

INDIAN STATISTICAL INSTITUTE

Twentieth Annual Report : 1951-52

1.0. INTRODUCTORY

The present report gives a brief review of the Institute's activities in the twentieth year of its existence. The year under review has been a busy one. All the old activities in connection with research, training and scientific projects have been extended in scope. The stabilization of a portion of Institute's activities, viz., research and training, has been completed and a governing body has been set up to take charge of the research and training school of the Institute. The 27th session of the International Statistical Institute was held in Delhi from 5 to 11 December 1951, followed by a short session in Calcutta from 16 to 18 December 1951. The Indian Statistical Institute acted as the host society.

1.1. INTERNATIONAL STATISTICAL CONFERENCES: INDIA 1951.

The International Statistical Institute held its 27th session in India in New Delhi from 5 to 11 December 1951, with a short session in Calcutta from 16 to 18 December 1951. The International Biometric Society, the International Econometric Society, the International Association for Research in Income and Wealth, the International Union for the Scientific Study of Population, also held joint or associated meetings with the International Statistical Institute. A special session was also convened of the International Statistical Association for Asia and the Far East. The Indian Statistical Institute, Calcutta, acted as the host society.

Dr. Rajendra Prasad, President of the Republic of India, inaugurated the Conferences at New Delhi and Shri C. D. Deshmukh in his capacity as the Finance Minister, Chairman of the Executive Committee and President of the Indian Statistical Institute welcomed the delegates. Prime Minister Shri Jawaharlal Nehru also welcomed the delegates, and remarked that he was glad to notice a tendency among statisticians to deal more and more with the human aspects of a problem. Dr. S. A. Rice, President of the International Statistical Institute, in his address termed the 27th session as "the session of fulfilling".

Nearly 150 distinguished statisticians from 40 countries, other than India, participated in the Conferences. Participants also included the representatives of UN, FAO, WHO, ECAFE, UNESCO, ILO, ISO, and WMO.

In this connection it may be mentioned that most of the delegates took great interest in the working of the Institute and the impressions of some of them are recorded in Appendix 10.8.

1.2. DEDICATION OF NEW BUILDING

The construction of a portion of the Institute's own building at Baranagar which was started in 1950-51 was completed during the year with a floor space of approximately 19,000 sq. ft. in five stories. The major portion of the staff was removed to the new building during the year and this relieved the acute congestion to some extent. But more accommodation is needed still and additional sections adjoining the present building are proposed to be erected in 1952-53. We were fortunate in receiving a building grant of Rs. 2,00,000 from the Government of India just before the close of the financial year, and we expect to receive an equal sum for the same purpose during 1952-53.

The dedication ceremony of the new building of the Institute at Baranagar was performed by Dr. R. A. Fisher on 17 December 1951 in the presence of the delegates to the International Statistical Conferences, and an exhibition was arranged to give the visitors some idea of the nature and scope of activities of the Institute.

1.3. UNITED NATIONS SUB-COMMISSION ON STATISTICAL SAMPLING

The United Nations Sub-Commission on Statistical Sampling held its fifth session in Calcutta from 10 December 1951 to 2 January 1952. At the first meeting of the session, Professor P. C. Mahalanobis was elected Chairman for the fifth time. Many subjects of special interest were discussed in the session:— sample surveys of current interest, use of sampling techniques for the improvement of statistics on acreage yield and forecast, statistical technique for the development of methods for testing standard for countries entering into international trade, statistical technique in industry as a national resource, sample surveys carried out by the Indian Statistical Institute, sampling in population censuses, report on sampling to obtain road statistics, sampling of administrative forms, etc.

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2.0. RESEARCH AND TRAINING SCHOOL

2.1. REORGANIZATION OF THE INSTITUTE

In accordance with the regulations framed by the Council at its meeting held on 17 February 1951 and approved by the Department of Economic Affairs, Ministry of Finance, Government of India, on 19 March 1951, the Governing Body for the Research and Training School of the Institute has been set up with the following personnel:—

Ex-officio Chairman: The President of the Institute:

Shri C. D. Deshmukh

Ex-officio members: (1) The Secretary of the Institute

and (2) The Director of the Training and Research School:

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

Two representatives of the Government of India:

1. Shri Bali Ram Bhagat,
Member, Parliament,
Kadamkuan, Patna.
2. Shri P. C. Bhattacharyya,
Joint Secretary, Ministry of Finance,
Government of India,
New Delhi.

