifts. The end of the war made it possible to fill some of the war-time gaps in the periodicals section. Many of the pre-war exchange arrangements have been renewed with the Government Departments and Scientific Institutions in European countries. The library received 279 periodicals and 100 annuals during the year under review. With improvement of shipping facilities some more periodicals are expected to be received in future.

The number of readers was almost double that in the previous years. The number of volumes issued from the Calcutta Library was : reference 8428, overnight 8358 and lending 2026 with a total of 18,812 (as against 9910, 3915, and 2231 respectively in 1942-43). The branch libraries at Giridih and Baranagar were used much less, the total number of volumes issued being 1339 and 860 respectively.

Circulating Library : 535 new volumes were added to the circulating library and the books in different centres were interchanged at regular intervals. The circulation of books increased during the year and the total numbers issued were 5309, 3362 and 3500 at Giridih, Calcutta and Baranagar respectively.

VISITORS

As usual a large number of distinguished visitors came to the Institute among whom were : Maharajah Sham Sher Jang Bahadur (Finance Minister, Nepal), Mr. A. B. Bokhari (Controller of Broadcasting in India), Mr. L. J. F. Brimble (Editor, Nature), Professor C. Y. Chang (University of Peking), Mr. Kai Lai Chung (University of Peking), Major General Fleming (of the U.S.A. Army), Mr. Y. A. Godbole, C.I.E., I.C.S. (Advisor to H.E. the Governor of Bihar), Mr. M. K. Son Gupta (Financial Advisor, Communication Department, Government of India), Mr. Nool F. Hall (Economic Advisor, Government of Bengal), Col. M. W. B. Hardaker (Chief Inspector of Stores and Clothing), Mr. G. McKelvie (Consulting Engineer, Roads, Government of India), Mr. Wang Chion Ming (Agricultural College, National Central University), Pandit Jawaharlal Nehru, Mr. & Mrs. M. N. Roy, Sir H. R. Stewart (Vice-Chairman, I.C.A.R.), Mr. C. R. Trevor (Deputy Governor, Reserve Bank of India), Mr. G. W. Wyant (of U. S. A.).

LOCAL BRANCHES OF THE INSTITUTE

No reports for the current year have been received so far from the local branches of the Institute.

MISCELLANEOUS

Honours course in statistics in the Presidency College, Calcutta : The course has now run for two years and the first batch of eleven students sat for their degree examination in April 1946. Professor K. R. Madhava worked as the Head of the Department in an honorary capacity till he was succeeded by A. Bhattacharyya from February 1946. Birendra Nath Ghosh and Monimohan Mukherjee acted respectively as professor and lecturer and Amalendu Narayan Ganguly succeeded Sunith Krishna Gupta as laboratory assistant. Prasad Banerjee joined the Department in the capacity of an honorary lecturer in December 1945. Eight students were selected for admission in the third year class out of a large number of applicants.

Post Graduate Department of Statistics, Calcutta University : Professor P. C. Mahalanobis tendered his resignation from the Headship of the Post-graduate Department of Statistics during this year, and was succeeded by Mr. R. C. Bose, one of the part-time workers of the Institute. Messrs S. N. Roy and C. R. Rao, and Mrs. C. Bose are connected with both the Institute and the Post-graduate Department.

Indian Science Congress : Prof. P. C. Mahalanobis, Honorary Secretary of the Institute was elected General Secretary of the Indian Science Congress Association early in 1946, and the bulk of the office work of the Science Congress was done with the part-time help of the Institute staff for which a contribution was made to the Institute by the Science Congress. A new section for statistics was opened in the Indian Science Congress in January 1946 with Prof. K. B. Madhava as president of the section.

INDIAN STATISTICAL INSTITUTE

Prof. P. C. Mahalanobis, and Messrs R. C. Bose, S. N. Roy, N. T. Mathew and C. R. Rao were deputed as delegates from the Institute to attend the Bangalore Session of the Science Congress in January 1946.

United Nations Organization : Prof. P. C. Mahalanobis has been appointed, in his individual capacity, as one of the nine members of the Statistical Commission of the United Nations Organization, and is leaving by air for U. S. A. to attend the first session of the Statistical Commission which will be held in New York beginning from April 29th.

London Scientific Conference : Prof. Mahalanobis has also been invited by the Government of India to join the Indian Delegation to both the Royal Society Conference and the Empire Scientific Conference to be held in June and July respectively in London.

I.C.A.R. Statistic Committee : The Imperial Council of Agricultural Research has set up a Statistical Committee to advise the council on its Statistical Schemes. The Institute is represented on this Committee by P. C. Mahalanobis, and another member to be nominated by the Institute from time to time. The meeting of this Committee held in Delhi in September 1945 was attended by P. C. Mahalanobis and C. R. Rao.

