

## INDIAN STATISTICAL INSTITUTE

### Eleventh Annual Report: 1942-43

The present report gives a brief review of the Institute's activities in the eleventh year of its existence. In spite of the general difficulties under war conditions which took a rather pronounced form during the year under review, work was continued on more or less normal lines.

#### THE SIXTH SESSION OF THE INDIAN STATISTICAL CONFERENCE, CALCUTTA 1943.

The Conference was opened on 4th January 1943 at 4 P.M. in the Darbhanga Hall of the Calcutta University by Dr. B. C. Roy, Vice-Chancellor of the University, who read out a message received from the Patron of the Conference, His Excellency the Governor of Bengal. The Governor in his message stressed the importance of statistics in planning which he said is the passport to progress and wished the delegates creative success in the impending debates and a bright future for statistical science itself. Dr. Roy as Chairman of the Reception Committee welcoming the delegates referred to the fact that the Calcutta University was the first in India to have recognised the need for a separate post-graduate department in statistics which had been established in July, 1941, and as Vice-Chancellor of the University he was happy to note the very close association which had been established between the University and the Statistical Laboratory. The Hon'ble Mr. N. R. Sarkar, Member-in-charge of the Departments of Food & Commerce, Government of India, in his Presidential address urged a better appreciation of the need for accurate statistics in the country and he referred to his own difficulties as Food Minister in striking a balance among conflicting interests arising out of urgent demand for goods in short supply and in retaining equitable distribution of the available supply on the basis of insufficient statistical material. After the presidential address Prof. P. C. Mahalanobis, Hon'y. Secretary, presented an annual review of the activities of the Indian Statistical Institute.

The first scientific meeting of the Sixth Conference was held on January 4th, 1943, jointly with the section of Mathematics and Statistics of the Indian Science Congress with Prof. F. W. Levi in the chair. Prof. B. K. Sarkar opened the discussion on Teaching of Statistics and Mathematics in which Dr. H. Sinha, Mr. R. C. Bose, Dr. Chandras Sekar, Mr. Y. S. Tu, Prof. F. W. Levi and Prof. P. C. Mahalanobis took part.

On the 5th January, 1943, there was a morning session on theoretical statistics presided over by Mr. R. C. Bose. Mr. K. R. Nair opened a discussion on Design of Experiments in which Dr. Chandras Sekar, Mr. C. R. Rao and Mr. R. C. Bose took part. In the evening there was a session of applied statistics presided over by Prof. B. K. Sarkar. Prof. Sarkar opening the discussion spoke at length on the need of applied statistics in any scheme for planning and re-construction. A prolonged discussion followed in which Prof. Mahalanobis, Mr. A. R. Sinha, Mr. J. N. Dutt, Mr. J. Guba Thakurtha, Mr. M. P. Srivastava, and Dr. H. Sinha participated.

#### THEORETICAL RESEARCHES.

Theoretical researches were continued on three main topics: (1) measures of statistical divergences with appropriate exact distributions; (2) design and analysis of experiments; (3) design of large-scale sample surveys together with model sampling experiments on non-random falls. The third subject received a good deal of attention especially in connexion with the development of an efficient technique for crop estimating surveys.

*D-Statistic*: Work was continued under the guidance of S. N. Roy who worked out the individual sampling distributions, on the null and non-null hypotheses, of  $p$ -statistics (introduced by him for purposes of discrimination in respect of variances and co-variances between two multi-variate normal populations, or in respect of mean values between  $k$  multivariate normal populations supposed to have the same set of variances and co-variances), the joint distribution of these  $p$ -statistics having been already worked out and published by him in the previous year.

Work is also proceeding (S. N. Roy and P. K. Bose) on the construction of suitable tables for the relevant incomplete probability integrals under the guidance of P. C. Mahalanobis. It may be mentioned here that Mahalanobis' Generalized Distance has found suitable application in a rice experiment at Bankura.

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*Problems of Distribution :* Several more problems on the multi-variate distributions were worked out by S. N. Roy and P. K. Bose. The distribution of the ratio of the two variates of a bi-variate normal population has been worked out. Tables have also been constructed for confluent hypergeometric series for various values of the argument, under the guidance of P. C. Mahalanobis.

*Design of Experiments :* Further progress has been achieved in the mathematical theory of the design and analysis of experiments by R. C. Bose, K. R. Nair and C. R. Rao. The conditions for the resolvability of balanced incomplete block designs were discovered; certain inequality relationships among combinatorial parameters of incomplete block designs were established. A new class of incomplete block designs for inter and intra group comparisons for several groups of varieties of a crop was found out. Considerable progress was made in the technique of extracting inter-block information for partially balanced incomplete block designs. The measure of improvement in the precision of biological experiments which can be attained by adjustments for concomitant characters has also been calculated.

*Design of Sample Surveys :* Three types of problems emerged directly or indirectly out of certain large scale sample surveys entrusted to the Indian Statistical Institute and conducted by it during the period of 1937-41. The problems relate to the formulation of a proper sampling design for estimating with maximum precision for a given cost, (i) the proportion of land under a particular crop or crops, (ii) the yield per unit area of a particular crop and (iii) the geographical distribution of the crop over a particular area in respect of both proportion of land under the crop and yield per unit area. In the technical language used here the problems are those of (i) area survey, (ii) yield survey and (iii) mapping survey. The experience of the last few years has enabled P. C. Mahalanobis to reach a fairly comprehensive solution of (i) the area problem, both in the abstract as well as in the concrete, and a partial solution of (ii) yield survey, mostly in the abstract. With regard to (iii) mapping survey, work is in progress.

A list of papers published by the workers of the Institute and reports submitted during the year under review is shown in Appendix I below.

### SPECIAL ENQUIRIES AND PROJECTS.

*Jute area survey :* 1941 was the first year when a Jute Census was taken on an all-provincial scale with completely satisfactory results, the margin of error being less than three per cent. The Indian Central Jute Committee recommended continuance of the sample survey by the Government of Bengal, which, however, took a good deal of time in reaching a decision. The preparatory work for a provincial survey usually takes at least four months but Government instructions to proceed with the survey which had to start early in May came so late as the 29th of March 1942. By the time most of the trained staff had been disbanded so that the field work in 1942 had to be carried out by investigators with no previous training or experience, with unhappy results. The amount sanctioned for the area survey was Rs. 1,00,000 and for crop-cutting experiments Rs. 18,000, the total falling short by Rs. 8,000 of the estimate submitted by the Honorary Secretary, and the programme of the work had to be modified accordingly. A grant of Rs. 22,000 was sanctioned by the Government of Bengal in August 1942 for tabulating the area figures for ass paddy and sugarcane, data on which we had already collected in the course of the B-41 survey of the jute crop. Owing to the delay in Government deciding to continue the sample survey in 1942 we had to use the design employed in 1941 having no time for working out a new one in the light of our experience of 1941. This meant a break in the continuous advancement of technique from year to year which had been effected since 1937.