One representative of the Reserve Bank of India:

Dr. N. S. R. Sastry,
Director of Statistics,
Reserve Bank of India,
Bombay.

One representative of the Inter University Board:

Dr. P. B. Patnaik, M.A., Ph.D. (Lond.),
Professor of Statistics,
Presidency College, Madras.

One representative of the Associated Chambers of Commerce of India:

Mr. J. A. R. Tainah,
Messrs. Ibeon Ltd.,
15 Chittaranjan Avenue, Calcutta.

One representative of the Federation of Indian Chambers of Commerce & Industry:

Shri D. N. Mukherjee,
C/o United Bank of India Ltd.,
4 Clive Ghat Street, Calcutta.

One representative of the National Institute of Sciences of India:

Dr. P. V. Krishna Iyer.

One representative of the Indian Economic Association:

Professor J. P. Niyogi of the Calcutta University,
19 Ballygunj Place, Calcutta.

Seven representatives of the Council of the Indian Statistical Institute (elected at a meeting of the Council held in Calcutta on 16 October 1951):

1. Sir Shri Ram,
Delhi Cloth Mills, Delhi.
2. Professor S. N. Bose,
Professor of Physics, Calcutta University, Calcutta.
3. Dr. S. K. Banerjee,
Retired Director General of Observatories, Calcutta.
4. Professor K. B. Mulhava,
Retired Professor of Mysore University,
Mudra.

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5. Shri Nihar Chandra Chakravarti,
Assistant Secretary,
Department of Agriculture, Forests & Fisheries,
Government of West Bengal, Calcutta.
6. Shri Mohanlal Ganguli,
Statistician, Associated Chambers of Commerce,
Calcutta.
7. Dr. C. R. Rao,
Professor and Head of the Division of Theoretical Research,
Indian Statistical Institute, Calcutta.

Professor K. N. Chakravarti, Registrar of the Indian Statistical Institute (Secretary).

2.2. TRAINING SECTION

Seven students out of nine who had been promoted from the first year to the second year class passed the qualifying examination held at the end of their second year session. The other two were re-admitted into the second year class.

Eleven students appeared at the annual examination held at the end of their first year session, of whom six were promoted to the second year class. Fifteen new students were admitted to the first year class this year.

2.3. COMPUTER'S TRAINING CLASSES

Provision has been made during the year under review for a six months' course for the training of computers. Classes are held in the evening and students are given training corresponding to the syllabus for the Computer's Certificate Examination (Part I—A, B, & C) conducted by the Institute. The first term began in November 1961 with 31 students on the rolls.

2.4. EXAMINATIONS

The Statistician's Diploma Examination, according to the revised syllabus, was held in August 1961, simultaneously at Bombay, Calcutta, Delhi, Lucknow, Madras and Poona. Fifty-nine candidates registered themselves for examination in different papers, of whom thirty-seven appeared and twenty-two passed, in one or more papers.

The Computer's Certificate Examination Part I was held in June 1961, simultaneously at Calcutta and Giridih. Out of two hundred and three candidates, who registered themselves for different sections of the examination, one hundred and sixty-five appeared and seventy-five passed, in one or more sections.

The Statistical Field Survey Examinations (Junior and Senior) were also held in June 1961, for the first time after an interval of ten years and out of three hundred and thirty-two candidates who registered themselves for different sections of the examinations, two hundred and seventeen appeared and one hundred and four passed, in one or more sections.

The names of successful candidates in different examinations are given in Appendix 10.7.

2.5. OFFICERS ON DEPUTATION

There were five officers on deputation during the year under review. One of them, deputed by the Government of Assam, joined as a regular student of the first year training section. Two officers, deputed by the East Punjab University, were given special courses of training suited to their individual requirements. The remaining two from the Calcutta University are carrying on studies in Statistics in Experimental Psychology.

2.6. LIBRARY

2.6.1. *Research Library:* During the major part of the year, the Central Library was located at Calcutta with branches at Giridih and Baranagar. The Central Library was removed to Baranagar and the Calcutta unit was converted into a branch in February 1962. This, however, continued to be the most widely used unit and a regular shuttle service of books and journals had to be maintained between it and the Central Library.

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During the year under review addition to the Library consisted of 578 books of which 63 were received as gifts from scientists and learned societies of various countries. The library now contains 24,797 volumes excluding off-prints and monographs. A total of 734 periodicals and annuals were received; of these 165 were gifts from scientific societies, government departments and research departments of commercial firms.