APPENDIX I.

List of Papers Published and Reports Submitted in 1945-46

1. BRATTACHARYYA, A. A note on the distribution of sum of chi-Square. *Sankhyā*, 7(1), 1945.
2. BOSE, CHAMELI. Standardisation and quality control. *Science and Culture*, 11(4), 1945.
3. BOSE, P. K. Lima in two different doses. *Proc. Ind. Sc. Congress*, 1946.
4. ——— The effect of inorganic fertilizers on the yield and growth of rice plant. *Proc. Ind. Sc. Congress*, 1946.
5. ——— An approximate method for forecasting the yield of Aman paddy. *Proc. Ind. Sc. Congress*, 1946.
6. ——— Functional relations in a Beesal population. *Proc. Ind. Sc. Congress*, 1946.
7. BOSE, R. C. A theorem on balancing. *Proc. Ind. Sc. Congress*, 1946.
8. ——— The Fundamental theorem of linear estimation for correlated variates. *Proc. Ind. Sc. Congress*, 1946.
9. ——— On the application of linear estimation to the general theory of the analysis of doubly classified heterogeneous material. *Proc. Ind. Sc. Congress*, 1946.
10. BOSE, R. C. and CHOWLA, S. On the construction of affine difference sets. *Bull. Cal. Math. Soc.*, 1945, 37.
11. CHAKRABARTY, N. K. A new approach to the theory of demand. *Proc. Ind. Sc. Congress*, 1946.
12. CHERIAN, K. C. Distribution of certain frequency constants samples from non-normal populations. *Sankhyā*, 7(2), 1945.
13. GHOSH, BINENDRA NATH. Measures of heterogeneity and their inter-relation in agricultural & similar fields. *Proc. Ind. Sc. Congress*, 1946.
14. ——— Measures of heterogeneity in agricultural & similar fields and their inter-relations. *Science & Culture*, 11 (7), p.382.
15. GHOSH, M. N. Test for field uniformity based on the space correlation method. *Proc. Sc. Ind. Congress*, 1946.
16. ——— Tests of hypotheses for more than one free parameters. *Proc. Ind. Sc. Congress*, 1946.
17. MAHALANOBIS, P. C. Report on the Bihar crop survey : Rabi season 1943-44. (Submitted to the Govt. of Bihar in Nov. 1944) also published in *Sankhyā*, 7(1), 1945.
18. ——— A direct method of estimating total production of crops. *Proc. Ind. Sc. Congress*, 1946.
19. ——— *Bengal Crop Survey 1945-46* : Progressive reports and estimates submitted to the Government of Bengal on Jute and Aus paddy crops on 6 July, 13 August, 11 September and 27 December 1945; on Jute, Aus and Aman paddy crops on 29 October, and 20 November; and a report on the sample survey of crops on 5 February, 1946.