A preliminary estimate of the area under jute was submitted to Government on the 9th September 1942, just about a week after receiving the last set of field records. After detailed scrutiny of the records it was, however, discovered that much of the primary material was suspicious. As a matter of fact, a good portion of the primary material collected in 1942 had to be thrown away so to say, because they were found unreliable in so far as the interpenetrating sub-samples were not found to tally. This merely shows that it is not possible to secure reliable material by employing untrained and unselected primary investigators. The Honorary Secretary has indeed stressed in his report the need for a nuclear staff of trained workers for the whole year who would be employed for a part of the time in field survey and for the remaining period in statistical work. However, by throwing away unreliable data and by making such necessary adjustments as would be statistically permissible we arrived at a revised estimate of 29,93,529 acres under jute in the province in 1942 with an estimated margin of error of the order of one per cent at odds of 20 to 1.

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This year Government instructions have been received to proceed with a combined *jute-aree* area and yield survey at a cost of Rs. 1,80,000; and preparatory work is proceeding smoothly.

*Are survey* : Some of the primary material of the aree survey had to be rejected as in the case of jute but after proper adjustment it was found that our sample estimate was on the whole about 20 per cent in excess of the official forecast, and the suggestion was put forward by the Honorary Secretary that the official forecast for the province as a whole should be corrected from 62.5 lakhs of acres to 75 lakhs of acres under aree paddy.

*Jute crop-cutting* : Experimental work was continued in 1943 on jute crop-cutting and considerable advance was made on the statistical side, but the human factor in organisation needs immediate attention. The mean yield figures indeed were not found to be fully reliable in the light of the various cross-checks (including half-sampling) we employed. No real progress can be made until we succeed in organising a trained staff, a point strongly emphasised by Prof. R. A. Fisher in the memorandum which he submitted to H. E. the Viceroy as early as in 1938.

*Are crop-cutting* : Yield figures for aree paddy were collected for 7 districts and on the basis of these it has been found that the official normal yield figure for these districts would require a revision downwards of 18 per cent in 1942.

*Sugarcane area survey* : At the request of Government of Bengal we tabulated the aree figures for sugarcane. Our estimate of the total area under sugarcane in Bengal in 1942 was 202,000 acres against an official forecast of 303,000 acres.

*Wheat and Sugarcane: United Provinces 1942-43* : This was the third year of this scheme. The field work of two seasons has been completed and the statistical analysis of the material collected is proceeding. The design for what ought to have been the final year's work was prepared embodying improvements based on the first two years' work. The field work was, however, postponed at the last moment, as the Government of the United Provinces was unable to spare the necessary staff because of urgent war-work.

*Aree Paddy: Barbans-Hooghly-Hooverak Irrigation area* : A preliminary report on the work during 1938-39, 1939-40 and 1940-41 was submitted to the Government of Bengal in September 1942. The field work for the season 1942-43 was carried out in accordance with the design prepared in the Statistical Laboratory. Analysis of the material not included in the preliminary report (1938-41) is proceeding. It may be mentioned here that this is partly an yield and partly a mapping survey.

*Cinchona Survey 1941-42* : There were two schemes, a report on one of which, as mentioned in last year's Annual Report, had been submitted in 1941-42. A report was prepared during the year on the other scheme which related to six different age-groups of cinchona plants.

*U. P. Anthropometry 1942-43* : This is a project relating to the analysis of certain anthropometric data collected by Dr. D. N. Majumdar of Lucknow University in connexion with 1941 Census, and is being financed jointly by the Government of India (Home Department) and the Indian Statistical Institute. Work on the scheme is progressing satisfactorily; and mean values, standard deviations, and coefficients of variation for 18 characters for 23 caste-groups have already been sent to Dr. Majumdar.

*Bengal Labour Enquiry 1940-42* : The Bengal Labour Enquiry entrusted to the Institute as mentioned in last year's Annual Report had to be discontinued for lack of funds with effect from 5th May, 1942. Altogether since November 1940, a total of 3625 labour family budgets had been collected. A Draft Report on 573 budgets collected at Jaguaidal in the first instance had been submitted in November 1941 but no instructions had been received in this regard since then. A note on the precision of the survey was submitted in July 1942 in respect of the first sample at Jaguaidal and the Honorary Secretary is glad to report that the primary object of the Institute in taking up the enquiry, viz. devising a suitable statistical technique for such socio-economic surveys has been achieved to a very large extent.

*Nagpur Labour Enquiry* : The work of collecting 907 family budgets in Nagpur under the technical guidance of the Honorary Secretary was completed by the Labour Office of the Government of Central Provinces; and Mr. M. P. Shrivastava of the Labour Office, Nagpur came to Calcutta some time ago with the primary material. The analysis of the material has been completed and a report is to be submitted shortly to the C. P. Government.

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*Regional Survey of Birth Rates of Superstitions 1940-41 :* As reported last year, the data in this scheme are being analysed with the help of a grant from the Imperial Council of Agricultural Research. The analysis is nearing completion, the grant having been increased in response to a request by the Honorary Secretary, owing to the rise in costs under war conditions.

*Astrological Research :* In 1941 a Sample Survey had shown that roughly two-thirds of middle class families in Calcutta possessed horoscopes and that about one-third of the persons interviewed had faith in astrological forecasts. In view of such wide-spread belief in astrology, in May 1942 a series of studies were taken up to find out how astrological forecasts fared in infant mortality cases. Dates and times of births etc. of babies obtained from a Maternity Hospital in Calcutta were given to two astrologers who were asked to find out how many and which of the babies would die within a fortnight. Data regarding deaths were kept absolutely secret. The predictions of the astrologers were taken in respect of 300 child-birth cases and the material is being statistically analysed.

### STATISTICAL ENQUIRIES.

As usual a large number of enquiries from all parts of India was attended to during the year under review. The distribution by subjects and by administration regions of the more important enquiries is given below :—

*By Subjects :* Agriculture 35; Anthropology 3; Economic and Business Statistics 2; Industry 22; Theoretical Statistics 16; Medical 13; Irrigation 2; Labour 8; Sample Survey 8; Veterinary 4; Miscellaneous 8; Total 119.

*By Regions :* Assam 5; Bengal 48; Bihar 8; Bombay 12; C. P. 6; Central Government 7; Madras 2; Orissa 5; Punjab 3; Sind 5; U. P. 7; Native States 11; Total 119.

### STATISTICAL LIBRARY.

As already reported last year the bulk of the Library has been evacuated to Giridih for the duration of the present emergency. The library is functioning at Giridih normally, though urgent local business keeping most of the workers at Calcutta and Baranagore and the University Department of Statistics functioning now at Calcutta involved frequent requisitioning here of books from Giridih. The general policy however continues to be to keep as few books in Calcutta and Baranagore as is consistent with the urgent needs of our research and other workers.

The number of books purchased during the year was 145 and the number received for review in *Sankhya* was 20. In spite of the war we are receiving now 173 annuals and 250 periodicals appearing more than once a year. The number of volumes issued on loan or for reference during the year was 721 (against 7039 in 1941-42) owing mainly to the bulk of the Library having been shifted to Giridih.

