

THE INDIAN STATISTICAL INSTITUTE

ANNUAL REPORT OF, FOR 1935-36¹.

Progress in the fourth year of the work of the Indian Statistical Institute has been on the whole satisfactory. With the sanction of a Government of India research grant, the position of the Institute may be considered to have been placed on a stable basis.

SCHEME OF EXAMINATIONS IN STATISTICS.

The question of instituting examinations in statistics had been discussed informally as early as April 1931 when the proposal to start the Indian Statistical Institute was under consideration. The general opinion was in favour of undertaking the work, and the first clause in Section 3 of the Memorandum of Association empowered the Institute "to hold meetings, arrange for lectures and courses of instruction and to grant certificates of proficiency in statistics."

The situation was carefully considered by the Council of the Institute, and on its recommendation a resolution was unanimously adopted by the Institute at its Annual Meeting held on the 26th April, 1935, appointing a Committee consisting of the following persons with powers to co-opt to report to the Council on the action to be taken for instituting examinations for the award of certificates or diplomas in statistics.

Dr. L. K. Hyder (Member, Public Service Commission, Delhi); Mr. D. G. Karve (Principal, Willingdon College, Salara); Prof. J. McLean (Wilson College, Bombay); Prof. K. B. Mahabaxa (University of Mysore); Dr. J. Mathias (Director-General of Commercial Intelligence and Statistics); Mr. S. P. Mookerjee (Vice-Chancellor, Calcutta University); Dr. C. W. B. Suroond (Director General of Observatories); Prof. E. S. Pearson (University of London); Prof. N. R. Sen (University College of Science, Calcutta); Dr. H. Sinha (Lecturer, University of Calcutta); Mr. M. Vaidyanathan (Statistician, Imperial Council of Agricultural Research, Delhi) with Prof. P. C. Mahalanobis as Secretary.

A draft scheme was prepared by the Secretary and was circulated among the members of the Examinations Committee in July 1935; copies were also sent to a number of other persons likely to be interested in this matter. The proposal to start examinations in statistics in India was generally approved and various suggestions and criticisms were received from

Prof. Karl Pearson, Prof. Corrado Gini (Editor, "Metron", Rome), Prof. A. L. Bowley (London School of Economics), Prof. R. S. Pearson (University of London), Dr. John Wishart (University of Cambridge), Dr. A. C. Aitken (University of Edinburgh), Dr. G. M. Monant (University College, London), and Prof. F. Zahn (President, International Institute of Statistics, Munich) from abroad, and by Dr. S. K. Banerjee (Offg. Director General of Observatories, India), Prof. S. N. Bose (University of Dacca), Mr. P. H. Carpenter (Chief Scientific Officer, Indian Tea Association), Mr. C. J. Harrison (Toxical Experimental Station, Assam), Dr. R. B. Gupta (Director, Bureau of Statistics and Economic Research, U. P.), Mr. R. S. Kishal (Statistician, Technological Laboratory, Malunga, Bombay), Bhui Balmukund (Punjab Agricultural College, Ludhiana), Prof. C. N. Vakil (University of Bombay), Mr. T. J. V. Roxburgh (Judicial Secretary, Government of Bengal), Dr. K. C. K. R. Raja (Professor of Epidemiology and Vital Statistics, All-India Institute of Hygiene, Calcutta) in India.

The scheme was revised by the Secretary in the light of the above suggestions and criticisms, and was circulated again in November 1935. The Report was adopted at a meeting of the Examinations Committee held in Calcutta on Monday the 16th December 1935.

¹ The Annual Report and Audited Accounts for 1935-36 were adopted at the Annual General Meeting of the Indian Statistical Institute held in Calcutta on the 24th April, 1936.

The main object of the present scheme is to set up minimum standards of proficiency in the actual practice of statistical computation and statistical analysis. Emphasis has therefore been naturally placed on the practical and laboratory aspects of the subject. The present scheme will thus have greater analogy with the examinations conducted by professional organizations like the Institute of Actuaries rather than those conducted by the universities.

It is clear that there will be a demand for two different types of workers—(1) Computers for routine calculations and possibly for field work and the collection of primary materials, and (2) Statisticians with adequate knowledge of both statistical theory and practice.

Certificates will therefore be divided into two groups. (1) Computer's Certificates which will be awarded primarily for proficiency in statistical calculations and which will not involve any knowledge of higher mathematics, and (2) Statistician's Diplomas which will be more comprehensive in scope and will require an intelligent appreciation of statistical theory.

The policy to be adopted in regard to the appointment of examiners and moderators was given careful consideration. In order to maintain proper scientific standards it was recommended that for some time to come one examiner in each theoretical and if possible one moderator in each examination should be appointed from among well-known statisticians from outside India. This would involve some additional expenditure, but it is believed that the expenditure would be fully justified, for such a policy would quickly secure public confidence both in India and abroad.

The Report of the Examinations Committee was considered at a meeting of the Council of the Institute on the 16th December 1936 under chairmanship of Mr. S. P. Mukherjee, Vice-President of the Institute and Vice-Chancellor, University of Calcutta. The Report was then printed and circulated and received the final approval of the Council on the 24th April, 1936.

At the meeting of the Council held on the 16th December 1935 it was decided to request the Indian Inter-University Board to take necessary action for introducing Statistics as an independent subject for study and examination for the B.A., B.Sc., M.A. and M.Sc. examinations of the Indian Universities. We understand that the Inter-University Board have already taken action in this matter, and have circulated our Report to different Universities of India.

The scheme of examinations was favourably received outside India and we have been assisted of active co-operation in this work by several prominent statisticians in Europe and America. It may be mentioned in this connection that the American Statistical Association has very recently set up a committee for the same purpose, namely, to devise suitable examinations on statistics. It is gratifying to note that the Secretary, American Statistical Association, sent a very appreciative letter about the Report of our Examinations Committee, and asked for six additional copies of the same for use by the members of the American Committee on examinations in statistics.

COMMITTEE FOR OFFICIAL STATISTICS

From the very beginning the Indian Statistical Institute has been taking a keen interest in Indian official statistics. As there are no guides to current statistical publications, systematic bibliographies of data relating to agriculture, prices etc. are being published in every number of Sankhya: the Indian Journal of Statistics. The need for an advisory committee for a proper scrutiny of official statistical publications was stressed in a note appearing in Sankhya, Vol. I, Part 4. The question of improving the standard of Indian official statistical publications was carefully considered at a meeting of the Council of the Indian Statistical Institute held on April 20, 1935 in the Board Room of Messrs. Martin & Co., under the chairmanship of Sir E. C. Benthall, one of the Vice-Presidents of the Institute. The following resolution was passed by the Council and subsequently confirmed at the annual meeting of the Institute held on the same date under the chairmanship of Mr. D. P. Khaitan, another Vice-President of the Institute:—

Resolved that a Committee be appointed consisting of the following gentlemen with powers to co-opt to scrutinise the form and contents of official statistical publications and to make suitable recommendations:—

(1) Dr. John Matthal, (2) One nominee of the Bengal National Chamber of Commerce, (3) One nominee of the Bengal Chamber of Commerce, (4) One nominee of the Indian Chamber of Commerce, (5) Prof. J. C. Sinha, (6) Prof. P. C. Mahalanobis, (7) Dr. H. Sinha, to act as Secretary.