ANNUAL REPORT FOR 1945-46

20. MAHALANOBIS P. C. *Bihar Crop Survey* : Notes on Rabi crops (spring) 1945 submitted to the Government of Bihar on 12 April, 23 April, 4 May, 18 May, 30 May, and 14 July, 1946.
21. ——— *Forecast of yield of crop from rainfall data*. Report submitted to the Government of Bengal on 19 April, 1946.
22. ——— *Population Data Committee* : General recommendations and report on work done in the Statistical Institute sent to the Government of India on 3 May, 1946. Published by the Government of India in the same year.
23. ——— *Sample survey of economic condition in the distressed villages of Bengal* : Reports on the survey of Tangail sub-division in the Mymensingh district and Tamruk sub-division in the Midnapore District, and "Note on the number of destitutes in Bengal in 1943" submitted to the Government of Bengal on 23 February, 7 March and 28 May, 1945, respectively.
24. ——— *A multi-purpose sampling scheme for Bengal* submitted to the Government of Bengal on 26 February, 1946.
25. ——— *A preliminary note on statistical plan for Bengal* submitted to the Government of Bengal on 5 February, 1946.
26. ——— *Investigations into the economics & statistics of road Development* : Reports No. 1 and No. 2 covering the periods upto 30 September and 31 December, 1945 respectively submitted to the Government of India on 28 November, 1946 and 26 February 1946, respectively.
27. MATHEW, N. T. A family budget enquiry at Giridih (Bihar). *Proc. Ind. Sc. Congress*, 1946.
28. ——— An experiment on the construction of random numbers. *Proc. Ind. Sc. Congress*, 1946.
29. MUKHERJEA, R. K. Statistics in the service of planning. *Sankhyā*, 7(2), 1935.
30. NAIR, K. R. & BOSE, P. K. Influence of humidity & temperature on the yield of cotton. *Sankhyā*, 7(2) 1946.
31. NANDI, H. K. On the relation between certain types of tactical configurations. *Bull. Cal. Math. Soc.*, 37, 92-95.
32. ——— On the Power function of the Studentised D^2 statistic. *Proc. Ind. Sc. Congress*, 1946.
33. POTI, S. J. On a test of equality of association in two contingency tables. *Proc. Ind. Sc. Congress*, 1946.
34. ——— On a test of the efficacy of a treatment when all treated elements are not similarly chosen. *Proc. Ind. Sc. Congress*, 1946.
35. RAO, C. R. On the problem of K Samples & K multivariate populations with unequal variances and covariances. *Proc. Ind. Sc. Congress*, 1946.
36. ——— On the generalisation of Markoff's theory & tests of linear hypothesis. *Sankhyā*, 7(1), 1946.
37. ——— Markoff's theorem with linear restrictions on parameters. *Sankhyā*, 7(1), 1945.
38. ——— Information and accuracy attainable in the estimation of statistical parameters. *Bull. Cal. Math. Soc.* 37, 1945.
41. ——— Finite geometries and certain derived results in theory of numbers. *Proc. Inst. of Sc. XI*, No. 2, 1945.
42. ——— Studentized tests of linear hypothesis. *Science & Culture*, 11(4), 1945.
43. ROY, S. N. The individual sampling distribution of the maximum, the minimum & any intermediate of the p -statistics on the null hypothesis. *Sankhyā*, 7(2), 1945.
44. ——— AND BOSE, P. K. Bernoulli's theorem & Tchebycheff's analogue. *Sankhyā*, 7(2) 1945.
45. ROY, S. N. Further studies in multivariate analysis variance. *Proc. Ind. Sc. Congress*, 1946.
46. ——— On the power functions of the different p -statistics for multivariate analysis of variance. *Proc. Ind. Sc. Congress*, 1946.
47. ROY S. N. On the individual sampling distribution of p -statistics for testing equality of the dispersion matrices for two multivariate normal populations. *Proc. Ind. Sc. Congress*, 1946.

INDIAN STATISTICAL INSTITUTE

48. ——— On a certain class multiple integrals. *Bull. Cal. Math. Soc.*, 1945, 37, 69-77.

APPENDIX 2. OFFICERS ON DEPUTATION 1945-46

1. A. S. RAWAT, B.Sc. (*Forest Research Institute, Dehra Dun*).
2. P. D. SHUKLA, M.A., Ph.D. (*Lecturer in Mathematics, Lucknow University*).
3. A. K. GHOSH, M.A. (*Lecturer in Economics, Allahabad University*).
4. L. SHARMA, M.A. (*Lecturer in Commerce, Lucknow University*).

APPENDIX 3. STUDENTS IN THE TRAINING SECTION 1945-46

(1) NARAIN PRAKASH SRIVASTAVA, M.A. (*Lucknow*); (2) RAHUBIR GRI, B.A. (*Patna*); (3) SUNITH KRISHNA GUPTA, B.Sc. (*Calcutta*); (4) S. R. SUBRAMANIAN M.A. (*Madras*); (5) SHYU CHANDRA GANG, B.Sc. (*Ajmir*); (6) PRASANTA CHOUDHURY, M.Sc. (*Calcutta*); (7) RAJENDRA NATH KAUSHIK, M.A. (*Delhi*); (8) C. V. S. SASTRY, M.A. (*Benares*); (9) S. N. GHOSH, B.A. (*Calcutta*); (10) A. BOSE, B.Com. (*Calcutta*); (11) B. SEN GUPTA, B.A. (*Calcutta*); (12) NONI GOPAL BANERJEE, M.Sc. (*Calcutta*); (13) M. K. DAS GUPTA, M.Sc. (*Calcutta*); (14) P. GUNTA THAKURTA, M.Sc. (*Calcutta*); (15) V. E. GEORGE, B.A. (*Malabar*); (16) THOMAS ABRAHAM, B.Com. (*Travancore*); (17) K. S. BALKRISHNAN, M.Sc. (*Andhra*); (18) A. SATYANARAIN RAO, B.Sc. (*Mysore*); (19) C. K. VASANTHA RAO B.E. (*Mysore*); (20) HUSSAIN ALI GHIS, B.Sc. (*Mysore*).