The Library is keeping in custody a loan collection of 3000 books valued at Rs. 20,000 belonging to the Honorary Secretary and of 100 volumes valued at Rs. 1,600 belonging to Prof. K. B. Madhava. The Council in its meeting of the 9th October 1942 suggested that these collections should be made over to the Institute as gifts on condition that special funds of Rs. 20,000 and Rs. 1,500 respectively would be built up for disbursement by the Council in consultation with Professors Mahalanobis and Madhava respectively, who would also retain the right to borrow and use such or all the books belonging to their collections.

### TRAINING WORK AND EXAMINATIONS.

Owing to Calcutta being a danger area there were many officers who gave up the idea of coming here on deputation: 3 however joined at Giridih where special efforts were made to open up training facilities. Mr. K. R. Nair continued to be in charge of this section and altogether 6 officers from Assam, Bengal, Bihar, Madras and Sind came on deputation to the Institute for statistical training, and in addition there were 7 officers from Bengal and U. P. who came for scientific consultations and discussions (Appendix 2). As regards the standard training course run by the Institute, though we had to restrict admissions due to the present emergency, there were 4 advanced students in addition to 3 apprentices for professional training (Appendix 3).

*Institute Examinations in Statistics :* In spite of the difficulties under war conditions arrangements were made to hold the Computer's Certificate examinations simultaneously in Calcutta and Giridih starting from 7th October 1942. At the last moment the candidate wanted a refund of their fee on the plea of

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various difficulties which could not be entertained. Earlier however, Mr. G. O. Goela of Delhi had come and sat for a special examination which he passed successfully. The Board of Examiners for the year consisted of Professor K. B. Mahdava, Messrs. R. C. Bose, S. N. Roy and K. R. Nair and Prof. P. C. Mahalanobis. It is proposed to hold the Statistician's Diploma and Computer's Certificate examinations during the monsoon term.

### INSTITUTE STAFF.

The work of the Laboratory was carried on as usual on a unitary basis, though grants were received from different sources for various projects as in previous years. As reported last year in response to recommendations made by the Honorary Secretary, two scales of pay Rs. 33-4-75 and Rs. 30-3-100 had been introduced by the Council for the lower paid workers of the Laboratory. In September, 1942, however, it appeared that there was a possibility of the Institute's receipts dropping appreciably in case the jute survey and certain other schemes were not renewed. In this situation the Council decided to serve two months' notice to all workers. This development brought to light the inherent instability of the present financial position of the Institute. The Honorary Secretary had made repeated representations at Delhi and elsewhere for some form of stabilisation in the interests as much of the scientific value of the Institute's work as those of the workers whose position was extremely insecure. The chronic result of this insecurity is that the best workers one after another habitually go away to more secure places elsewhere.

Fortunately, however, the crisis was tied over without any drastic retrenchment owing to the Government of India continuing the special non-recurring grant of Rs. 20,000 which they had paid in 1941-42. Also early in 1942 it was informally understood that the Government of Bengal would continue the Jute and Asa Survey this year, and it was also made known that the I. C. A. R. scheme which would have terminated by 31st March 1942 according to previous advices would be continued for another six months. Every possible effort is being made by the Honorary Secretary to achieve a sort of permanent status for the Institute, though it is feared that for a considerable time yet the present insecurity would have to be endured.

Samar-wala Nath Roy was appointed whole-time lecturer on a temporary basis in the Calcutta University, Department of Statistics; and Jitendra Mohan Sengupta and Puranendu Kumar Bose were appointed part-time Demonstrators in the University Department. P. V. Krishna-murthy, B.A. (Andhra), B. Hanumanthayya, M.Sc. (Cal), K. K. Mathon M.A. (Madras), M. M. Mukherjee M.A. (Cal), S. Banerjee M.A. (Cal), and M. N. Ghosh M.A. (Cal), joined the Institute during the year under review as technical operatives. Also of the 9 apprentices and training students shown in Appendix 4, three, B. Sircar, V. Rama Chandra Rao and N. H. Rama Subramannan were appointed technical apprentices during the year.

*Fellowships and Scholarships:* Applications for fellowships and scholarships varying in value from Rs. 50 to Rs. 100 were asked for by advertisement in the press; and in response a large volume of applications came in. In future, it is intended to award the research scholarships and fellowships to persons who not only possess a good knowledge but have also shown some aptitude for research work on either the theoretical or the applied side of the subject. (This because better facilities are now available for statistical training in Calcutta and elsewhere; and it is no longer necessary to give stipends to students of other subjects to induce them to take up statistical studies). In accordance with this policy a large number of technical apprentices have been appointed; and it is intended to watch how they shape in both advanced studies and project work. Awards of Scholarships and Fellowships will be made duly by the Council after the Honorary Secretary has submitted his report.

During the year under review a Chinese student, Mr. Y. S. Tu, M.A. (Econ.) of the National Tsing Hua University of China came down to India as a Research Fellow of the Institute in accordance with an arrangement through Dr. P. I. Hsu of the Peking University now situated in Kunming. Mr. Tu is working on a comparative study of agricultural economics and statistics in China and India.

*President Fund:* A President Fund was put into operation in January 1941 with a basic contribution of one anna in the rupee from the workers and an equal contribution from the employees. In view of the uncertainty of the financial position steps are being taken, however, to restrict admission to the scheme to what may be called the nucleus staff.

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### LOCAL BRANCHES OF THE INSTITUTE.

In some of the branches of the Institute work was carried on as in previous years; in some, however, work unavoidably suffered owing to the repercussions of the war.

#### BOHRAV BRANCH

The Annual General Meeting of the Branch was held on the 22nd July, 1942 for the election of the office-bearers and Committee members. Sir H. M. Mehta, Kt., K.B.E. continued to be the President of the Branch. It was difficult to carry on the normal activities owing to the unsettled state in the city and the preoccupation of the members with other pressing duties.

#### DELHI BRANCH

In pursuance of the resolution adopted at the fifth session of the Indian Statistical Conference, held at Baroda in January 1942, the Branch was organised and started from 1st of May, 1942. Mr. N. H. Barkar (then Member of the Viceroy's Executive Council) kindly consented to act as the President, Dr. P. V. Borkhatre, Statistician of the Imperial Council of Agricultural Research as the Treasurer, and Mr. G. R. Seth of Hindu College, Delhi as the Secretary. Two business meetings and three ordinary meetings were held at which the following lectures were delivered: (1) Survey of Labour Statistics in India today: by Mr. S. Subramanian, Statistician to the Economic Adviser to the Government of India; (2) War Finance and Indian Economy: by Dr. V. K. R. V. Rao of the University of Delhi; and (3) On Estimation of Crop Yields: by Dr. V. G. Panse, Statistician, Institute of Plant Industry, Indore.

#### MADRAS BRANCH

As most of the Government Departments were removed from Madras city on account of the war situation it was not possible to carry on the usual activities of the Branch. As usual, work was carried on in active collaboration with the Economic Department of the University of Madras. Dr. N. Sundara Rama Sastry continued to be the Secretary of the Branch. Prof. P. J. Thomas, the President of the Branch has been appointed Director of Research, New India Planning Group, Government of India.

#### MYSORE BRANCH

The Branch worked in collaboration with the departments of Statistics, Economics and Psychology of the University of Mysore. Work was greatly disturbed by the abnormal conditions in the country. Two meetings were held in which the current literature from statistical periodicals was discussed. The computational and reporting work was carried on without much interruption. Prof. Madhava who was analysing fertility statistics of marriages for the Mysore Census published his findings in the Report of the Mysore Census, 1941.