Mr. Laidlaw, C.A., (Messrs. Mackinnon Mackenzie & Co.) Mr. H. D. Ghose M.A. (Commercial Bureau) and Mr. G. L. Mehta, M.A., (Sindia Steam Navigation Co. Ltd.) respectively have been nominated by the Bengal Chamber, the Bengal National Chamber and the Indian Chamber of Commerce to serve on the Committee.

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Mr. N. C. Mehta, M.A. (Lantab), I.C.S., Secretary, Imperial Council of Agricultural Research, has been co-opted as a member of the Committee.

A provisional note on the Statistical Abstract for British India was drawn up by the Secretary of the Committee and circulated among statisticians, businessmen, economists, universities, chambers of commerce and other bodies likely to be interested in the matter, with a view to invite their suggestions in regard to statistical publications in general. Valuable memoranda and suggestions were received from

Prof. B. P. Adarkar (*Hindu University, Benares*), Mr. S. S. Bose (*Statistical Laboratory, Calcutta*), Bengal Chamber of Commerce (through Mr. W. Laidlaw), Bengal National Chamber (through Mr. H. N. Ghose), Bombay Chamber of Commerce (through a Sub-Committee), Mr. Daya Shankar Dubey (*Allahabad University*), Mr. N. C. Mehta (*Secretary, Imperial Council of Agricultural Research*), Mr. S. N. Sen (*Bengal Judicial Service*), Mr. S. Roy Choudhary (*Statistical Laboratory, Calcutta*), Prof. J. C. Sinha (*Presidency College, Calcutta*), and Universities of Malra, Patna and Raigoon.

A large number of persons and institutions also generally approved of the work of the Committee and desired to be kept in touch with it.

Most of the suggestions referred to the Statistical Abstract of British India and the Monthly Survey of Business Conditions in India. Some of the members were in favour of making detailed recommendations with regard to individual publications, while others were of opinion that only general principles should be laid down in the preliminary report and that the present Committee should act as a Standing Committee of the Institute for offering detailed suggestions as occasion arises.

The different suggestions received were classified broadly under the heads (1) delay in publication, (2) lack of information with regard to the significance and scope of published statistics, (3) gaps and defects in existing statistics, and (4) lack of co-ordination, and the preliminary report was drawn up by the Secretary of the Committee and was circulated in April 1935. The report was adopted at a meeting of the Council of the Institute on the 24th April 1936, and has been issued separately.

MEETINGS OF THE INSTITUTE.

By the kind permission of Mr. B. M. Sen, Principal, Presidency College, Calcutta, 18 meetings were held in the Presidency College, Calcutta, in which a large variety of topics were discussed. Fuller details are given in an appendix.

Prof. K. B. Malhava, Honorary Secretary of the Mysore Branch of the Indian Statistical Institute, was kind enough to deliver a special course of six lectures on the "Theory of Graduation" in Calcutta in December, 1935. The opening lecture was given on the 16th December, 1935 and was presided over by Mr. S. P. Mookerjee, Vice-President of the Institute and Vice-Chancellor, Calcutta University. The course of lectures was much appreciated, and proved most stimulating to the workers of the Statistical Laboratory. Our sincere thanks are also due to Prof. Malhava for presenting to the Laboratory a fine collection of bibliographical notes on the theory of graduation neatly arranged in the form of a card index.

A tea party was arranged by the workers of the Statistical Laboratory on the 16th December, 1935 to meet Prof. Malhava which was attended by a large number of members of the Institute. Prof. Malhava again came to Calcutta for one day on the 18th March 1936, and gave a general talk on the application of the statistical method in genetic analysis.

RESEARCH WORK AND ADVANCED STUDIES.

Research and advanced studies in statistics under the auspices of the Institute were carried on with the help of other research grants in the Statistical Laboratory, Calcutta.

Research Committee of the Institute :—A research grant of Rs. 5,000 per year was sanctioned by the Government of India in April 1935 on certain conditions and was accepted by the Institute at its annual meeting held on the 26th April, 1935. A Standing Committee for Research consisting of Dr. G. S. Bose (*Head of the Psychological Department, Calcutta University*), Mr. P. H. Carpenter (*Chief Scientific Officer, Tackal Tea Experimental Station*), Prof. K. B. Malhava (*Mysore University*), Dr. John Mathai (*Director General of Commercial Intelligence and Statistics*), Dr. C. W. B. Normand (*Director General of Observatories in India*), Mr. Y. Y. Roxburgh, I.C.S. (Bengal),

Mr. B. M. Sen (*Principal, Presidency College, Calcutta*), Prof. N. R. Sen (*Ghosh Professor of Mathematics, Calcutta University*), Dr. H. Sinha (*Calcutta University*), with Prof. P. C. Mahalanobis to act as Secretary of the Committee, was set up for guiding research work in connexion with the above grant.

A note on the research programme for 1935-36 was circulated by the Secretary in August 1935, and a meeting of the Research Committee was held in the Presidency College on Monday the 9th September, 1935 with Principal B. M. Sen, one of the Vice-Presidents of the Institute, in the chair. Samarendranath Roy, M.Sc., who was appointed on an allowance of Rs. 100/- per month to work on theoretical statistics with special reference to tests of significance and measures of statistical divergence, joined in November 1935. Jatis Chandra Sen who was appointed on an allowance of Rs. 75/- per month for work in intelligence tests joined in August 1935 but resigned the post to take up an educational appointment in January 1936. Since then the post has not been filled up. Computers on allowances of from Rs. 25/- to Rs. 50/- per month were also appointed with the available balance out of the grant sanctioned for the research staff.

Grants to the Statistical Laboratory:—A grant of Rs. 7,500£ was received from the Imperial Council of Agricultural Research (Government of India) for statistical studies with special reference to agriculture. Two posts of research assistants on Rs. 150—190 were advertised early in January 1935. Candidates for these two posts were interviewed by the Public Service Commission at Delhi in April 1935, and Subhendu Sekhar Bose and Rajchandra Bose were appointed in these posts from June 1935.

The Government of Bengal sanctioned a non-recurring grant of Rs. 1,500£ and a recurring grant of Rs. 2,000£ for studies in connexion with agricultural statistics in Bengal. Work under this scheme continued practically throughout the year. Another grant of Rs. 600£ was sanctioned by the Government of Bengal in February 1936 for a special investigation in connexion with the Damodar Irrigation Project. The Bengal Board of Economic Enquiry sanctioned a non-recurring grant of Rs. 5,000 for a sampling survey of the weaving industry in 8 districts in Bengal. It was decided to conduct the survey from the Statistical Laboratory and a Sub-Committee was set up by the Board for this purpose with P. C. Mahalanobis as Secretary. Actual field work in this scheme was started in January 1936.

Research Work:—Work in a variety of theoretical and applied subjects was continued under the general guidance of P. C. Mahalanobis. Rajchandra Bose and Samarendranath Roy were mainly engaged in researches in mathematical statistics. Systematic work was continued on the generalized distance in statistics and on the use of orthogonal varieties in the theory of sampling distributions.