Indian Statistical Institute : Receipts and Payments Account for the Year ending 31st March, 1946

ANNUAL REPORT FOR 1945-46

RECEIPTS

	Rs.	A. P.	Rs.	A. P.
To Opening Balance	16,986 15 6		1,17,312 7 3	
Govt. papers at cost for Rs. 1,00,000	1,00,325 7 10		2,105 8 0	
Membership fees		2,082 13 3	
Interest on investments			
Training receipts			
Miscellaneous receipts :				
508 1 9				
3,310 0 0				
885 0 0				
Examination fees		3,742 1 9	
Block Grant : Government of India :				
Department of Education :				
General grants	51,500 0 0			
For Prof. R. A. Fisher's salary	2,000 0 0			
For S. S. Ghosh's salary	3,000 0 0			
Department of Health :				
Population Data Committee	13,750 0 0			
War Transport Department : Statistics of Road Development	37,000 0 0			
Home Department : Occupational Statistics	8,000 0 0			
Food Department : Population Census Scheme	50,000 0 0			
Food Department : Famine Enquiry Commission	4,000 0 0			
Food Department : Scientific and Industrial Research	15,000 0 0			
Block Grant : Government of Bengal :				
Bengal Crop Survey (1945-46)	8,41,500 0 0			
Furnace Dept. for Prof. R. A. Fisher's visit	2,500 0 0			
Controller of Rationing	1,884 0 0			
Bengal Administration Enquiry Committee	300 0 0			
Survey of the Economic Conditions of Agricultural Labourers	48,000 0 0			
Rural Industries Survey	23,000 0 0			
Crop Survey (1944-45)	10,000 0 0			
Crop Survey (1944-45)	3,000 0 0			
Crop Survey : Government of Bihar	73,881 11 0			
Contribution for office assistance (Indian Science Congress Association, etc.)	3,880 0 0			
Contribution in lieu of Prof. P. C. Mahalanobis's service				
Government of Bengal	16,000 0 0			
Government of Bihar	4,313 5 0			
Population Data Committee	1,250 0 0			
War Transport Department	5,000 0 0			
Interest earned	5,000 0 0			
Provident Fund Subscription		29,539 5 0	
Contribution to leave salary and Provident fund		14,005 6 0	
Rentals realised		49,137 2 0	
Library disposal		15,796 0 0	
Bequest a/c		422 12 0	
Bequest a/c		3,732 0 0	
Legal Crop Survey (1944-45)		4,800 0 0	
Old dues realised		19,227 0 0	
Bank overdrafts : National Bank	85,108 12 1			
Special Bank	32,808 0 2			
			15,49,105 5 0	

6. HASTING - SINGH - SARKATTA,
The 1st .. .

PAYMENTS

	Rs.	A. P.	Rs.	A. P.
By Salary including research staff		3,07,107 13 0	
Deputation allowances		1,25,808 11 9	
Contribution to leave salary & Provident Fund		40,137 2 0	
Salary and allowances (Field Branch)		4,39,073 10 0	
Establishment and travelling		43,250 12 9	
Books and journals		14,561 7 9	
Laboratory Equipment		11,006 4 3	
Stationary and stores purchase		33,701 5 3	
Stationery printing and contingency		29,050 1 9	
Office expenses (hire charge of machines etc.)		28,481 0 0	
Rentals		1,809 0 0	
Auditor's fee		1,084 14 6	
Workers' Circulating Library		2,946 15 3	
Workers' welfare Scheme at Giridih & Barnasore		364 2 6	
Maps		255 0 0	
Bank charges		4,780 3 0	
Construction, maintenance & repairs		2,000 0 0	
Grant for Sankhya		32 8 0	
Local Finances		1,62,796 1 0	
Bengal Crop Survey (Field Branch) other expenses		7,482 0 0	
Population Data Committee (field work and direct charges)		1,629 8 6	
Road Development Scheme (field work and direct charges)		35,495 1 9	
Housing scheme at Giridih and Barnasore		15,883 4 8	
Professor R. A. Fisher's visit (remaining portion)		4,510 15 0	
Scientific and Industrial Research		8,718 0 0	
Provident Fund subscription		5,572 12 0	
Leave Salary & Provident Fund Contributions			
payment				
Leave salary	7,402 9 0			
Provident Fund contribution	1,304 8 0			
Hire and maintenance of Hollerith Machine		8,707 1 0	
Supervise a/c		35,451 7 9	
Contribution to Statistical Publishing Society		13,974 4 9	
Interest at paid to Director's Publishing		3,720 0 0	
Director's Fund		2,950 0 0	
Less amount not yet invested		1,00,256 0 0	
Provident Fund (Govt. Paper)		2,586 7 0	
Closing Balance : cash in hand		97,688 9 9	
			25,609 12 1	
			1,615 2 6	
			15,49,105 5 0	

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

INDIAN STATISTICAL INSTITUTE

Indian Statistical Institute : Exempted & Special Enquiries Fund, Account for the year ending 31st March, 1946.