The number of library members increased from 321 to 408. The total number of books and journals borrowed was 39,035 of which 5,200 were issued from the lending section and 24,828 from the reference section.

In the Documentation Unit, organized for the preservation of papers containing important technical information, 35 files containing about 300 papers have been arranged with systematic classification and proper indexing.

The Records Unit, which had been set up for the systematic arrangement and preservation of the large volume of maps and documentary material collected in the course of the statistical surveys conducted by the Institute, was handicapped by depletion of staff, illness among the workers and, above all, shortage of space. The Unit has so far collected 1,96,706 schedules of 36 surveys. Some progress has also been made with the systematic arrangement of maps.

2.6.2. *Workers' Circulating Library:* 33 English and 87 Bengali books were added to the library thus bringing up the total stock to 4,131 volumes. The number of books issued from Calcutta, Baranagar and Giridih were 956, 4,805 and 1,333 respectively.

3.0. INTERNATIONAL STATISTICAL EDUCATION CENTRE

The second semester of the International Statistical Education Centre, sponsored by the International Statistical Institute, under the auspices of the UNO came to a close in December 1951. 36 trainees from 10 different countries in the middle- south- and far-East Asia attended the course.

They also participated in the 27th session of the International Statistical Conference which were held in Delhi and Calcutta in December 1951.

During the second term, fellowships under the Colombo Plan were granted to 11 trainees of the Centre by the Government of India. The value of each Fellowship was Rs. 380/- per month, there was a lump grant of Rs. 150/- for the purchase of books and the cost of transportation from the country of origin to the Centre and back was also borne by the Government of India.

As in the first term, the bulk of the teaching work was undertaken by the workers of the Indian Statistical Institute. The visiting teachers were Professor A. Linder (University of Geneva), Professor Maurice A. Copeland (University of Cornell), and Dr. C. P. G. J. Smit (FAO, Bangkok). Dr. Stuart A. Rice (President, International Statistical Institute) and Dr. G. Goulsward (Director, Permanent Office, International Statistical Institute) addressed the trainees on two days on U.S. Statistical Organization and International Statistics respectively. Shri R. A. Gopalswamy, Registrar General of India, also gave them a talk on the last census operations in India.

The third semester which began on 14 January 1952 will continue till the end of June 1952. It is being attended by 40 trainees belonging to 12 different countries. The visiting teachers who have assisted so far during this term are Professor W. F. Ogburn (University of Chicago), Dr. H. Kneeland and Dr. C. P. G. J. Smit (FAO).

3.1. VISITING PROFESSORS

During the year under review the Institute invited a number of outstanding statisticians who attended the International Statistical Conferences and the Indian Science Congress sessions and delivered courses of lectures on specialized topics. Professor J. B. S. Haldane of the London University in a course of twelve lectures discussed statistical and mathematical methods in the study of animal demography, population genetics and theory of natural selection. Dr. G. Raach of the State Serum Institute, Copenhagen, delivered six lectures on the mathematical and statistical problems of growth. Dr. K. Wagner, President of the Statistical Office of Bavaria and President of the German Statistical Society, delivered two lectures on new trends of business trends and economic situation of Western Germany. Dr. Mitsuhiro Masuyama of the Institute of Physical Therapy and Internal Medicine, Tokyo University, discussed in a course of four lectures a number of interesting topics in applied and theoretical statistics.

Professor A. Linder of the University of Geneva and President of the International Biometric Society who came to the Institute to lecture to the trainees of the International Statistical Education Centre

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conducted a number of seminars of the training and research division of the Institute. He also gave three special lectures on statistical methods as a tool in medical research.

3.2. VISITORS

The Institute had the opportunity of welcoming a large number of distinguished statisticians who came to participate in the Calcutta session of the International Statistical Conferences, from nearly forty countries of the world. Among them were:

Bolz, M. H. (Australia); Winkler, W. (Austria); Frumkin, G. (U.N. Technical Assistance Mission in Afghanistan); Silva Rodrigues, M. C. and Mortara, G. (Brazil); Hausor, P. M., Koop, J. C. and The Tun Oo (Burma); Marshall, H. (Canada); Dasgupta, B. B. (Ceylon); Ti Chao Pei (Peoples' Republic of China); Bjerke, K. and Raseh, G. (Denmark); Findlay Shirras, G. (Eire); Borel, E., Depoid, P., Rivot, R., Roy, R., Sauvy, A. L. and Darinois, G. (France); Fürst, G. M. W. and Wagner, K. E. F. (Germany); Calitsanakias, D. (Greece); Baechi, Ruberto (Israel); Gini, C., Livi, L. and Tagliacarno, G. (Italy); Maayama, M., Minobe, R. and Blagge, (Mrs.) A. G. (Japan); Song, Y. P. and Smith, T. (Malaya); Acharya, K. B. and Majhi, T. B. (Nepal); Goudswaard, G., Idenburg, Ph. J. and Tinbergen, J. (Netherlands); Bjerve, P. J. (Norway); Ansuari, C. R. and Siddiqui, M. A. (Pakistan); Moraes, P. (Portugal); Paroz, B. A. (Philippines); De Miguel Martin, A. (Spain); Dulenius, Tore (Sweden); Kull, W. and Nixon, J. W. (Switzerland); Goodman, R. (Thailand); Allen, R. G. D., Campion, H., Fialor, R. A., Moser, C. A. and Yates, F. (U.K.); Copeland, M. A., Davis, K., Deming, W. E., Lorimer, F. W. and Rice, S. A. (U.S.A.); Nyogen Cong Phu, (Viet-Nam); Maaura, M. and Vogelnik, D. (Yugoslavia) and Leonard, W. R. (United Nations).

Sukhatme, P. V. (F.A.O.); Satya Swaroop (W.H.O.); Dashora, Y. L.; Dhillon, J. S.; Namia, D. N.; Nair, U. S.; Ekambaram, S. K.; George, (Miss) A.; Pande, J. K.; Shal, H. N.; Sharma, V. G.; Towari, J. N.; Saxsena, K. L.; Shaukat Abbas and Jain, D. D. were among the Indian visitors to the Indian Statistical Institute during the year 1951-52.

An invitation was also issued to statisticians of U.S.S.R. to attend the 27th session of the International Statistical Conferences. Owing to unavoidable circumstances the Russian delegation could not reach India in time to attend the International Statistical Conferences. They reached Calcutta early in January when the Indian Science Congress was in session in the Presidency College, Calcutta. During their stay in Calcutta the Russian delegates, I. S. Malyshov (Deputy Director, U.S.S.R. Central Statistical Board), T. V. Ryabushkin (U.S.S.R. representative on U.N. Statistical Commission) and I. Y. Pizarev (Head of Statistical Division, U.S.S.R. Academy) delivered 3 lectures in the Indian Statistical Institute on National Income Statistics and the Development of Statistics in U.S.S.R.

4.0. SCIENTIFIC ACTIVITIES

4.1. THEORETICAL AND APPLIED RESEARCHES

4.1.1. *Decision Functions*: D. Basu has considered a number of examples to demonstrate that minimax estimators do not always exist unless the parameter space is truncated or the loss function is suitably restricted. Some interesting results have been obtained in the case of the Poisson distribution. It has been shown that for the rectangular distribution with the range from 0 to θ there does not exist a minimax estimate if the range of θ is from 0 to ∞ and the loss function is of the 0, 1 type. The class of admissible estimators of normal variance is shown to be of the type $(s^2+c)/(n+1+d)$ where s^2 is the corrected sum of squares, n , the sample size and c and d are positive constants.

4.1.2. *Minimum Variance Estimation*: From a general theorem that the necessary and sufficient condition for a statistic T to be a minimum variance estimate is that it has zero covariance with all functions with zero expectation, C. R. Rao has obtained a number of results the most important of which is the minimum variance property of all functions of a minimum variance estimate. Some theorems concerning the construction of minimum variance estimates, the role of sufficient statistics in minimum variance estimation, and estimation when the estimating functions belong to a restricted class have been easily deduced from the necessary and sufficient condition stated above. C. R. Rao has also proved that if a distribution is such that it admits of uniformly minimum variance estimates, the distribution must be of a special type admitting sufficient statistics. It would then follow that minimum variance estimation is possible only in this special class of distribution functions.

D. Basu has shown that if the variables are asymmetrically distributed, minimum variance estimates (and in general estimates with minimum expected loss using a convex loss function) are symmetric func-

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tions of the observations. He used this result in deducing the expressions for estimates of variances in sampling problems and linear estimation. He also constructed examples to show that minimum variance statistics do not always exist.

D. Basu has also found that the maximum likelihood estimate of the parameter θ in a rectangular distribution from θ to 2θ has asymptotically a higher variance than that of the alternative statistic $(2\frac{1}{2} + \eta)/5$ where ξ and η are the maximum and the minimum in the observed sample.