#### POONA BRANCH

A large number of workers in the local educational institutions were closely associated with the work of the Branch; and a number of statistical problems were taken up for study by informal references and formal discussions. Professors Gadgil and Karve organised a survey of the economic resources of Sangli, an Indian State, by the sample and group enquiry method; the cost for conducting the survey was small and the results were promising. An interesting paper on some suggested modifications in the Proportional Representative Scheme was read by Mr. S. W. Ranade of Nagpur.

#### LUCKNOW BRANCH

A number of interesting papers were read during the last session. Dr. Radhakant Mukherjee read a paper on the criteria for fixing the minimum living wages for industrial operatives in India; he advocated a correlation of wages to the movements of cost of living index on the basis of minimum requirements. Mr. Shitla Prasad Saketou read a paper on the limitations of the index numbers for measuring the movement in the cost of living. Mr. Raj Narain read a paper on efficiency tests and defects in the present system of examinations. On each occasion, the reading of the papers was followed by lively discussions.

#### NANHYA : THE INDIAN JOURNAL OF STATISTICS.

Two issues of the Journal were published during the year. The Monotype machine the bill for which had been fully paid as reported last year has been found to be of considerable help in the matter of typographical arrangements, though the acute shortage of paper which we are experiencing may compel us to discontinue publishing the Journal if the war continues too long. We have however enough paper for another four or five issues of the Journal, thanks to our having built up a stock when there was still an opportunity

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for it. The amount of Rs. 5209-4-0 which was still outstanding at the end of the year 1941-42 out of the original advance of Rs. 9,000 made by the Honorary Secretary in his personal capacity on the Monotype Machine account was repaid during the year under review.

### EVACUATION ARRANGEMENTS.

As already reported last year, the Institute is having three offices during the present emergency, at Baranagore, Calcutta and Giridih. The general policy is to keep as little as possible of our books and equipments in the danger area. It is presumed that Giridih is the safest of all the three places, and Calcutta the most dangerous, Baranagore coming in between. Owing to the exigencies of work, records, books, and equipments have indeed to be moved about between the three offices involving considerable problems of co-ordination which, however, are being attended to in a more or less satisfactory manner.

Construction work has been almost completed at Baranagore and is nearing completion at Giridih. Considerable additional space has been obtained by the Institute without any payment of rent for office work, for safe-keeping of Institute records, books, and equipments as well as for housing Institute workers both at Baranagore and Giridih. The arrangements at Giridih were personally looked into by the President, the Hon'ble Mr. N. R. Sarkar in December 1942.

The Council decided in its meeting of the 9th March, 1942 to have a separate account for construction, repair and maintenance in respect of the two houses Amrapali (Baranagore) and Mahua (Giridih), placed at the disposal of the Institute for the present emergency by Prof. P. C. Mahalanobis and Mrs. Mahalanobis, respectively. The owners of Amrapali and Mahua would also be entitled to retain all fixtures at the end of the emergency on payment of such amount as the Council may then decide not exceeding the balance of expenditure incurred out of the General fund for construction, maintenance and repair.

*Contributions in lieu of the services of the Honorary Secretary:* A sum of Rs. 2,500 sanctioned as the fee of the Statistical Adviser for crop-cutting work on jute (Indian Central Jute Committee letter No. 281/42 dated 24-2-42) was merged with the block grant to the Institute at the desire of the Hon. Secretary. Another sum of Rs. 9,000 sanctioned as fee for the jute scheme (Government of Bengal letter No. 121-J, dated 26-2-43) was handed over to the Institute as desired by the Hon. Secretary. A grant of Rs. 2,500 was also directly paid to the Institute in lieu of the services of the Hon. Secretary in connection with crop-cutting work in the Burdwan-Bogghly-Howrah Irrigation area (Government of Bengal Memo. No. 272-1, dated 16-2-43).

### MISCELLANEOUS.

*Calcutta University Department of Statistics:* The Calcutta University Department of Statistics, which had been opened in July, 1941 as reported last year with the Honorary Secretary as its Honorary Head, has been functioning smoothly. In November, 1942, a new batch of students joined the fifth year classes, so that from that date there were both fifth and sixth year classes as in other established departments. The Department is still located in the Statistical Laboratory and there has been no interruption in the close association established initially between the two organisations. Special classes were held in the summer of 1942-43 at Giridih for the benefit of the students, but the Department has since come back to Calcutta and its work is going on satisfactorily.

We are glad to note that a knighthood has been conferred on Dr. T. E. Gregory, who has for several years been a Vice-President of this Institute.

*Calculating Machines:* Owing to import restrictions the supply of calculating machines from abroad has practically ceased. The Hon. Secretary, therefore, submitted a tentative scheme to the Government of Bengal for manufacturing such instruments in India and asked for permission to act as honorary technical adviser to a commercial concern which might be started for the purpose. The Secretary, Education Department, informed him that the Government of Bengal was unable to do this as it would involve a reference to the Secretary of State for India (the Hon. Secretary being a permanent member of the Indian Educational Service) and advised him to take up the work on a non-profit-making basis. Serious efforts are being made in this regard.