RECEIPTS		PAYMENTS					
<i>Bengal Crop Survey.</i>							
To Opening balance	33,170 12 0	<i>Statistical Branch (1944-46)</i>					
" " Suspense (Field Branch) realised,	13,916 10 0	Rs.	A.	P.	Rs.	A.	P.
" " Block grant for 1945-46	8,41,500 0 0	8,88,587	8	0	31,173	11	0
" " Advance from Institute	32,048 2 3	1,96,583	8	0			
		82,527	0	0	2,79,110	8	0
		<i>Field Branch (1944-46)</i>					
	9,41,235 8 3	2,637	9	0	6,655	14	0
		6,018	5	0			
		<i>Field Branch (1945-46)</i>					
		4,27,623	1	0			
		1,53,270	10	0	8,09,883	12	0
		" " Other expenses					
		" " Suspense— including Cash balance					
					11,407	7	3
					9,11,241	3	3
		<i>Statistical Branch (1940-47)</i>					
		21,424	8	0	29,994	5	0
		8,509	13	0			
		" " Other expenses					
					9,41,235	8	3
<i>Survey of the Economic Condition of Agricultural Labourers.</i>							
To Block grant	48,000	0	0			
		<i>Statistical Branch</i>					
		6,200	0	0			
		2,418	15	0	8,087	15	0
		" " Other expenses					
		<i>Field Branch</i>					
		16,487	13	0			
		5,874	0	0	22,362	3	0
		" " Other expenses					
		Closing balance					
					16,949	14	0
					48,000	0	0

RECEIPTS.		PAYMENTS.				
<i>Rice and Indulgence Schemes.</i>						
	Rs.	A.	P.	Rs.	A.	P.
To Block grant	23,000	0	0	3,068	0	0
" Advance from Institute	2,808	0	0	378	0	0
	25,808	0	0	3,446	0	0
				16,487	11	0
				5,874	5	0
				22,362	0	0
				25,808	0	0
<i>Survey of Yields from rainfall</i>						
To Block grant	10,000	0	0	6,224	8	0
				2,931	15	0
				843	9	0
				10,000	0	0
<i>Burdwan-Hooghly-Heriah Fishing Scheme.</i>						
To Opening balance	748	4	0	6,732	0	0
" Advance from Institute	8,683	15	0	2,089	3	0
	9,412	3	0			
				9,412	3	0
<i>U. P. Wheat and Sugarcane Schemes.</i>						
To Opening balance	2,221	6	3	310	8	0
				124	3	0
				434	11	0
				1,781	10	3
				2,221	6	3
<i>Bihar Crop Survey (1944-45)</i>						
To Block grant	73,801	11	0	6,012	16	6
" Advance from Institute	4,443	12	6	51,637	8	0
	78,305	7	6	20,656	0	0
				78,305	7	6

INDIAN STATISTICAL INSTITUTE

RECEIPTS		PAYMENTS.				
<i>Population Data Comities (Government of India).</i>						
To Block grant	Rs. A. P.	By Amount over spent	Rs. A. P.	By Salary and allowance	Rs. A. P.	
.. .. .	13,750 0 0	" Other expenses	2,249 0 0	" Other expenses	2,724 0 0	
		" Closing balance	689 0 0	" Closing balance	9,505 10 0	
			4,184 0 0		13,750 0 0	
<i>Population Census (Home Department, Govt. of India)</i>						
To Block grant	Rs. A. P.	By Salary and allowance	Rs. A. P.	By Salary and allowance	Rs. A. P.	
.. .. .	50,000 0 0	" Other expenses	24,944 8 0	" Other expenses	24,944 8 0	
" Advance from Institute	1,028 15 0		24,084 7 0		24,084 7 0	
	51,028 15 0				51,028 15 0	
<i>Road Development Engineering (War Transport Department, Govt. of India).</i>						
To Block Grant	Rs. A. P.	By Amount over spent in (1944-45)	Rs. A. P.	By Salary and allowance	Rs. A. P.	
.. .. .	37,000 0 0	" Other expenses	988 0 0	" Other expenses	18,330 9 0	
" Advance from Institute	3,754 8 0			" Other expenses	20,426 15 0	
	40,754 8 0				40,754 8 0	
<i>Scientific and Industrial Research.</i>						
To Block grant	Rs. A. P.	By Salary and allowance	Rs. A. P.	By Salary and allowance	Rs. A. P.	
.. .. .	15,000 0 0	" Other expenses	4,800 0 0	" Other expenses	3,918 0 0	
		" Closing balance	3,918 0 0	" Closing balance	6,382 0 0	
					15,000 0 0	

Examined and Found Correct
 F. C. NASH & Co., Auditors,
 Chartered Accountants,
 Registered Accountants.

d, HASTINGS STREET CALCUTTA,
 The 18th April, 1946.