4.1.3. *Problems of efficient selection*: The combinatorial problem of selecting specified numbers n_1, \dots, n_k elements from a rectangular array of elements in k columns and N rows such that their sum or product is a maximum has been solved by C. R. Rao. This result has been found to be of some use in the problem of efficient selection of candidates for various posts using differential predictors for the success of a candidate in various jobs on the basis of initial test scores. The above solution is also useful in the application of the maximum likelihood method in separating mixed samples and other related problems.

4.1.4. *Testing of Hypothesis*: It is well-known that in testing for the difference between the averages in two groups the efficiency of comparison can be increased by choosing the observations in the two groups in such a way that they are positively correlated. K. C. Chanda has shown that even in the test for difference in the standard deviations between the two groups there is a definite advantage in choosing correlated sets of observations in small samples.

4.1.5. *Characterization of the normal distribution*: Extending and generalizing Bernstein's theorem D. Basu has proved that if an orthogonal transformation of n independent variables leads to an independent distribution of the transformed variables, the original variables must be normally distributed provided that $E(|x|^4)$, $0 < \delta < 1$, exists for each of the variables. This proposition has been also proved very simply assuming the existence of the moments of all orders for all the variables. Generalizing Geary's work R. G. Laha has shown that if in random samples of a given size from a population the mean is distributed independently of any Fisher's k -statistic, the original population must be normal.

4.1.6. *Non-normal sampling distributions*: A. K. Gayen obtained the distribution of the product moment correlation-coefficient in any size of non-normal samples for populations expressed by Edgeworth form of the bivariate Type A surface upto terms in the fourth and the third order semi-invariants, which were assumed to be known. It is seen that for samples of moderate size, the distribution of Fisher's z -transformation of the correlation-coefficients is still approximately normal with a mean and standard deviation depending on the first two β -coefficients of the population. In the course of the work, certain errors have been detected in the higher order terms of the expressions of the moment co-efficients of z , given by Fisher (1921). While these terms are not important in most practical applications they have been used by many workers in examining the closeness of the approximation involved in the use of z .

Some further investigations were carried out on the sampling distribution of non-normal t -statistic, to compare the approximations provided by the derived frequency densities of t for Edgeworth series (Gayen 1949) and Compound Normal (Hyrenious 1950) parent populations. The regions of validity of these formulae have been found out.

4.1.7. *Asymptotic Expansion of distributions*: By suitable transformations of the Wilks' likelihood criterion statistic it has been possible to obtain asymptotic expansions of its distribution function in gamma and beta forms. These expansions are such that the probabilities can be evaluated with a high degree of accuracy by using only one or two terms even in very small samples. The theory and the applications to some problems have been given by C. R. Rao and Jogendra Roy.

4.1.8. *Multivariate Distributions*: The concept of partial canonical correlations was developed by A. C. Das. He found the joint distributions of these correlations between two groups of variables and proposed appropriate tests of significance by using the maximum and the minimum of the canonical correlations.

4.1.9. *Design of Experiments*: Using the power cycle of the Galois field, C. R. Rao obtained an integral representation of the treatment combinations as well as the contrast sets in a factorial design. This is useful in two ways (i) to provide cyclic solutions in all possible groups of confounded contrast sets and also to the key blocks from either of which the whole design can be generated in a simple way, and (ii) to develop a punched card technique for the analysis of experimental data. The punched card technique is also useful in the derivation of fractionally replicated designs, optimum multifactorial designs, incomplete block, balanced, partially balanced and lattice designs.

4.1.10. *Sample Surveys*: In the problem of choosing sample units with probability proportional to their size the usual practice is first to obtain a cumulative total of the sizes and then choose that unit whose

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cumulative total just exceeds a randomly chosen number from 1 to the maximum cumulative total. D. B. Lahiri has proposed a simple rule by which the tedious process of finding the cumulative totals can be avoided. If the number of units is K and the maximum size of the unit is U , Lahiri's method consists in choosing a random number say i between 1 and K and selecting the i th unit only if another random number between 1 and U does not exceed the size of the i th unit. There will be, however, a few rejections depending on the range of the sizes of the units. This method is the only practicable one, if the problem is to choose a cluster of units with probability proportional to its total size. In this case, if the cluster consists of p units, p random numbers are drawn from 1 to K and the units corresponding to them chosen only when another random number chosen from 1 to pU does not exceed the total size.