Subhendu Sekhar Bose worked on the application of statistical theory in agricultural experiments. The estimation of missing plot yields in a split-plot type of design was solved by using R. A. Fisher's method of minimising the residual variance. The work of F. Yates on the reconstruction of missing yields of single plots was extended to cases of missing yields of two or more mixed up plots in different types of experiment. A method of using regression equations with discontinuous fluctuations was developed for the analysis of data relating to the effects of feeds on the yield of milk in cows and buffaloes. A modified method of analysis of co-variance was used for the analysis of results of silvicultural experiments on the effect of root competition on the growth of trees conducted at the Imperial Institute of Forest Research at Dehra Dun. A good deal of work was also done in the analysis of agricultural statistics in Bengal and other provinces of India.

Work was continued with the help of Jatis Chandra Sen on a group test of intelligence conducted through the medium of the Bengali language, and two papers were completed in this subject dealing with the validity of the group test and alternative measures of intelligence. Khagenendra Nath Chakravarti (*Presidency College*) completed a paper on the age distribution of people in government and private schools in the United Provinces. Durga Prasanna Acharya (*Hooply College*) made a statistical study of the marks in the Annual and the Test examinations of the College for a number of years.

A preliminary analysis of the blood-pressure of 800 persons measured by J. C. Gupta (*Cornwall Medical College*) showed that there was no appreciable increase in the blood-pressure after the age of 20 or 21; the paper was presented before the Medical Section of the Indian Science Congress and attracted a good deal of attention. The blood-pressure survey is being continued in the Alipore Central Jail by the kind permission of Lt. Col. M. Das, I.M.S.

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Among miscellaneous subjects may be mentioned the special investigation in connexion with the Dagodar irrigation project which was taken up with the help of a small grant from the Government of Bengal. A small scale consumer research was also started during the year with the help of an earmarked donation from Messrs. D. J. Keymer & Co. of Calcutta, and with the co-operation of Dr. G. S. Bose, Head of the Department of Psychology of the Calcutta University.

On the economic side a comprehensive sampling survey of the weaving industry in Bengal was started in January 1936 under a scheme of the Bengal Board of Economic Inquiry. The object of the survey is not merely to collect information but also to develop a standard technique for such surveys with adequate statistical controls.

WORK IN CALCUTTA: MEETINGS OF THE INSTITUTE.

By the kind permission of Mr. B. M. Sen, Principal, Presidency College, seminar meetings of the Institute were held in the Presidency College, Calcutta. A list of the meetings with short summaries is given below:

July 4, 1935. S. S. Bose: *Complex Experiments in Agriculture*. The principles of complex experiment, developed by Fisher and his school at Rothamsted were discussed and the nature of the results obtained in agricultural field experiments in England and in India were pointed out.

July 11, 1935. P. C. Mahalanobis: *D²-Statistic*. The lecturer emphasized the distinction between tests and measures of divergence and stressed, with various practical illustrations, the need for an over-all measure of the divergence between two different populations, which led him to the formulation of the *D²-Statistic* in 1928. He then discussed the logical aspects of the definition.

July 20, 1935. R. C. Bose: *The Exact Distribution of the D²-Statistic*. Dr. Bose explained how by the use of hyperspace representation and the algebra of quadratic forms it is possible to obtain the exact distribution as well as the moment co-efficients of the *D²-Statistic*.

July 27, 1935. A. C. Nag: *The Theory of Construction of Life Tables*. The principle of constructing Life Tables were discussed in detail together with the various methods of graduating mortality tables generally used by actuaries.

August 3, 1935. P. C. Mahalanobis: *The Problem of Artificial Sampling Technique*. The lecturer dwelt on the need for random sampling in individual and economic surveys and illustrated the actual technique of constructing artificial samples by a number of examples.

August 10, 1935. A. C. Nag: *Theory and Construction of Life Tables*. The lecturer continued his discourse on the subject.

August 17, 1935. J. C. Gupta: *Blood Pressure Studies*. Mr. Gupta discussed the results of 500 observations of blood pressure and showed that this pressure increases up to an age of about 21 years, then remains practically constant up to about the age of 60. The conclusion remains to be verified by a more extensive survey.

August 31, 1935. P. C. Mahalanobis: *Meteorological Statistics*. The lecturer discussed the study and interpretation of daily weather chart with special reference to weather forecasting, and considered the possibilities of using statistical methods.

September 14, 1935. S. S. Bose: *Estimate of Yield of Missing Plots*. The method of minimising the residual variance has been extended to the case of evaluating the individual yields in the case of mixed up or missing plots. The adequacy of the method was illustrated by actual examples taken from field data.

September 19, September 21, September 23, 1935. S. N. Roy: *An Introduction to Statistical Mechanics*. The lecturer gave a general sketch of the subject discussing the implications of the two hypotheses of Boltzmann and of the Maxwell-Boltzmann distribution.

November 23, 1935. R. C. Bose: *Fiducially and Confidence Intervals*. The lecturer discussed R. A. Fisher's concept of fiduciality, and showed the connexion between this concept and Neyman's conception of confidence intervals.

November 30, 1935. R. C. Bose: *Fiducially and Confidence Intervals*. The lecturer continued his discourse of the previous day.

December 16, December 17, December 19, December 20, December 31, 1935. Prof. K. B. Madhava: *Theory of Graduation*. A series of lectures on the various standard methods with critical discussion of recent developments. In the first lecture Prof. Madhava gave a general talk

on the need and uses of graduation in actuarial work and illustrated his discourse with the help of lantern slides, and in the second lecture on the general principles of summation formulae for graduation. In the third lecture he discussed the combination of the summation method and the method of curve-fitting in the process of graduation, and suggested a particularly simple formula developed by him which had been found to be satisfactory in practice. The fourth lecture was on the application of probability to problems of graduation developed by the Whittaker School at Edinburgh. In the fifth and the last lecture, the speaker gave a brief survey of the theory of graduation as a whole, which was followed by a general discussion on graduation in its theoretical and practical aspects.

STATISTICAL ENQUIRIES.

A large number of enquiries in statistical subjects were attended to as usual during the year. The distributions by subjects and by provinces are given below:

By subjects—Agriculture 59; Anthropology 3; Economics 8; Education 7; Forest Research 2; Medical 18; Physiology 2; Irrigation 2; Mathematical Statistics 2; Miscellaneous 2; Total 105.

By Provinces—Assam 3; Bengal 81; Bihar & Orissa 5; Bombay 4; Burma 2; Punjab 3; Madras 2; United Provinces 2; Baroda 1; I. C. A. R. 2; Total 105.

WORKERS FROM OUTSIDE CALCUTTA.