INDIAN STATISTICAL INSTITUTE

Proceedings of the Council Dated 27th April 1946

A meeting of the Council of the Indian Statistical Institute was held at 5 p.m. on Saturday, the 27th April 1946 in the Statistical Laboratory, Presidency College, Calcutta.

Dr. S. P. Mukherjee, M.A., B.L., M.L.A., D.Litt., Bar-at-Law was in the chair.

Present: Mr. S. N. Ray, C.I.E., I.C.S., Messrs. B. Das Gupta, S. K. Banerjee, Samsrānranath Roy, Rajehandra Bose, Mrs. Chameli Bose, Dr. C. Chandrasekhar, Prof. K. B. Madhava, H. C. Ghose, K. N. Chakravarti, Mr. N. C. Chakravarti, Prof. S. N. Bose (Hony. Secretary).

1. Proceedings of the meetings of the Council dated 8 April, 1946 and 17 April 1946 were read and confirmed.

2. The following persons were elected ordinary members of the Institute.

(1) Anil Kumar Bhattacharyya (Superintending Statistician, Indian Statistical Institute Presidency College, Calcutta.

(2) Pitambar Pant, 11 Hamilton Road, Allahabad.

3. *Annual Report:* The Hony. Secretary placed before the meeting the Draft Annual Report for the year 1945-46.

Resolved that the draft 14th Annual Report be adopted and forwarded to the Annual General Meeting.

4. *Audited Accounts:* The Hony. Secretary placed before the Council the audited report for 1945-46 together with statements relating to projects and other funds.

Resolved that the Audited Accounts and Statements relating to funds be adopted and forwarded to the Annual General Meeting.

Resolved also that the Hony. Secretary be requested to prepare a statement for consideration at the next meeting of the Council showing how the sanctioned overdraft from Banks was exceeded and how the excess of expenditure over the receipts as shown in the audited statements arose.

5. *Budget Estimate for 1946-47:* The Hony. Secretary placed before the Council the draft Budget Estimate for the year 1946-47.

Indian Statistical Institute: Budget Estimate for 1946-47

RECEIPTS		EXPENDITURE	
	Ra.		Ra.
Membership	2,500	Salary including research staff	3,00,000
Training fee, interest & other receipts	6,029	Peons	12,000
<i>(Govt. of India):</i>		Travelling	10,000
General Grant	61,000	Books & Journals	10,000
Dues and allowance including amount		Laboratory Equipments	00
in arrears for 1945-46	10,000	Stationery & Stores purchases	22,000
For Sankhya	2,000	Postage, printing & contingency	15,000
Road Development	73,000	Other expenses (hire charge of	
Population Census	1,00,000	machines etc.	15,000
<i>(Govt. of Bengal):</i>		Rentals	20,000
Crop Survey	8,37,000	Auditors fee	1,800
Agricultural Labour Survey	48,000	Workers Welfare Scheme	1,500
Rural Indebtedness	80,000	Grant for Sankhya	2,000
Rainfall and Yields	10,000	Bengal Crop Survey (Field Branch)	
Statistical Bureau (1915-46)	2,971	& Agri. Labour & Rural Indebtedness	
Contributions	3,834	Enquiry	6,39,000
Contribution in lieu of Professor's service	16,000	Road Development (Field & Direct) ..	45,000
Rentals	16,000	Scientific & Industrial Research	6,282
Temporary advances from Director's		Hire & Maintenance of Hollerith	45,000
Fund.	35,000	Contribution to Statistical Publishing	
		Society	1,500
		Director's Fund	15,000
		Provident Fund (investment)	5,000
		Amount over drawn in 1945-46 a/c to	
		be recouped	66,352
	12,70,034		12,70,034

Resolved that the draft Budget Estimates be circulated to members of the Council and be considered by the Finance Committee before it is placed before the next meeting of the Council.*

Sd/ S. P. Mukherjee
Chairman.

Sd/ S. N. Bose,
Hony. Secretary.

* This budget was subsequently passed by the Council in its meeting dated 15 May, 1946.

Proceedings of the Annual General Meeting of the Indian Statistical Institute dated 27th April 1946

The Annual General Meeting of the Indian Statistical Institute was held at 5-30 p.m. on Saturday, the 27th April 1946, in the Statistical Laboratory, Presidency College, Calcutta.