A. C. Das derived expressions for the estimates of means and the variances of the estimates for two phase sampling from a mixed population, sampling with varying probabilities without replacement and systematic sampling.

The general problem of planning successive sample surveys over several years has been studied by A. Matthai and K. C. Seal.

4.1.11. *Studies in Time series and Demand analysis*: During the year under review, the research projects on time series and demand analysis, started in 1950 under the supervision of Prof. Herman Wold, have been completed and the results have been published in a separate seminar volume of *Sankhyā*. The important problems discussed are discriminant function methods of classifying time series by C. R. Rao; tests of significance by S. R. Rao, A. Matthai, M. B. Kannan and R. K. Som; analysis of recursive systems by A. C. Das; analysis of demand for Indian goods by V. N. Murti and K. Sastry; the theory of indifference maps by M. V. Jambunathan; and moments of moment statistics by A. Sreerama Sastry.

4.1.12. *Studies in Income distribution*: A. K. Gayen (with G. C. Roy) examined the possibility of graduating the income distribution of Indians by a generalized Pareto function. The agreement between the graduated and the observed figures was found to be satisfactory. From this function, it was found that the *wolf-point* for the year 1938-39 was Rs. 1000/- approximately, which for annual per capita estimation would work out at about Rs. 182/- only. R. K. Som also investigated into the concentration of income in Bengal villages. The general distribution function (of the Pareto form) was also fitted, the minimum subsistence level, the so-called per capita *wolf-point*, coming out to be Rs. 127/- for 1946.

4.1.13. *Studies in Infant Mortality Rates and Fertility Rates*: A. K. Gayen (jointly with K. N. Mitra and others) studied the trend of infant mortality rates in the middle income groups in Calcutta by longitudinal (historical) data. Advantages of longitudinal data in conducting infant mortality surveys have also been considered by them. B. N. Sarkar investigated the possibility of graduating fertility rates in West Bengal and in Bombay by Poissonian system of curves. The agreement between the observed and the graduated figures was considered to be satisfactory.

4.1.14. *Study of Strike movement in India*: R. K. Som (with Miss K. Ray) investigated into some broad aspects of the strike movement in India for 1927-45. It was observed that the efforts at industrial peace had resulted in the reduction of man-days lost by shortening and localizing strikes (i.e., by cutting down their length and size) though the number of strikes had increased.

4.2. PROJECTS

4.2.1. *Multipurpose National Sample Survey, 1951-52*: The Institute continued the Multipurpose National Sample Survey sponsored by the Ministry of Finance, Government of India. In the current year three rounds of the survey were completed. The field work of the first round was started in May 1951 and was completed in July 1951. A total of 1,160 villages was selected at random from those surveyed in the previous year and a random sub-sample of 10 households was chosen in each selected village for investigation. The data collected primarily relate to details on volumes of and expenditure on various consumption items and information on crop production with special reference to cereals, jute and cotton.

The second round of the survey was started in August 1951, and was completed in November 1951. Two important changes were made. Firstly, the survey covered both rural and urban areas so that the sample represented the whole of India. Secondly, the survey was extended in scope by collecting extra information on production relating to agriculture and animal husbandry; production, cost and income relating to small scale industry; trade and services in addition to details regarding volumes of and expenditure on various consumption items. Besides these certain general items of information relating to economic conditions of villages, village markets, educational and medical facilities available in villages etc., were

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also collected. The survey extended over 920 villages, 80 towns and 4 cities of Calcutta, Bombay, Madras and Delhi. A sample of 12 households was selected from each village for detailed investigation, the number of households surveyed in the urban area varying according to the size of the town.

In the third round of the year a crop acreage survey of winter and spring crops in all the 920 villages included in the preceding round was conducted. The survey started in December 1951 and ended in January 1952. Besides these certain special investigations were undertaken to study various problems associated with the planning of different kinds of surveys.

Preliminary tabulation of the data collected in 1950-51 has been completed and a draft report has also been prepared. Utilizing all the relevant information collected so far a design for the first round of the survey of the next year has also been drawn up. The salient features of the design are described below:

(i) India has been stratified into 62 'Natural Divisions' as defined by the Registrar General for demographic comparisons.

(ii) Within a 'Natural Division' the *tehsils* are classified according to the density of population in such a manner that the estimate of total consumers' expenditure based on information collected in the previous year is the same.

(iii) Within each stratum 2 *tehsils* are chosen at random with probability proportional to size (population or area) and within a selected *tehsil* 2 villages are chosen at random with probability proportional to size (population or area).