A list of persons who came to Calcutta for short courses of training in statistics is given below

Mr. Fariduddin Ahmed, M.Sc. (Asst. to Economic Botanist, Government Farm, Dacca, Bengal) November 1935. Mr. M. Chakladar, M.Sc. (Soil Physicist, Government Farm, Dacca, Bengal) March, 1935. Mr. D. C. Ghose, M.A. (University of Punjab) December-March, 1936. Mr. Krishna Gupta, L.Ag. (Department of Agriculture, U. P.) July-September, 1935. Mr. Abdul Hye, M.Sc. (Asst. Physiological Chemist, Government Farm, Dacca, Bengal) March, 1936. Mr. K. S. S. Iyer, B.R. (Lecturer in Agricultural Engineering, Agricultural College, Nagpur) March-June, 1935. Mr. Norasingha Rao, B.Ag. (Asst. Paddy Specialist, Behrampur, Madras) May-July, 1935. Mr. K. V. Sastri, M.A. (Benares University) March, 1936. Mr. Bhagatram Sehgal, M.A. (Asst. Statistical Officer, Lyallpur Agricultural College, Punjab) July-September, 1935. Mr. S. M. Sen, B.Sc. (Ag.) (Asst. Horticulturist, Krishnagar, Bengal) December, 1935. Dr. B. L. Sethi, M.Sc. (Ph.D. Assistant Paddy Specialist, Nagma, U. P.) January-March, 1936. Mr. R. S. Singh, B.Sc. (Ag.) (Horticulturist, Hill Fruit Research Station, Chaudhalla, U. P.) October-December, 1935.

VISITORS.

Besides members of the University and other local institutions a large number of distinguished persons visited the Statistical Laboratory during the year, the names of some of whom are mentioned below:

Mr. C. G. Arthur (Vice-President, Bengal Chamber of Commerce). Mr. W. R. Aykroyd (Director, All India Nutrition Research Institute, Coonoor). Prof. S. N. Bose (University of Dacca). Sir George Campbell (President, Bengal Chamber of Commerce). Mr. J. H. Carpenter (Chief Scientific Officer, Indian Tea Association). Mr. B. De, I.C.S. (Reld). Prof. H. L. De (University of Dacca). Dr. J. C. Ghosh (University of Dacca). Prof. J. Kellas (Scottish Churches College). Mr. W. Lathlow (Messrs. Mackinnon Mackenzie & Co.). Prof. K. B. Mahalanobis (University of Mysore). Dr. J. Mathai (Director General of Commercial Intelligence & Statistics). Mr. A. C. Mukherjee (MADRAS, Baroda State). Mr. Raulhakamal Mukherjee (University of Lucknow). Mr. Raulhakamal Mukherjee (University of Lucknow). Prof. K. C. R. P. Raja (All-India Institute of Hygiene & Public Health). Mr. V. K. R. V. Rao (Wilson College, Bombay). Mr. P. A. Sastri, I.C.S. (Member, Board of Revenue, Bengal). Prof. M. N. Saha (University of Allahabad). Mr. H. P. V. Townsend, I.C.S. (Rural Development Commissioner, Bengal). Prof. C. N. Vakil (University of Bombay). Mr. A. T. Weston (Director of Industries, Bengal). Dr. T. A. West (Geological Survey of India).

POONA BRANCH.

Prof. D. G. Karve, who had removed to Satara on his appointment as Principal of the Willington College, continued to act as the Secretary of the Poona Branch at the special request of the local members. The strength of the Poona Branch was 15 including 13 Life Members. It is proposed to have fresh additions in the class of local members, so that the circle of interested workers may expand.

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During the year the Branch members met on four occasions. At the first meeting of the year, which was held in August 1935, Prof. V. G. Kale gave a talk on "Recent Trends in Banking." In the course of his talk Prof. Kale analysed recent data relating to the operations of banks, and pointed out some of the obvious alterations that seem to have been induced by the recent world-wide economic changes. 'So far as the Commercial Banks are concerned', said Prof. Kale, 'they have recently shown a marked tendency to increase the proportion of their investment in Government Paper, at the cost of advances to customers and discounts of bills. Short term investments are dwindling in proportion. This loss of liquidity must be treated as an element of weakness in the system.' Prof. Kale also surveyed the situation created by the establishment of exchange equalisation accounts and by the growing contrast between short borrowings and long investments.

At the second meeting held in September 1935, Dr. Ramdas, Head of the Department of Agricultural Meteorology, spoke about the activities of his department, and the use of statistical methods made therein. The statistical aspects of agricultural meteorology was the subject matter of a valuable paper read at a subsequent meeting by Dr. R. J. Kalamkar of the same department. At both lectures a large number of charts and slides were shown.

During the year the Branch made some progress in organising a critical survey of the statistical publications issued by the various departments of the Government of Bombay. The local Government has been approached for the free and regular supply of such publications for this purpose and it is to be hoped that the Government of Bombay will comply with the request. A tentative selection of publications of statistical interest and their distribution among the members of the Local Branch for review have been proposed and will be finally adopted when the matter again comes up for discussion.

Owing to certain unforeseen difficulties it was not found possible to conduct any statistical classes this year. It is, however, hoped that during the next year the classes will be started again. When the scheme of examinations in statistics is brought into operation these training classes may be correlated to some stages of that scheme.

MYSORE BRANCH.

Prof. K. B. Maithava, the Secretary of the Mysore Branch, came to Calcutta on two occasions, and served to establish personal contacts with the workers in the Statistical Laboratory. The Branch at Mysore worked, as in the last year, in association with the several departments of the Mysore University interested in statistics. Dr. M. V. Gopalaswami continued his work in the collection and analysis of statistical data of Psychological tests which has now amounted to considerable dimensions. Prof. V. L. D'Souza, with the help of the research students in Economics and others, has now completed the housing survey of Mysore City. Professor K. B. Maithava and his colleagues organised with the help of the Municipality a survey of vagrants in Mysore city followed by another survey of beggars and have collected very interesting material. Reports of the same are under preparation.]

BOMBAY BRANCH.

Messrs. G. S. Ghurye and S. R. Deshpande worked as the Local Secretaries of the Bombay Branch which was reorganised during the year under review with Sir Hornsaji P. Mody, K.B.E. as President. The Branch has at present 12 Ordinary and 15 Associate members.

The Branch began to function effectively from the beginning of this year and so far two general meetings have been held; one on the 18th January and the other on the 28th March. At these meetings Mr. L. S. Vaidyanathan, B.A., F.I.A., Actuary to the Oriental Government Security Life Assurance Company read papers on "Errors in Age-returns of the 1931 Census and the methods of correcting them." The meetings were largely attended and the members took active part in the discussion which followed.

BENARES BRANCH.

Prof. B. P. Adarkar, Head of the Department of Economics in the University of Benares, spent a few days working in the Statistical Laboratory in December, 1935. He had been in correspondence with the General Secretary regarding a proposal to start a Branch of the Institute at Benares. A meeting of persons interested in this question was held in the Benares University in December 1935, and the formal permission of the Council of the Institute for the organization of a

local Branch at Benares was given on the 16th December 1935. Unfortunately Prof. Adarkar fell seriously ill immediately after this and was absent from Benares for a long time. It is hoped that the Benares Branch will start active work on the reopening of the Hindu University after the summer vacation.

MEMBERSHIP.

The membership of the Institute at present consists of:—Honorary Fellows 2, Honorary Members 2, Life Members 23, Ordinary Members 142.

AUDITED ACCOUNTS.