Dr. S. P. Mookerjee, M.A., B.L., D.Litt., Bar-at-Law (Vice-President) was in the Chair.

The following members were present :

Mr. S. N. Ray, C.I.E., I.C.S., Dr. C. Chandrasekhar, Prof. K. B. Madhava, Mr. R. C. Bose, Prof. H. C. Ghosh, Mrs. Chameli Bose, Messrs. S. N. Roy, C. K. V. Rao, C. R. Rao, N. Chakravarti, S. Sen Gupta, B. Ganguly, K. C. Cheryan, K. C. Banerjee, Nanigopal Banerjee, K. C. Basak, N. T. Mathew, B. N. Ghosh, P. Pant, P. R. Sen, N. K. Chakravarti, M. N. Ghosh, H. K. Nandi, M. Maitra, B. Das Gupta, N. C. Chakaravari P. K. Bose, T. Choudhury, P. K. Banerjee, C. Roy, S. K. Banerjee, Prof. K. N. Chakravarti and Prof. S. N. Bose (*Hon. Secretary*).

1. *Annual Report & Audited Accounts* : The Hon. Secretary placed before the meeting the Annual Report and Audited Accounts for 1945-46 as adopted by the Council and mentioned that the accounts had been audited by Messrs. P. C. Nandi & Co., Chartered Accountants.

Proposed by Prof. S. N. Bose.

Seconded by Mr. B. Das Gupta.

The Chairman having invited discussions on this, Mr. P. K. Bose spoke suggesting (1) that the Annual Report should be circulated to the members of the Institute at least one week before the actual date of the meeting so as to enable them to form their opinion on different matters stated therein. He also suggested (2) now that the war is over, steps should be taken by the Institute authorities to bring back the Institute library from Giridih where it was transferred during 1942 as a measure of evacuation. At any rate, the more important periodicals and books should at once be brought back to the Statistical Laboratory, Calcutta, (3) The general Training Section and classes for industrial statistics Section should be separated. (4) Steps should be taken to have a journal like *Sankhyā* owned and published by the Institute.

Mr. H. K. Nandi regretted that *Sankhyā* was of late rather irregular in publication. He suggested that steps should be taken so that the issues came out regularly in future.

Mr. N. K. Chakravarti wanted to know if the Journal Committee was functioning and if so, how often it had met during the year under review. The Hon. Secretary wanted notice, but Prof. K. B. Madhava replied that it had not in fact met last year.

The Hon. Secretary accepted in principle the suggestions (1), (2) and (4) put forward by Mr. P. K. Bose. As regards (3) he stated that there were practical difficulties which, however, might be looked into. About Mr. Nandi's remarks regarding the irregularity in the publication of *Sankhyā*, the Hon. Secretary observed that the question was beset with many practical difficulties though it was no doubt desirable to bring out the journal more regularly.

Mr. B. N. Ghosh pointed out that under Rule 12 publication of reports or opinions on behalf of the Institute required the approval of the Technical Committee which was defunct. He wanted to know if the many reports published on behalf of the Institute were authorized under the constitution. The Hon. Secretary remarked that in forming the Technical Committee the idea was to draw in men who were not Statisticians themselves but were eminent in sciences where statistics would find useful application; this was felt to be essential to the growth of the subject in India, but such a Committee obviously could not nor was perhaps intended to function as a consultative body in the day-to-day analysis and solution of statistical problems. Moreover, it was up to the Committee itself, which under the constitution was a self-perpetuating Committee with very wide powers, to take or refrain from taking any initiative in the matter. He felt, however, that the provision for this Committee as laid down in the constitution required a revision now. Mr. S. N. Ray, I.C.S., said that under the Rules it was up to the Council itself to consult the Committee at certain occasions, which perhaps it had never done.

ANNUAL REPORT FOR 1945-46

The Report was then unanimously adopted by the meeting.

2. The Hon. secretary placed before the meeting for information the Report of the Committee on the future development of the Indian Statistical Institute.

3. *Recommendation from the Council* : The Hon. Secretary placed before the meeting the following resolutions passed at the meeting of the Council held on 7th March 1946 :

"Resolved that in view of the fact that the re-organization of the Institute would have to be taken up at an early date it was considered inadvisable to hold fresh elections under the existing constitution and the interests of the Institute would be best served by the present office-bearers and Council continuing to carry on work until the re-organization is completed".

"Resolved that the above recommendation of the Council to allow the present office-bearers and Council to continue to function until the re-organization is complete be placed before the next Annual General Meeting".