APPENDIX I. LIST OF PAPERS PUBLISHED AND  
REPORTS SUBMITTED IN 1942-43

1. BHATTACHARYYA, A. On Discrimination and Divergence. (*Proc. Ind. Sc. Congress*, 1942).
2. ——— A Note on RANASURTI's Problem of Maximal Sets. (*Sankhya*, 6(2), 1942).
3. BOSE, CHAMELI. The Variance of the Forecasted Mean Value Subjected to Two-way Fluctuations. (*Science & Culture*, 7(10), 1942).
4. BOSE, PYRMEYDI. On the Exact Distribution of the Ratio of Two Means belonging to Samples drawn from a given Correlated Bivariate Normal Population. (*Bull. Cal. Math. Soc.* 34(3), 1942).
5. BOSE, R. C. An Affine Analogue of Singer's Theorem. (*Jour. Ind. Math. Soc.* 6(1), 1942).
6. ——— On Some new Series of Balanced Incomplete Block Designs. (*Bull. Cal. Math. Soc.* 34(1), 1942).
7. ——— A Note on Two Series of Balanced Incomplete Block Designs. (*Bull. Cal. Math. Soc.* 34(3) 1942).
8. ——— A Note on Two Combinatorial Problems having Applications in the Theory of Design of Experiments. (*Science & Culture*, 8(4), 1942).
9. ——— A Note on the Resolvability of Balanced Incomplete Block Designs. (*Sankhya*, 6(2), 1942).
10. GHOSH, BIRENDRANATH. On the Distribution of Random Distances in a Rectangle. (*Science and Culture*, 8(7), 1942).
11. MAHALANOBIS, P. C. Sample Surveys. (Presidential Address, Section of Mathematics & Statistics. (*Indian Science Congress*, 1942).
12. ——— Statistical Definition of Standard Yield of Crops. (*Sankhya*, 6(1), 1942).
13. ——— Sample Survey of Public Opinion. (*Proc. Ind. Sc. Congress*, 1942).
14. ——— Report on the Precision of Family Budget Enquiry at Jagaddal, August 1942. (*Bengal Board of Economic Enquiry*).
15. ——— Preliminary Report on Burhwan-Hooghly-Hooghly Crop-cutting Survey. (*Irrigation Department, Government of Bengal*).
16. ——— Note on the Life of a Rupee Note. (*Reserve Bank of India*).
17. ——— On Large Scale Sample Surveys. (*Ind. Sc. Congress*, 1942).
18. ——— Preliminary Report on the Sample Census of the Area under Jute in Bengal, 1942. (*Government of Bengal*).
19. ——— Preliminary Report on the Sample Census of the Area under Aus Paddy in Bengal, 1942. (*Government of Bengal*).
20. ——— Preliminary Report on Crop-cutting Experiments on Jute, 1942. (*Government of Bengal*).
21. ——— Preliminary Report on Crop-cutting Experiments on Aus Paddy, 1942. (*Government of Bengal*).
22. NAIK, K. R. Efficiency of the Adjustment for Concomitant Characters in Biological Experiments. (*Sankhya*, 6(2), 1942).
23. NAIK, K. R. and RAO, C. R. A Note on Partially Balanced Incomplete Block Designs. (*Science and Culture*, 7(11), 1942).
24. ——— Incomplete Block Design for Experiments involving several groups of varieties. (*Science & Culture*, 7(12), 1942).
25. NAIK, K. R. & SRIVASTAVA, M. P. On a Simple Method of Curve Fitting. (*Sankhya*, 6(2), 1942).
26. RAO, C. R. On the Sum of 'd' observations from different Gamma-type Populations. (*Science & Culture*, 7(12), 1942).
27. ——— On Bivariate Correlation Surfaces. (*Science & Culture*, 8(6), 1942).

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28. RAO, C. R. On the volume of a prismoid in  $N$ -space and some problems in continuous probability (*The Mathematics Student* (Vol. 10, 1942).
29. ROY, S. N. The Sampling Distribution of  $p$ -statistic and Certain Allied Statistics on the Non-null Hypothesis. (*Sankhyā*, 6(1), 1942).
30. ——— Analysis of Variance for Multivariate Normal Populations: The Sampling Distribution of the Requisite  $p$ -statistic on the Null and Non-null Hypothesis. (*Sankhyā*, 6(1), 1943).
31. SINHA, H. Seasonal Factor in Indian Trade, Industry and Finance. (*Sankhyā*, 6(1), 1942)

### APPENDIX 2. OFFICERS ON DEPUTATION FOR TRAINING AND SCIENTIFIC CONSULTATION 1942-43

1. GEORGE ABRAHAM, M.A. (*Lecturer, Christian College, Madras*), May-June 1942.
2. K. N. SRIVASTAVA (*Office of Director of Public Health, Bihar*), May-August 1942.
3. N. N. UZIR, B.Ag.(Allahabad), Botanical Assistant, (*Department of Agriculture, Assam*), June-July 1942.
4. CHITTOGAR DUTTA, B.Ag.(Poona), Botanical Assistant, (*Department of Agriculture, Assam*), June-July 1942.
5. M. P. SRIVASTAVA, M.A. (*Senior Assistant Labour Officer, C.P.*), July-August 1942 and December 1942 to March 1943.
6. SADIPTAM LOKESHAN RELWANT, B.Ag.(Bombay) Statistician, (*Office of Director of Agriculture, Sind*) August-October 1942.
7. P. R. ROY, M.Sc. (*Statistician, Department of Agriculture, Bengal*). 24th to 25th September, and 20th to 21st October, 1942 and 25th February to 6th March 1943.
8. MUKUNDA CHANDRA CHAKRAVARTY, M.Sc. (*Lecturer in Mathematics, Dacca University*). October—November 1942 and February-April 1943.
9. D. N. MAJUMBAR, Reader in Anthropology. (*Lucknow University*). 5th October, 1942.
10. SUPRAKASH SEN, M.Sc. (*Statistical Assistant, Imperial Veterinary Research Institute, Mukteswar, U.P.*). 9th to 22nd October, 1942.
11. Q. M. HOSBAIN, M.Sc. (*Lecturer, Dacca University*). 20th to 21st October 1942 and 23rd to 27th March 1943.
12. SUBNATA SEN, M.Sc., Assoc. I.A.R.T., (*Botanical Assistant, Dacca Farm, Bengal*), 3rd to 12th December 1942.
13. INDU DEBAN CHATTERJEE, M.Sc. (Ag.), L.Ag. (*Physiological Chemist, Govt. of Bengal, Dacca*), 12th February, 1943, and 27th February to 6th March 1943.

### APPENDIX 3. APPRENTICES AND TRAINING STUDENTS, 1942-43

- \*1. P. N. CHAUDHURY, M.Sc. (*Calcutta*) July, 1940—March, 1943.
- \*2. S. C. SEN GUPTA, M.Sc. (*Calcutta*) January, 1941—March, 1943.
- \*3. B. N. SEN GUPTA, M.A. (*Calcutta*) January 1941—December, 1942.
- \*4. B. SINHA, M.Sc. (*Calcutta*) January 1941—
5. V. M. DANDEKAR, B.A. (*Nagpur*) July-Oct. 1942 (Joined the Calcutta University, Statistics Department).
6. V. RAMA CHANDRA RAO, M.A. (*Andhra*) July 1942—March 1943.
7. N. R. RAMA SUBRAMANIAM, B.A. (*Madras*) August 1942—February 1943.
8. W. GUTLERKARAM (*Ceylon*) August 1941—
9. B. K. GHOSH, B.Com. (*Calcutta*) July—November 1941. (Joined the Calcutta University, Commerce Dept.)

\*Apprentices.

## INDIAN STATISTICAL INSTITUTE

### PROCEEDINGS OF THE ANNUAL GENERAL MEETING, 30th APRIL, 1943

The Annual General Meeting of the Indian Statistical Institute was held at 5-30 p.m. on Friday, the 30th April, 1943 in the Statistical Laboratory, Presidency College, Calcutta.

*Present:* Mr. Nalini Ranjan Sarkar (President, in the Chair), Dr. P. N. Banerjee, M.L.A. (Central), Sir A. H. Ghuznavi, M.L.A. (Central), Col. S. S. Sokhey, I.M.S. (Director, *Haffkine Institute, Bombay*); Dr. H. Sinha (Calcutta University); Mrs. Channeli Bose (Statistical Laboratory, Calcutta); Mr. Nihar Chandra Chakravarti (Special Officer, Revenue Department, Government of Orissa); Mr. Raj Chandra Bose (Calcutta University); Mr. Samarendra Nath Roy (Calcutta University); Prof. Kharendra Nath Chakravarti (Presidency College, Calcutta); Mr. Sainav Sengupta (Calcutta University) and Prof. P. C. Mahalanobis (Honorary Secretary).

1. *Annual Report and Audited Accounts:* The Honorary Secretary placed before the meeting the Annual Report and Audited Accounts for 1942-43 as approved by the Council and mentioned that the Accounts had been audited by Messrs. P. C. Nandi & Co., Chartered Accountants.