The accounts for 1935-36 were very kindly audited free of all charges by Messrs. P. C. Nandy & Co., Chartered Accountants, Calcutta and are given below:—

Receipts and Payments Account for the year ending 31st March 1936.

RECEIPTS.		EXPENDITURE.	
To Opening Balance.		By Research Staff	1,615 0 3
Cash	48 14 0	Books & Journals	419 0 6
Bank	570 1 9	Calculating Machine & Other	
	618 15 9	Accessories	608 1 0
Subscription.		Contribution to Sankhyā	690 0 0
Ordinary Members	685 0 0	Part time Clerk & Peon	264 8 0
Life Members	740 0 0	Postage	273 5 0
	1,425 0 0	Stationary & Contingency	106 9 9
Grant from Govt. of India	5,000 0 0	Printing (Art Press)	476 15 0
Marked Donation.		Contribution to Branches	195 0 0
Messrs. D. J. Keymer & Co. (Special Enquiry)	200 0 0	Bank Charges	3 0 6
P. C. Mahalanobis, Esq. (for Sankhyā)	3,482 11 9	Laboratory of Experimental Psychology	185 0 0
		Transferred to Sankhyā a/c	3,482 11 9
		Closing Balances	
		Bank	2,353 9 0
		Cash	63 14 3
	10,736 11 6		2,417 7 3
			10,736 11 6

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

6, HASTINGS STREET,
 CALCUTTA,
 The 18th April, 1935.

CONCLUSION.

The grant from the Government of India has made it possible to start systematic work in analytic statistics. The urgent need at present is to place the financial position of Sankhyā on a sound basis. For this we must make every effort to increase the membership of the Institute.

P. C. MAHALANOBIS,
 Secretary.

**PROCEEDINGS OF THE COUNCIL OF THE INDIAN STATISTICAL INSTITUTE,
16th December 1935.**

A meeting of the Council of the Indian Statistical Institute was held in the Room of the Vice-Chancellor, Calcutta University, on Monday the 16th December at 3-30 p.m.

Chairman: Mr. S. P. Mukerjee (*Vice-Chancellor of the Calcutta University and Vice-President of the Indian Statistical Institute*) in the chair.

Present: Mr. S. S. Bose, Mr. P. H. Carpenter, Prof. K. N. Chakravarti, Dr. K. C. K. E. Raja, Mr. W. Laidlaw, Prof. R. B. Lal, Prof. K. B. Malhava, Mr. H. Sinha, Prof. J. C. Sinha and Prof. P. C. Mahalanobis (*Secretary*).

Proceedings of the Council dated 26th April, 1935 confirmed.

1. Read and confirmed the Proceedings of the Council dated 26th April, 1935.

Life Membership Fees: Quota for Local Branches.

2. The Secretary stated that at present Rs. 2/8/- out of the annual membership fee of Rs. 15/- is credited to the funds of the Local Branch. The whole of the life-membership fee is, however, credited to the General Fund; against this a contribution of Rs. 2/8/- per annum is made to the funds of the Local Branch concerned out of the General Fund. This arrangement is cumbersome and there are difficulties in working it. The Poona Branch passed a resolution at a meeting of the Branch held on the 14th October, 1935, under the Chairmanship of Dr. C. W. B. Normand approving of the Secretary's suggestion that one-sixth of the life-membership fee should be credited to the funds of the Local Branch concerned in lieu of the annual contribution.

Resolved that one-sixth of the life-membership fee be credited to the funds of the Local Branch concerned in lieu of the annual contribution and that this resolution be given retrospective effect.

Organization of a Local Branch at Benares.

3. Considered a letter dated 2nd December, 1935 from Prof. B. P. Adarkar forwarding the following resolution adopted at a meeting of persons interested in statistics in Benares:—

"This meeting of invited staff and students of the Benares Hindu University endorses the proposal for the establishment of a Local Branch of the Indian Statistical Institute at the University and requests the Council of the Institute to sanction the proposal".

Prof. Adarkar in his covering letter of the 2nd December, 1935 states that work in economic statistics is already being done in the Department of Economics and that a number of persons are also engaged in work on agricultural statistics in the Agricultural Institute.

Resolved that sanction be given to the formation of a Local Branch of the Indian Statistical Institute at Benares, and that Prof. Adarkar be appointed provisional Local Secretary of the Branch and be authorized to take necessary action for its organization and inauguration.

Research Programme.

4. The Secretary had circulated in August, 1935 a note on the research programme for 1935-36, a summary of which is given below.

The Government of India sanctioned a grant of Rs. 5,000/- a year with effect from 1935-36, on certain conditions, one of which was that the Institute would take up special investigations in statistics. The conditions attached to the grant were formally approved at the Annual Meeting of the Institute held on the 26th April, 1935, and a Standing Committee consisting of the following persons with powers to co-opt was appointed:—

Dr. G. S. Bose (*Head of the Psychological Department, Calcutta University*), Mr. P. H. Carpenter (*Chief Scientific Officer, Tocklai Tea Experimental Station*), Prof. K. B. Malhava (*Mysore University*), Dr. John Matthai (*Director General of Commercial Intelligence & Statistics, India*), Dr. C. W. B. Normand (*Director General of Observatories, India*), Mr. T. J. Y. Roxburgh (*I.C.S., Judicial Secretary*),

Bengal), Mr. B. M. Sen (Principal, Presidency College, Calcutta), Prof. N. R. Sen (Ghosh Professor of Mathematics, Calcutta University), Dr. H. Sinha (Lecturer, Calcutta University), with Prof. P. C. Mahalanobis as Secretary, Research Committee.

The Secretary discussed the question of the research programme with Sir George Anderson, the Educational Commissioner with the Government of India, in Delhi, on the 4th April 1935, and it was settled that the subjects for research would be taken up in the following order of preference :—

- (1) Mathematical and theoretical statistics.
- (2) Educational tests.
- (3) Biometric studies, including Medical and Public Health Statistics.
- (4) Statistics relating to economic studies and other subjects.

The Secretary proposed the appointment of one research assistant on Rs. 100/- for researches in mathematical statistics and one assistant on Rs. 75/- for work in educational tests.

A meeting of the Research Committee was held in Calcutta on the 9th September, 1935 with Mr. B. M. Sen in the chair. The Secretary reported that 7 out of 10 members had approved of the proposals, one member was out of India, and no objections had been received from any one. (The approval of the two other members were received subsequently). The Secretary's proposals were adopted at the meeting, and Mr. Samarendrakrishna Roy, M.Sc. was appointed on an allowance of Rs. 100/- per month for one year to work on theoretical statistics with special reference to tests of significance and measures of statistical divergence, and Mr. Jatschamini Sen, B.Sc. was appointed on an allowance of Rs. 75/- per month for one year to work on intelligence tests and the analysis of educational statistics. The Secretary was further authorized to appoint computers on an allowance of Rs. 25/- to Rs. 50/- with the available balance out of the total allotment of Rs. 3,000/-.

Considered the proceedings of the Research Committee dated 9th September 1935. (To be recorded).

Changes in Bye-laws.