A total number of 480 *tehsils* have been allotted to 240 strata in 50 'Natural Divisions', the quota of each 'Natural Division' being proportional to estimated total consumers' expenditure.

4.2.2. *Special Crop Survey in West Bengal:* With a view to trying out a new sample design for purposes of estimating the area and yield of crops in the state of West Bengal as a whole, sample surveys were carried out in West Bengal by the Institute during the Bhadai (July to October) season for Jute and Aus paddy and during winter (November to January) season for Aman paddy. The entire state of West Bengal except for the hill tracts and Sunderban forests was covered, involving an area of about 30,000 sq. miles.

4.2.2.1. Design of the area survey:

(1) Jute-Aus area Survey: The unions (administrative units with an average size of about 12 sq. miles) of West Bengal, excluding Cooch Bihar, were stratified into 16 classes according to the value of the proportion of area under Jute and proportion of area under Aus in 1944-45. Cooch Bihar was treated as a separate stratum bringing the total number of strata to 17. In each stratum a two stage sampling procedure was adopted, the first stage units being the unions (group of villages) and the second stage units being exclusive clusters of 30 serial plots in the unions. A total of 900 unions were chosen with probability proportional to area of unions, the number from different strata being preassigned. 8 clusters were chosen with probability proportional to area of the cluster from each of the selected unions. Unions chosen from each stratum were divided into two interpenetrating random samples of unions.

One union out of 600 unions and 243 clusters out of 4,800 clusters could not be surveyed due to practical difficulties. These 243 unsurveyed clusters were from all the strata.

(2) Aman area survey: The design was the same as that of Jute-Aus Survey. In this season all the 900 unions were surveyed. 156 out of 4,800 clusters could not be surveyed due to practical difficulties and these were from all the strata.

4.2.2.2. Design of the yield survey:

(1) Jute-Aus crop: After some further stratification, a 20% sub-sample of unions were chosen at random for yield estimation survey. The investigators were asked to take three concentric circular cuts of radii 2', 4', 5'-8" round a random point as centre in one plot of Jute and one plot of Aus paddy to be chosen at random from among the plots in each of the 8 clusters in each of the 120 unions. Only 385 random points in 77 unions for Jute and 247 random points in 64 unions for Aus paddy could be accepted against an expected number of 900 points for each crop in 120 unions, the rejections being due to the practical difficulties like non-availability of plots with crop, crop already harvested, crop not ripe for harvest, etc. Jute retting work was carried out in 291 cuts from 17 unions belonging to different strata for purposes of estimating the ratio of weight of dry jute fibre to weight of freshly harvested jute plants.

(2) Aman Crop: The design was same as that of Jute-Aus Survey. The investigators were asked to take 2 plots of Aman at random from among the plots with Aman in each cluster. Only 1,285 cuts of each size could be taken against an expected number of 1,920 either due to non-availability of plots with Aman in the clusters chosen or due to practical difficulties.

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4.2.2.3. *Field Organisation:* There were 15 inspectors and 4 investigators under each inspector who worked as mobile party, giving a total of 80 investigators. The two interpenetrating net work of unions were surveyed by two parties of 30 investigators each. Each investigator was allotted the work of 10 unions of area survey and 2 unions of crop-cutting either in his own region of area survey or in two unions nearest to his region of area survey. The investigators were asked to complete the work in a union within a haltage of 6 days.

4.2.3. *Population Studies:*

4.2.3.1. All India Population Statistics (Y-Sample):

Preparation of Means of Livelihood and Industries Tables based on Y-Sample (2% sample of 1941 Census slips which was transferred to Hollerith Cards) for the states of Madhya Pradesh, Uttar Pradesh, Punjab and Bombay was completed during the current year. A critical examination of these tables was also carried out on the basis of the variation in the percentage of earners to total population.

Special studies on the fertility data collected during 1941 census, e.g., the total number of births as entered in the census slips for females, were taken up for the states of Bombay and West Bengal and some fertility tables were built up for those states.

4.2.3.2. *Studies on sampling methods in population census based on the 1941 Census Enumeration slips of Hazaribagh district in Bihar.*

Experimental studies on the methods of sampling in population census as mentioned in the last year's report were continued during the year under review.

Relative efficiencies of different types of sampling units in conjunction with different methods of sample selection etc. are being studied.