Resolved that the Annual Report and Audited Accounts (annexed) for 1942-43 be adopted.

Proposed by Sir A. H. Ghuznavi

Seconded by Dr. P. N. Banerjee

(Carried unanimously).

2. *Election of Office-bearers and Members of the Council:* The Honorary Secretary reported that in accordance with the bye-law 3 for election of office-bearers and members of the Council, nominations for 1943-44 approved by the Council of the Institute had been circulated together with the notice of the Annual General Meeting on the 10th April, 1943. As the number of nominations was in no case in excess of the number of vacancies, no voting was necessary and no voting paper was therefore issued.

The election of the following office-bearers and members of the Council as circulated was then announced from the chair.

<i>President</i>	
Mr. Nalini Ranjan Sarkar, .. .. .	<i>Calcutta.</i>
<i>Vice-Presidents</i>	
Dr. P. N. Banerjee, M.A., D.Sc., M.L.A. (Central), .. .. .	<i>Calcutta.</i>
Mr. E. T. Curlewell, .. .. .	<i>Messrs. Bird &amp; Co., Calcutta.</i>
Mr. C. D. Deshmukh, C.I.E., .. .. .	<i>Deputy Governor, Reserve Bank of India.</i>
Sir A. H. Ghuznavi, Kt., M.L.A. (Central), .. .. .	<i>Messrs. A. H. Ghuznavi &amp; Co., Calcutta.</i>
Sir T. E. Gregory, D.Sc., .. .. .	<i>Economic Adviser to the Government of India, Delhi.</i>
Dr. S. P. Mukherjee, M.A., B.L., M.L.A., D.Lit., .. .. .	<i>Bar-at-law.</i>
<i>Council</i>	
Dr. C. W. B. Norman, C.I.E., M.A., D.Sc., F.N.I., .. .. .	<i>Director General of Observatories, Poona.</i>
Sir Shri Hanu, Kt., .. .. .	<i>Delhi Cloth and General Mills, Delhi.</i>
Sir C. V. Varman, D.Sc., F.R.S., N.L., .. .. .	<i>Indian Institute of Science, Bangalore.</i>
The Hon'ble Mr. Justice T. J. Y. Roxburgh, B.A., .. .. .	<i>Judge, Calcutta High Court.</i>
Bar-at-law, C.I.E., I.C.S., .. .. .	<i>Bar-at-law, C.I.E., I.C.S., .. .. .</i>
The Hon'ble Mr. H. S. Mukherjee, .. .. .	<i>Minister, Government of Bengal.</i>
<i>Treasurer</i>	
Dr. Satya Churn Law, M.A., B.L., Ph.D., F.Z.S., .. .. .	<i>Calcutta.</i>
M.B.O.U.,	
<i>Secretary</i>	
Prof. P. C. Mahalanobis, .. .. .	<i>Statistical Laboratory, Calcutta.</i>
<i>Joint-Secretaries</i>	
Mr. R. C. Bose, M.A., .. .. .	<i>Lecturer, Calcutta University.</i>
Prof. H. N. Chakravarti, M.Sc., .. .. .	<i>Presidency College, Calcutta.</i>

PROCEEDINGS OF THE ANNUAL GENERAL MEETING

Members of the Council for 1943-44

Mr. B. P. Adarkar, M.A.,	.. ..	University of Allahabad.
Mrs. C. Bose, B.Sc. (London),	.. ..	Statistical Laboratory, Calcutta.
Prof. R. N. Bose, M.Sc.,	.. ..	University of Dacca.
Mr. P. H. Carpenter, O.B.F., F.I.C., F.C.S.,	.. ..	Director, Indian Tea Association, Teoklai, Assam.
Mr. B. H. Das Gupta, M.A.,	.. ..	Secretary, Indian Central Jute Committee, Calcutta.
Prof. H. C. Ghosh, M.A., F.R.S.,	.. ..	University of Calcutta.
Dr. J. B. Grant, M.D., Dr. P.M.,	.. ..	Director, All India Institute of Hygiene and Public Health, Calcutta.
Mr. J. V. Joshi, M.A.,	.. ..	Deputy Economic Adviser to the Government of India, Delhi.
Prof. F. W. Levi, Dr. Phil. Nat.,	.. ..	University of Calcutta.
Prof. John Maclean,	.. ..	Wilson College, Bombay.
Mr. A. C. Mukherji, M.A., Dip. in statistics, F.R.S.,	.. ..	Director of Statistics, Baroda State, Baroda.
Mr. K. R. Nair, M.A., M.Sc.,	.. ..	Statistical Laboratory, Calcutta.
Dr. K. C. K. E. Raja, L.R.C.P., & S., D.P.H.,	.. ..	Deputy Public Health Commissioner with the Government of India, Delhi.
D.T.M. & H.,	.. ..	
Dr. V. K. R. V. Rao, M.A., Ph.D.,	.. ..	University of Delhi.
Mr. B. Rang Reddy,	.. ..	Joint Revenue Secretary, B. E. H. the Nizam's Government, Secunderabad.
Mr. S. N. Roy, M.Sc.,	.. ..	Lecturer, Calcutta University.
Prof. Benoy Kumar Sarkar,	.. ..	University of Calcutta.
Dr. H. C. Sinha, M.Sc., Ph.D.,	.. ..	Lecturer, Calcutta University.
Prof. J. C. Sinha, M.A., Ph.D.,	.. ..	Presidency College, Calcutta.
Dr. P. V. Sukhatma, Ph.D., D.Sc.,	.. ..	Statistician, Imperial Council of Agricultural Research, Delhi.

3. *Recommendations from the Council* : Considered the recommendation of the Council that "in view of increasing financial responsibilities of the Institute a Standing Finance Committee be set up and suitable bye-laws be framed for this purpose."

Resolved that the proposal of appointing a Standing Finance Committee be approved and the Council be requested to frame necessary bye-laws for this purpose.

*Proposed by Dr. H. Sinha*  
*Seconded by Mr. R. C. Bose* (Carried unanimously).

4. *Appointment of Auditors* : Resolved that Messrs. P. C. Nanji & Co., Chartered Accountants be appointed auditors for the year 1943-44 on an honorarium of Rs. 500.

*Proposed by Mr. N. C. Chakravarti*  
*Seconded by Mr. S. N. Roy* (Carried unanimously).

5. *Appointment of Committee* : Resolved that as recommended by the Council the following Committee be reconstituted as follows :

(i) *Standing Committee for Research (3 years)* : Dr. P. N. Banerjee, M.A., D.Sc., M.L.A. (Central), Calcutta ; Prof. Dr. G. S. Bose, M.D., D.Sc., F.N.I. (Head of the Department of Psychology, University of Calcutta) ; Prof. S. N. Bose, M.Sc., F.N.I. (Head of the Department of Physics, University of Dacca) ; Mr. P. H. Carpenter, O.B.F., F.I.C., F.C.S. (Chief Scientific Officer, Indian Tea Association, Teoklai, Assam) ; Dr. J. B. Grant, M.D., Dr. P. H. (Director, All-India Institute of Hygiene and Public Health, Calcutta) ; Prof. F. W. Levi, Dr. Phil. Nat., (Head of the Department of Pure Mathematics, University of Calcutta) ; Prof. K. B. Madhava, M.A., A.I.A., F.S.S., F.N.I. (Head of the Department of Statistics, Mysore University) ; Dr. C. W. B. Norman, C.I.F., M.A., D.Sc., F.N.I. (Director General of Observatories, Ponnai) ; Col. S. S. Sokhey, M.A., M.D., D.T.M., & H., I.M.S., F.N.I. (Director, Haffkine Institute, Bombay) ; and Prof. F. C. Mahalanobis (Member and Secretary) with two persons to be nominated by the Government of India.