5. The Secretary stated that in view of the fact that a large number of the members of the Institute are resident outside Calcutta, and also in view of the all-India character of the Institute, it would be desirable to provide for the proposed names for election as office-bearers or as members of the Council being circulated previously. Under the constitution this can be done by framing suitable Bye-laws for this purpose, and the Council is the competent authority to do this (subject to confirmation by the Institute), and he placed draft proposals for consideration by the Council.

Resolved that the proposed bye-laws be circulated and be placed for consideration at a meeting of the Council to be held at an early date.

Report of the Committee for Examinations in Statistics.

8. Considered the Proceedings of the Committee for Examinations in Statistics dated 18th December, 1936.

(a) Resolved that the Secretary be authorized to print and circulate the Report of the Committee for Examinations in Statistics for consideration at a meeting of the Council at an early date.

(b) Resolved further that pending final decision of the Council the existing Examinations Committee be authorized to carry on the working of the Standing Committee for Examination proposed to be set up under the Regulations, and the Secretary, Examinations Committee, be authorized to take necessary steps provisionally in accordance with the recommendations of the Examinations Committee to hold the examination for the Computer's Certificate Part I, in April 1936.

(c) Resolved that the recommendation of the Examinations Committee be accepted and the Inter-University Board be requested to move the different Universities to introduce Statistics as an independent subject for study and examination for the B.A., B.Sc., M.A. and M.Sc. examinations of the Indian Universities.

Confirmed.

Confirmed
W. LAIDLAW,
Chairman.
24th April, 1936.

P. C. MAHALANOBIS,
Secretary.

**PROCEEDINGS OF THE COUNCIL OF THE INDIAN STATISTICAL INSTITUTE,
24th April, 1936.**

A meeting of the Council of the Indian Statistical Institute was held in the Board Room of Messrs. Martin & Co., 12, Mission Row, Calcutta at 3-0 p.m. on Friday the 24th April, 1936.

Present : - Mr. W. Lalitlaw was voted to the chair.

Messrs. S. S. Bose, K. M. Chakravarti, H. C. Ghosh, K. C. K. E. Raja, H. Sinha, J. C. Sinha, and P. C. Mahalanobis (*Secretary*).

Proceedings of the Council dated 16th December, 1935 confirmed.

1. Proceedings of the Council Meeting dated 16th December, 1935 were read and confirmed.

Changes in Bye-laws.

2. The Secretary reported that in accordance with a resolution of the Council dated 16th December, 1935 certain bye-laws had been circulated on the 24th December, 1935. He also reported that 7 members of the Council had approved of the proposed changes, and that no objections had been received so far.

Resolved that the following* changes in bye-laws be approved and the changes be placed before the Annual Meeting of the Institute for confirmation.

Draft Annual Report and Audited Accounts.

3. Resolved that the Draft Annual Report and Audit Accounts (circulated) be approved and forwarded to the Annual Meeting.

Report of the Committee for Examinations in Statistics.

4. The Secretary placed before the Council the Report of the Committee for Examinations in Statistics already circulated in accordance with the resolution of the Council dated 16th December, 1935.

Resolved that the Council recommends to the Annual Meeting of the Institute that the Report be adopted and sanction be given for instituting examinations for the award of certificates and diplomas in statistics and the draft Regulations be adopted.

Report of the Committee for Official Statistics.

5. Dr. D. H. Sinha, Secretary of the Committee for Official Statistics, placed before the meeting the first Report of the Committee (circulated).

Resolved that the Report be adopted as modified in the Council and be forwarded to the Annual Meeting of the Institute for information.

Election of Members of the Committee for Examinations in Statistics.

6. Resolved that the following persons be elected members of the Standing Committee for Examinations in Statistics :—

- (1) Mr. S. P. Mookerjee (*Vice-Chancellor, University of Calcutta*).
- (2) Sir B. C. Benthall (*President, Bengal Chamber of Commerce*).
- (3) Mr. D. P. Khaitan (*President, Federation of Indian Chambers of Commerce*).

* As printed in the Proceedings of the Annual Meeting of the Indian Statistical Institute, dated 24th April, 1936.

Budget Estimates for 1936-37

8. Resolved that the following Budget Estimates for 1936-37 be adopted and be forwarded to the Annual Meeting for information.

RECEIPTS.		EXPENDITURE.	
	Rs. A. P.		Rs. A. P.
Opening Balance	... 2,427 7 3	Research Staff	... 3,600 0 0
Grant from the Government of		Books & Journals	... 1,300 0 0
India	... 5,000 0 0	Calculating Machines and accessories	... 800 0 0
Membership Fees	... 1,500 0 0	Contribution for Journal	... 1,250 0 0
Miscellaneous	... 72 8 9	Contribution to Branches	... 50 0 0
		Part time Clerk & Peon	... 250 0 0
		Postage	... 250 0 0
		Printing, Stationary & Contingency	... 250 0 0
		Closing Balance	... 1,150 0 0
	<hr/>		<hr/>
	9,000 0 0		9,000 0 0

Election of Members.

9. Resolved that the following persons be elected members of the Indian Statistical Institute:

Prof. B. P. Adarkar (Benares), Mr. Nazir Ahmed (Bombay), Mr. P. D. Bhargava (Ajmete), Rai Bahadur Bindasaran (Lahore), Mr. Ajit Mohan Bose (Calcutta), Mr. B. N. De, I.C.S. (Retd.), Dr. H. L. Dey (Dacca), Mr. Sai Gopal (Benares), Mr. P. K. Jackson (Loochoor), Mr. H. B. Joshi (Bombay), Prof. V. R. Khandekar (Bombay), Mr. R. S. Koshal (Bombay), Dr. Setya Churn Law (Calcutta), Mr. Ishwardass Mahendru (Lahore), Mr. N. C. Mehta, I.C.S. (I. C. A. R.), Mr. V. V. Narlikar (Benares), Mr. H. Navkar (Bombay), Mr. P. Nikantanayyer (Jamshedpur), Mr. Ramonati Pal Choudhury (Benares), Mr. B. Ram Chandra Rau (Calcutta), Dr. K. C. Ray (Calcutta), Mr. Hansraj Sani (Benares), Mr. M. K. Sen Gupta (Quetta), Mr. L. S. Vaidyanathan (Bombay), Mr. V. Venkataraman (Bombay).

The meeting of the Council was adjourned till after the Annual Meeting of the Institute held in the Board Room of Messrs. Martin & Co., 12, Mission Row, Calcutta on the 24th April, 1936 at 3-30 p.m.

The adjourned meeting of the Council was held at 4-0 p.m. on the 24th April, 1936 with Mr. W. Laidlaw in the chair, the same members of the Council being present at the meeting.

Journal Committee.

1. Resolved that the Journal Committee be constituted as follows:—

Prof. K. B. Mahdava, Mr. N. C. Mehta, Mr. T. J. Y. Roxburgh, Prof. N. R. Sen, Dr. H. Sinha, Prof. P. C. Mahalanobis (Editor, *ex-officio*) with Mr. H. C. Ghosh as Secretary.

Opening of Bank Account in the name of the Treasurer.

2. Resolved that an account be opened in the name of the Treasurer, Indian Statistical Institute with the Imperial Bank of India, and that Mr. Satya Churn Law, Treasurer, Indian Statistical Institute and Prof. P. C. Mahalanobis be authorized to operate jointly on it.