In placing these before the house for ratification the Hon. Secretary observed that the Council had taken the unprecedented step of seeking to extend its own life this year under extraordinary circumstances. A Sub-committee appointed by the Council was already negotiating with the Government of India in connexion with the future re-organization and development of the Institute, and in the interests of continuity and speedy disposal of business it was necessary that the present Council and sub-committee should continue to function until the re-organization was completed. It was now open to the house either to accept the recommendation made by the Council under Rule 7 or reject it and elect a Council and Office-bearers on the spot under Rule 2(a) of the constitution.

Mr. H. K. Nandi held that, while in making the recommendation the Council had undoubtedly been actuated by the best of motives and the weightiest of reasons, the resolutions as they stood before the house were unfortunately ultra vires, being in violation of Rules 5, 14 and 15 of the constitution. He suggested that the resolutions be referred back to the Council for reconsideration and regularization.

Mr. S. N. Ray, I.C.S., explained the circumstances under which the Council had been constrained to take the particular step.

The Chairman gave a ruling for election on the spot and suggested that in view of the weighty reasons set forth by the Hon. Secretary the house would be well advised to re-elect the present Council and Office-bearers, a course which would also help the house out of the constitutional difficulty. Finally, on his recommendation, the following resolution was moved by Mr. Nihar Chandra Chakravarti :

"This General Meeting of the Indian Statistical Institute considered the resolutions of the Council placed before this meeting and resolved that the present Council and the Office-bearers be re-elected for the year 1946-47."

This was seconded by Mr. N. T. Mathew and was carried unanimously.

4. *Appointment of Auditors* : Resolved that Messrs. P. C. Nandi & Co., Chartered Accountants, be appointed Auditors for the year 1946-47 on an honorarium of Rs. 1,800/-.

Proposed by Prof. H. C. Ghosh,

Seconded by Prof. K. B. Madhava

5. *Notified resolutions* : Mr. P. K. Bose moved :

"In view of a scheme for re-organization of the Indian Statistical Institute which is already under the consideration of the sub-committee of the Council of the Institute, it is resolved that a Committee be appointed including nine members elected from the General body of members of the Institute to consider the re-organization in all its aspects—constitutional, administrative and technical—and to report thereon to the general body of the members of the Institute".

It was seconded by Mr. M. N. Ghosh.

The mover Mr. P. K. Bose said he would not make any speech in support of his resolution.

The Hon. Secretary pointed out that it would be highly undesirable to have two parallel committees to consider more or less the same question, and requested the mover to withdraw it. Mr. H. K. Nandi proposed an amendment suggesting that the Council be requested to advise the existing Re-organization Committee to consider the re-organization in all its aspects—constitutional, administrative and technical. Mr. S. N. Ray, I.C.S. having assured the movers that the question of re-organization in all its different aspects would be gone into by the existing sub-committee and the chair having agreed, both the resolution and the amendment were withdrawn.

INDIAN STATISTICAL INSTITUTE

Mr. Birendra Nath Ghosh moved the following resolution :

"This Annual General Meeting of the Indian Statistical Institute ~~second~~ with regret that although Subhendu Memorial Fund was created some eight years ago with a view to perpetuate the memory of one of outstanding merit and abilities who was mainly responsible for the reputation of the Institute in its childhood and also in later years, yet no step has been taken upto now to utilize the fund in the realization of its noble purpose. Indeed the name of the great scholar is gradually passing into oblivion. To use the fund only for giving loans to workers of the Institute at a certain percentage of interest may serve any other purpose but that of a memorial to the great soul. So it is resolved that immediate attention be given by the Council to think out and to give effect to ways and means like awarding a prize or medal at regular intervals for commemorating the name of Subhendu Sekhar Bose within the next three months".

The resolution was seconded by Mr. Harikinkar Nandi.

In moving the resolution Mr. B. N. Ghosh touched briefly upon the qualities of head and heart the late Subhendu Sekhar Bose, and the part he had played in the growth of the subject in India, and pointed out that his memorial fund was not being used to proper ends.

The Hon. Secretary replied that the fund in question was made up of contributions received from friends and admirers of late Subhendu Sekhar Bose as a result of an appeal issued by Prof. P. C. Mahalanobis in his personal capacity. The fund was being held in deposit only by the Institute which had no concern, whatsoever, with the administration of the fund, the responsibility for which lay with the committee formed specifically for that purpose. The Chair observed that since the Council had appointed a Committee for that specific purpose, the ultimate responsibility must rest with the Council. He assured the mover that the Council would direct the Committee to devise ways and means for the perpetuation of the memory of the great scholar which was already overdue. The resolution was then withdrawn by the mover.

6. A vote of thanks to the Chair was proposed by Prof. K. B. Madhava, which was carried unanimously.