(ii) *Journal Committee (1 year)* : Prof. S. N. Bose, Prof. K. B. Madhava, Mr. N. C. Mehta, Mr. R. C. Bose, Dr. U. S. Nair, Dr. H. Sinha, the Hon'ble Mr. Justice T. J. V. Borborgh, Prof. P. C. Mahalanobis (ex-officio), and Mr. Sadasiw Sengupta (as Secretary).

(iii) *Finance Committee (1 year)* : The President, Dr. P. N. Banerjee, Hon'ry. Treasurer, Hon'ry. Secretary, Mr. Hariharan (Hon'ry.) and Prof. K. N. Chakravarti (Convener).

*Proposed by Col. S. S. Sokhey*  
*Seconded by Mrs. C. Bose* (Carried unanimously).

Nalini Ranjan Sarkar  
 Chairman.

P. C. Mahalanobis,  
 Honorary Secretary.

# INDIAN STATISTICAL INSTITUTE

## PROCEEDINGS OF THE COUNCIL MEETING, 30th APRIL, 1943

A meeting of the Council of the Indian Statistical Institute was held at 5 p.m. on Friday the 30th April, 1943 in the Statistical Laboratory, Presidency College, Calcutta.

*Present :* Mr. Nalini Ranjan Sarkar (President, in the Chair), Dr. P. N. Banerjee, Sir A. H. Ghosh, Dr. H. Finka, Mrs. C. Bose, Mr. S. N. Roy, Prof. K. N. Chakravarti, Mr. R. C. Bose and Prof. P. C. Mahalanobis (Honorary Secretary).

1. *Proceedings of the meeting of the Council :* Proceedings of the meeting of the Council dated 12th February, 1943 were read and confirmed.

2. *Annual Report and Audited Accounts 1942-43 :* The Honorary Secretary placed before the meeting the Annual Report and Audited Accounts for 1942-43.

(i) Resolved that the Annual Report and Audited Accounts for 1942-43 be passed and forwarded to the Annual General Meeting.

(ii) Resolved further that the Honorary Treasurer be authorized to repay as and when possible the outstanding amount of Rs. 10,005-11-6 advanced by Prof. P. C. Mahalanobis, Honorary Secretary, in his personal capacity.

3. *Budget for 1943-44 :* The Honorary Secretary placed the following budget for 1943-44 as recommended by the Finance Committee of the Institute. The Honorary Secretary stated that at the request of the Secretary, Agriculture Department, Government of Bengal, he had submitted a scheme for a sample survey of manure paddy in 1942-43. In case this scheme was sanctioned it would be combined with the scheme for sample survey of jute and sun-paddy on which work had already been started.

### Budget Estimate for 1943-44

	Rs.	s.	p.		Rs.
Grant from Government of India	35,000	0	0	Salary of statistical and research staff	50,000
Grant for Saakhya	2,000	0	0	Establishment & Travelling	7,000
Grant from I.C.A.R.	8,000	0	0	Books and journals	3,000
Signature Board Post Survey H.C. A. R.	5,000	0	0	Laboratory equipment	4,000
Sample Survey of Jute and Sun Paddy	1,80,000	0	0	Stationery & stores	4,500
R.H.H. Flushing & Irrigation Scheme	9,000	0	0	Indian Statistical Conference	1,000
Subscriptions	1,000	0	0	Postage, printing & contingent	3,500
Miscellaneous receipts	1,024	11	6	Hire of machines, furniture, rent, etc.	14,000
Opening Balance	38,978	4	6	Excursion and emergency arrangements	4,000
				Bengal Crop Survey (Field Branch & Overhaul)	1,00,000
				Grant for Saakhya	2,000
				Closing Balance	2,35,000
	2,80,000	0	0		45,000
					2,80,000

Resolved that the estimates for 1943-44 as recommended by the Finance Committee be approved and the Finance Committee be authorized to make necessary modifications and appropriations up to a limit of Rs. 10,000 in anticipation of confirmation by the Council. Also resolved that the Honorary Secretary be authorized to appoint crop survey and other workers for projects for a period not exceeding 3 months in anticipation of sanction by the Finance Committee or the Council of the Institute.

4. *Finance Sanctions :* Resolved that the following recommendations of the Finance Committee dated 30th April, 1943 be approved.

(i) Resolved that the following appointments of temporary technical apprentices for three months in the first instance be approved and the Hon. Secretary be authorized to extend in suitable cases the term of appointment up to one year subject to confirmation by the Council.

(1) Banerjee Sudd Kumar : M.Sc. Applied Mathematics, Ist Class with research experience (Cal. Univ.) B.A. 25; from 11th March, 1943 (Bengal); (2) Ghosh Manindra Nath : M.A. Pure Mathematics, Ist Class (Cal. Univ.), B.A. 50; from 2nd April 1943 (Bengal); (3) Harinamanyu Haldinju : M.Sc. Pure Mathematics, Ist Class (Cal. Univ.), B.A. 50; from 29th March 1943 (Madras); (4) Krishnamoorthy, P.

## PROCEEDINGS OF THE COUNCIL

V. : M.A. Mathematics, 1st Class (Andhra Univ.)—Ra. 50/- from 1st April 1943 (Madras); (5) Mathen, K. K. : M.A. Mathematics, 3rd Class, with research experience in Statistics in Madras University—Ra.50/- from 31st March 1943 (Travancore); (6) Ramanubramanian, N. R. : B.Sc. Mathematics (Hons.), 1st Class (Madras Univ.)—Ra. 50/- from 29th March 1943 (Madras); (7) Rao Vakkalanka Ramachandra : M.A. Mathematics, 1st Class (Andhra Univ.) with statistics—Ra. 75/- from 29th March 1943 (Madras).

(ii) Resolved that subscriptions paid to the Statistical Workers' Provident fund by the following employees be paid to them, the employer's share of the contribution being withheld as all of them had left the Institute without proper notice.

(1) Subhil Kumar Dasgupta (Ra. 50/-); (2) Sachindra Chandra Banerjee (Ra. 53/2/-); (3) Chitta Hanjan Chakravarty (Ra. 84/11/-); (4) Prfulin Kumar Chatterjee (Ra. 53/8/-); (5) Suresh Chandra Ray (Ra. 64/8/-); and (6) Mohit Kumar Chatterjee (Ra. 53/8/-).

(iii) Resolved that Ra. 147/8/- be paid to Mr. Dhirendra Mohan (Ganguli)'s Provident Fund Account with the Indian Control Jute Committee by way of employer's contribution for his work at the Institute as Supervisor, Jute and Aus Comms. 1942 from May 1942 to 1st January 1943.