Issue of Imprest cash.

3. Resolved that the Treasurer be authorized to issue to the Secretary an imprest cash upto a limit of Rs. 1,500/- at a time on the written requisition of the Secretary.

P. C. MAHALANOBIS,
Secretary.

**PROCEEDINGS OF THE ANNUAL GENERAL MEETING OF THE
INDIAN STATISTICAL INSTITUTE, 24 April 1936**

The Annual General Meeting of the Indian Statistical Institute was held in the Board Room of Messrs Martin & Co., 12, Mission Row, Calcutta, at 3-30 p.m. on Friday the 24th April, 1936.

In the unavoidable absence of the President, Sir R. C. Benthall, one of the Vice-Presidents of the Institute, took the Chair.

The following members were present:—

Mr. C. G. Arthur (*Vice-President, Bengal Chamber of Commerce*).
Mr. S. S. Bose (*Statistical Laboratory, Calcutta*).
Mr. K. N. Chakravarti (*Presidency College, Calcutta*).
Mr. H. C. Ghose (*Lecturer, Calcutta University*).
Sir Badridas Goenka (*Calcutta*).
Mr. W. Laidlaw (*Messrs. Mackinnon Mackenzie & Co., Calcutta*).
Mr. H. D. Ghose (*Indian National Chamber of Commerce, Calcutta*).
Mr. R. Gupta (*Government Commercial Institute, Calcutta*).
Mr. H. Sinha (*University of Calcutta*).
Mr. J. C. Sinha (*Presidency College, Calcutta*).
Dr. K. C. K. E. Raja (*All India Institute of Hygiene, Calcutta*).
Mr. B. Roy (*General Assurance Society, Calcutta*).
Mr. P. C. Mahalanobis (*Secretary*).

1. The Secretary placed before the meeting the Annual Report and Audited Accounts for 1935-36 as approved by the Council, and mentioned that the accounts had been audited free of charge by Messrs. P. C. Nandy & Co., Chartered Accountants.

Resolved that the Annual Report and Audited Accounts for 1935-36 (previously circulated) be adopted.

Proposed by Sir R. C. Benthall

Seconded by Mr. W. Laidlaw (Carried unanimously).

2. Resolved that Sir R. C. Benthall be elected President of the Indian Statistical Institute for 1936-37.

Proposed by Prof. P. C. Mahalanobis

Seconded by Dr. H. C. Sinha (Carried unanimously).

3. This meeting places on record its deep appreciation of the services rendered to the Institute by Sir R. N. Mookerjee, the first President, without whose active help it would have been difficult to start the Institute.

Proposed from the Chair

(Carried unanimously).

4. Resolved that Sir K. N. Mookerjee be elected Honorary Vice-President for life

Proposed by Sir Badridas Goenka

Seconded by Mr. C. G. Arthur (Carried unanimously).

5. Resolved that this meeting places on record its profound regret at the death of Sir Kesharnath Das, M.D., C.I.E., one of the founder members of the Indian Statistical Institute who took an active interest in its work and helped it by contributions to Sanjha and in various other ways.

Proposed by Prof. P. C. Mahalanobis

Seconded by Dr. K. C. K. E. Raja (Carried unanimously).

6. Resolved that Prof. P. N. Banerjee, Mr. P. Basu (*Indore*), Sir Badridas Goenka, Mr. D. P. Khaitan, Dr. John Matthai (*Simla*), Mr. S. P. Mookerjee, Dr. C. W. B. Normand (*Poona*), Sir C. V. Raman (*Bengalor*), Maharajah Sir M. N. Roy Choudhury, Lala Shri Ram (*Delhi*), Mr. N. R. Sarkar, and Mr. D. M. Sen be elected Vice-Presidents of the Institute for 1936-37.

Proposed by Mr. K. N. Chakravarti

Seconded by Dr. H. C. Sinha (Carried unanimously).

7. Resolved that *Dr. Satya Churn Law* be elected Honorary Treasurer of the Institute for 1936-37.
Proposed by Prof. P. C. Mahalanobis
Seconded by Mr. H. C. Ghosh (Carried unanimously).
8. Resolved that *Prof. P. C. Mahalanobis* be re-elected the Honorary Secretary and *Dr. K. C. K. R. Raja* and *Dr. H. Sinha* be elected Honorary Joint-Secretaries of the Institute for 1936-37.
Proposed by Sir B. C. Benthall
Seconded by Mr. H. C. Ghosh (Carried unanimously).
9. Resolved that the following Branch Secretaries be elected for 1936-37.
 (1) *Poona Branch* : *Principal D. G. Karve*
 (2) *Mysore Branch* : *Prof. K. B. Madhava*
 (3) *Bombay Branch* : *Prof. G. S. Ghurye* and *Mr. S. R. Deshpande*
 (4) *Benares Branch* : *Prof. B. P. Adarkar*
Proposed by Prof. P. C. Mahalanobis
Seconded by Mr. S. S. Bose (Carried unanimously).
10. Resolved that the following persons be elected members of the Council for 1936-37 :—
Mr. N. K. Adyanthaya (Statistician, Government of Madras), *Dr. Nazir Ahmed* (Director of Plant Industries, Bombay), *Mr. C. C. Arthur* (Vice-President, Bengal Chamber of Commerce), *Prof. Bhai Dalmukand* (Agricultural College, Lyallpur, Punjab), *Dr. S. K. Banerjee* (Meteorologist, Poona), *Rai Bahadur Binaychaman* (President, Northern India Chamber of Commerce, Lahore), *Dr. G. S. Bose* (Head of the Department of Psychology, University of Calcutta), *Mr. S. S. Bose* (Statistical Laboratory, Calcutta), *Mr. P. H. Carpenter* (Chief Scientific Officer, Indian Tea Association), *Prof. K. N. Chakravarti* (Presidency College, Calcutta), *Prof. H. L. Dey* (University of Dacca), *Prof. H. D. Ghosh* (University of Calcutta), *Dr. B. S. Guha* (Anthropologist, Indian Museum), *Dr. R. B. Gupta* (Director, Bureau of Statistics, Cawnpore), *Mr. J. V. Joshi*, (Deputy Director of Commercial Intelligence and Statistics, Government of India), *Mr. W. Laidlaw* (Messrs. Mackinnon Mackenzie & Co.), *Prof. J. McLean* (Wilson College, Bombay), *G. L. Mehta* (Scindia Steam Navigation Company, Calcutta), *N. C. Mehta* (Secretary, Imperial Council of Agricultural Research), *Prof. Rallhakamal Mukerjee* (University of Lucknow), *Mr. T. J. Y. Rosthury* (I.C.S., Judicial Secretary, Bengal), *Dr. J. C. Sinha* (Presidency College, Calcutta),
Proposed by Sir Balridda Goenka
Seconded by Mr. H. C. Ghosh (Carried unanimously).
11. Resolved that this meeting places on record its appreciation of the services of Messrs. P. C. Nandy & Co., Chartered Accountants, who have audited the accounts free of all charges.
Proposed by Mr. W. Laidlaw
Seconded by Dr. H. Sinha (Carried unanimously).
12. Resolved that Messrs. P. C. Nandy & Co., Chartered Accountants, be requested to serve as Honorary Auditors for 1936-37.
Proposed by Mr. K. N. Chakravarti
Seconded by Mr. W. Laidlaw (Carried unanimously).
13. Considered the Report of the Committee for Examinations in Statistics and the recommendations of the Council.
 (a) Resolved that the Report of the Committee for Examinations in Statistics be adopted.
 (b) Resolved that sanction be given for instituting examinations for the award of certificates and diplomas in statistics, and the Regulations drafted by the Committee for Examinations in Statistics be adopted.
Proposed by Prof. J. C. Sinha
Seconded by Dr. K. C. K. B. Raja (Carried unanimously).
14. Resolved that the Standing Committee for Examinations in Statistics be constituted as follows :—
 (a) Six members elected by the Technical Committee :—
 (1) *Mr. P. H. Carpenter* (Chief Scientific Officer, Indian Tea Association).
 (2) *Prof. K. B. Madhava* (University of Mysore).
 (3) *Dr. J. Matthai* (Director General of Commercial Intelligence & Statistics).