5. *Appointment of Committees* : The Council recommends to the Institute that the following committees be reconstituted as follows:—

(a) *Standing Committee for Research* (3 years) : Dr. P. N. Banerjee, Dr. G. S. Bose, Prof. S. N. Bose, Mr. P. H. Carpenter, Dr. J. B. Grant, Prof. F. W. Levi, Prof. K. B. Mallava, Dr. C. W. B. Norman, Col. S. S. Sökhey, Prof. P. C. Mahalanobis (as Secretary) and two persons to be nominated by the Government of India.

(b) *Journal Committee* (1 year) : Prof. S. N. Bose, Prof. K. B. Mallava, Mr. N. C. Mehta, Dr. I. K. Nair, Mr. R. C. Bose, Dr. H. Sinha, the Hon'ble Mr. Justice T. J. Y. Roxburgh, Prof. P. C. Mahalanobis (Hon. Editor, ex-officio) and Mr. Salslav Sengupta as Secretary.

(c) *Finance Committee* (1 year) : The President, Dr. P. N. Banerjee, Hon. Treasurer, Hon. Secretary, Mr. Haricharan Ghosh and Prof. K. N. Chakravarti (Convener).

6. *Provident Fund Arrangements* : The Honorary Secretary stated that although all the workers of the Institute were appointed on a temporary basis the Council had started a Provident Fund with effect from January 1941. This was done in view of the fact that a scheme for the stabilization of the Institute with the help of a permanent grant from the Government of India had been at that time under consideration by Government. No decision, however, had been made in this regard so far, and it was difficult to maintain provident fund arrangements on the existing scale. In this situation the Honorary Secretary recommended certain steps being taken at an early date to reduce the commitments of the Institute. He also stated that as two months' notice terminating the service of all workers had been served on the 1st October, 1942, and all workers were subsequently reappointed subject to termination of service on fifteen days' notice, there was no legal difficulty in reorganizing the Provident Fund.

(i) Resolved that the amount of Ra. 9,000 covering approximately the estimated liabilities of the fund as on 31st March, 1943, be separated from the General Fund and invested in suitable securities as early as possible.

(ii) Resolved that the services of all workers be formally terminated not later than 30th May, 1943 and the Honorary Secretary be authorized to serve formal notices on all workers for this purpose; and that the workers be reappointed with effect from the 1st June 1943 in two classes of posts, namely (a) with and (b) without provident fund privileges.

(iii) Resolved that the Finance Committee be requested to prepare a revised list of persons to be admitted to the Provident Fund in future in accordance with the amount of the annual grant from the Government of India.

7. *Recommendations to the Institute* : Standing Finance Committee: In view of the increasing financial responsibilities the Council recommends to the Institute that a Standing Finance Committee be set up and suitable bye-laws be framed for this purpose.

8. *Election of Members* : The following persons were elected ordinary members of the Institute.

## INDIAN STATISTICAL INSTITUTE

Mr. Debicharan Das, M.A., Statistician, Department of Public Health, Assam; Rao Bahadur Thakur Chhan Singh, M.A., L.L.B., F.R.E.S., Sardar and Minister, Jodhpur; Mr. M. P. Srivastava, M.Sc., Assistant Labour Officer, Labour Office, Nagpur; His Excellency Sir Frederic William Eggleston, Australian Minister to China, Chungking; Mr. L. T. Nipahimalau, 6, Amil Colony No.1, Karachi; Mr. M. S. Venkatesan, M.A., Office of the Director of Public Health, Trichur, Cochin State; and Col. Sahib Singh Sokhey, I.M.S., Director, Haffkine Institute, Bombay.

9. *Form of Certificate* : The Honorary Secretary reported that it was necessary to settle the forms of Computer's Certificate and Statistician's Diploma.

Resolved that the Computer's Certificate and Statistician's Diploma of the Indian Statistical Institute have the following forms.

We, the President and General Secretary of the Indian Statistical Institute and the Secretary of the Examinations Committee do hereby make known that, in the year 19..... has been granted the Computer's Certificate/Statistician's Diploma, Part..... he having been first certified by duly appointed Examiners to be qualified to receive the same.

10. *Institute Accommodation* : The Honorary Secretary reported that he had removed a good proportion of maps and records to the Banaragore Office and that about 50 persons were already working there. In case the scheme for the survey of aman paddy was sanctioned by the Government of Bengal it would be necessary to increase office and store accommodation much further.

Resolved that the Honorary Secretary be authorized to take necessary action for increasing office accommodation at Banaragore or Giridih in case this became necessary on account of further expansion of work.

11. *Banking Accounts* : The Honorary Secretary reported that as there were two offices of the Institute for the emergency at Giridih and Banaragore, in addition to the one at Presidency College, Calcutta, the business of the Institute would be facilitated if the Institute were to open banking accounts at Giridih and Banaragore. In addition, it would also be desirable to have two accounts with Bengal Central Bank and Nath Bank at their Harrison Road Branches near the Presidency College office of the Institute.

Resolved that Banking Accounts for the Institute be opened with Bengal Central Bank, Harrison Road Branch, Calcutta; Nath Bank, Harrison Road Branch, Calcutta; Bengal Central Bank, C. R. 3th Branch, Giridih; and Suburban Bank, Banaragore and that the said Banks be and are hereby authorized to honour cheques, Bills of Exchange and Promissory Notes drawn, accepted or made on behalf of the Institute by either Prasanta Chandra Mahalanobis, Honorary Secretary of the Institute, or Khageswari Chakravarti, Joint Hon. Secretary of the Institute and to act on any instructions so given relating to the accounts, whether the same be overdrawn or not, or relating to the transactions of the Institute.

12. *Calculating Machines* : The Honorary Secretary stated that he had already reported to the Council the difficulty caused by the cessation of imports of calculating machines (Item No.8 of Council Proceedings dated 12th February 1943). Since the meeting of the Council he had had further discussions with Mr. Bottomley (then Director of Public Instructions, Bengal) and Mr. H. Grahma, I.C.S. (Secretary, Education Department, Bengal). Mr. Grahma I.C.S. No. 1827, Edm: dated 13th March 1943 informed him that a reference to the Secretary of State for India would be necessary to give him permission to act as Hon. Technical Adviser to a commercial concern as he was a member of the Indian Educational Service and advised him to take up the work on a non-profit making basis. In view of the urgency of the question he had already taken necessary action in this matter at his own personal risk and responsibility.

Resolved that the Council place on record its approval of the action taken by Prof. P. C. Mahalanobis in his personal capacity to make arrangements for repairing and constructing calculating machines in India. The Council is of opinion that it would be advisable to start a non-profit making society for this purpose. In case this was done the Council would be prepared to permit the Honorary Secretary to be associated officially with the concern as its Honorary Technical Adviser and also to appoint an advisory committee to give all possible help and guidance in this matter provided the Institute was given priority as well as a concession in charges for service and purchase of calculating machines if the scheme turned out to be successful.

Nalini Ranjan Sarkar  
Chairman.

P. C. Mahalanobis  
Hon. Secretary.