THE INDIAN STATISTICAL INSTITUTE

- (4) Dr. C. W. B. Normand (*Director General of Observatories in India*).
(5) Mr. N. C. Mehta, I.C.S. (*Imperial Council of Agricultural Research*).
(6) Dr. N. R. Sen (*University of Calcutta*).

- (8) Three members elected by the Council of the Institute :—
(7) Mr. S. P. Mookherjee (*Vice-Chancellor, University of Calcutta*).
(8) Sir R. C. Benthall (*President, Bengal Chamber of Commerce*).
(9) Mr. D. P. Khaitan (*President, Federation of Indian Chambers of Commerce*).

- (10) (11) The General Secretary, *ex-officio*.
(11) The Secretary of a Local Branch at which an examination is being conducted, *ex-officio*.

Proposed by Mr. W. Laidlaw
Seconded by Sir Balrudas Goenka (Carried unanimously).

15. Considered the Report of the Committee for Official Statistics.
(To be recorded).
16. Considered the Budget estimates for 1936-37 as passed by the Council.
(To be recorded).

17. Resolved that this meeting record their thanks to Prof. P. C. Mahalanobis for the support which he has given to *Sankhyā*: Indian Journal of Statistics.

Proposed from the Chair.
(Carried unanimously).

18. Resolved that the following changes in bye-laws which had been circulated on the 24th December 1933 and had been approved by the Council on the 24th April 1936 be confirmed.

Proposed by Sir R. C. Benthall
Seconded by Mr. C. G. Arthur (Carried unanimously).

Bye-laws.

(1) Besides office-bearers and *ex-officio* members there shall be twenty other members of the Council of whom not less than eight shall be elected from among members resident in Calcutta.

(2) The Chairman of each Local Branch shall be an additional Vice-President of the Institute. Each former President of the Institute who is a continuing member shall be an *honorary* Vice-President for a term of five years after vacating the office of the President. Besides *honorary* and additional Vice-Presidents, there shall be such number of Vice-Presidents as the Council may determine from time to time provided however that not less than three Vice-Presidents shall be elected from among members resident in Calcutta.

(3) Nominations for election as the Treasurer, the General Secretary or the Joint Secretaries of the Institute shall be made from among members resident in Calcutta.

(4) The Council shall prepare a list of the names of those persons whom it recommends for election as office-bearers or as members of the Council for the ensuing year and shall circulate this list among the members of the Institute resident in India at least two months before the date of the Annual General Meeting of the Institute. At the same meeting of the Council two scrutineers shall be appointed for counting the votes.

(5) A voting paper containing the names recommended by the Council together with the name of any other person nominated by not less than five members of the Institute and received by the Secretary not later than one month after the date of circulation of the list prepared by the Council shall be sent to each member of the Institute resident in India together with the notice of the Annual General Meeting.

(6) The members shall record their votes by placing a cross against the names of those they desire to be elected. The voting paper shall be enclosed unsigned in a sealed envelope supplied by the Institute which shall be forwarded with a signed covering letter so as to reach the Secretary at least two days before the date of the Annual Meeting. In the absence of a covering letter the voting paper shall be invalid.

(7) The voting papers in sealed covers shall be handed over by the Secretary to the two scrutineers not earlier than two days before the date of the Annual General Meeting. The scrutineers

shall count the voting slips, and submit to the Annual General Meeting a list showing the votes received by each person mentioned in the voting papers. In the case of office-bearers the Chairman shall declare the names of persons receiving the highest number of votes as duly elected, and in the case of members of the Council shall announce the names of persons who have received the necessary majority of votes as duly elected. If there be an equal number of votes for any two or more candidates the Chairman shall announce the fact and shall proceed to decide by lot which candidate shall have preference.

(8) The rate of subscription for members not resident in India shall be Rs. 20/- (Rupees twenty) a year, or its equivalent in foreign currency at rates to be fixed from time to time by the Council.

10. Resolved that this meeting place on record its appreciation of the services rendered to the Institute by the retiring office-bearers and members of the Council.

Proposed by Sir Balridas Goenka

Seconded by Mr. R. B. Gupta

(Carried unanimously).

The Meeting terminated with a vote of thanks to the Chair.

B. C. BENTHAL,

Chairman.

P. C. MAHALANOBIS,

Hon. Secretary.

PROCEEDINGS OF THE MEETING OF THE TECHNICAL COMMITTEE.

The meeting of the Technical Committee of the Indian Statistical Institute was held in the Board Room of Messrs. Martin & Co., 12, Mission Row, Calcutta, at 3 P.M. on Friday the 24th April, 1936.

Present: Dr. J. C. Sinha (in the chair), Messrs. Subhendu Sekhar Bose, K. N. Chakravarti, H. Sinha and P. C. Mahalanobis (Secretary).

P. C. Mahalanobis (Secretary) stated that he had circulated a note drawing the attention of the members of the Technical Committee to the fact that six members of the Standing Committee for Examinations in Statistics were to be elected by the Technical Committee.

The following names were proposed for election by the Technical Committee:—

- (1) Mr. P. H. Carpenter, F.I.C., I.C.S. (Chief Scientific Officer, Indian Tea Association).
- (2) Prof. K. B. Madhava, M.A., A.I.A. (University of Mysore).
- (3) Dr. J. Matilal, M.A., D.Sc. (Director General of Commercial Intelligence & Statistics).
- (4) Mr. N. C. Mehta, M.A., I.C.S. (Secretary, Imperial Council of Agricultural Research).
- (5) Dr. C. W. B. Norman, M.A., D.Sc. (Director General of Observatories in India).
- (6) Prof. N. R. Sen, M.A., D.Sc. (Head of the Department of Applied Mathematics, University of Calcutta).

Members of the Technical Committee who were unable to attend the meeting were requested either to approve the election of the above-named persons or to propose one or more names for consideration at the meeting of the Technical Committee.

The Secretary reported that 12 members had approved of the above proposals and that no fresh nominations had been received.

Resolved that the above-mentioned persons be elected members of the Standing Committee for Examinations in Statistics.

P. C. MAHALANOBIS,
Secretary.