The study has so far been mainly restricted to a comparatively small region in respect of two important aspects of the population, viz., the distributions by (1) age-sex-marital status and (2) sex-means of livelihood-dependency status. The coverage is now being extended to almost the whole of this district in respect of the above two distributions.

4.2.3. *Spot-check of Patwari records:* During the Rabi Season of 1950-51 a spot-check of patwari records was carried out along with the National Sample Survey work, with a view to supplementing similar studies made during the Rabi season of 1949-50. Unlike previous year, the plots for spot-check were chosen on a random sampling basis. The investigation was confined to Bihar, Uttar Pradesh, Madras, Punjab, Madhya Pradesh, PEPSU and Delhi. The analysis of data has been completed and the final tables are being scrutinized.

4.2.5. *Newspaper Reading Survey, Calcutta:* The Indian Statistical Institute organized a Newspaper Reading Survey on a sampling basis in Calcutta during May to July, 1951 at the request of the *Amritabazar Patrika and Jugantar*.

Calcutta was divided into a number of wards or combinations of wards, and 64 sample enumeration blocks were selected from these wards. The number of sample enumeration blocks allocated to the different wards was in proportion to the total number of households in the wards. The sample blocks were selected with probability proportional to the number of households in the blocks. A complete list of households was prepared for each sample enumeration block. Information relating to reading of newspaper was also collected in course of this listing.

On the basis of the information collected at the time of listing, all the households subscribing *Amritabazar Patrika and Jugantar* were selected for collection of further information on readership according to broad occupation groups and economic status, reader's reaction to news, views, features of these papers.

Out of the total number of about 14,000 families surveyed during the first phase of the survey 1,000 households or 13.8% were found to subscribe newspapers. Only a part of the households was subscribing *Amritabazar Patrika and Jugantar*. These households were then investigated in the second phase of the survey.

4.2.6. *Analysis of Data Relating to Special Crop-cutting Experiments:* The Institute has been conducting crop surveys since 1937. Along with extensive operations carried out for the estimation of yield rate and out-turn of crops, special experiments were also conducted almost every year to study various problems associated with the planning of crop surveys. A detailed analysis of the data thus collected has been recently taken up and the following important results relating to crop-cutting experiments have so far been obtained:

INDIAN STATISTICAL INSTITUTE

(i) There is little difference between the estimates of yield rate based on circular cuts with radii 4 ft. and 6 ft. 8 in. and it seems that the estimates of yield rate based on circular cuts of the above-mentioned sizes are practically free from bias of over-estimation due to a tendency of including border plants lying outside the cut.

(ii) The estimates of the variances at the different stages for the important crops (paddy, jute, rabi crops) in Bengal appear to be more or less steady from year to year. So these estimates of variances may be used with some confidence for the purpose of planning future surveys.

5. SANKHYĀ: THE INDIAN JOURNAL OF STATISTICS

During the year under review Part 2 and Parts 3 & 4 (jointly) of volume 11, were issued. Part 1 of volume 12, which is to be the Abraham Wald Memorial number, is expected to be published shortly.

6.0. GENERAL ARRANGEMENTS

Distribution of workers at the four centres as compared to last year

	Calcutta		Baranagar		Giridih		Delhi		Total	
	31 March 1961	31 March 1962	31 March 1961	31 March 1962	31 March 1961	31 March 1962	31 March 1961	31 March 1962	31 March 1961	31 March 1962
Monthly	28	20	169	184	23	31	2	4	212	239
Piece-rate	—	—	82	60	32	16	—	—	94	76
Total	28	20	221	244	55	47	2	4	306	315

6.1. OFFICE

Calcutta Office: The photographic section was shifted to Baranagar during the latter part of the year and a part of the library is being gradually shifted to Baranagar. The remaining portion of the library, the training and research section and the International Statistical Education Centre continued to function in Calcutta throughout the year.

Baranagar Office: The major portion of the staff was shifted to the new building of the Institute at 203 Barrackpore Trunk Road during the year where the main computing section, with major projects, the machine tabulation section, accounts section, the central office, cost accounts section and the circulating library are now located. The library, records, field office, establishment and stores and medical welfare unit continued to function at other buildings at the disposal of the Institute at Baranagar throughout the year. A good workshop was built up with precision instruments and machines and was of great service in the repair work of calculating machines and other mechanical jobs.

A Director's Office was set up in March 1962, and located at 204 Barrackpore Trunk Road to keep in touch with the various sections of the Institute and to function as a liaison office between the Director and other sections.

A canteen was started in January 1962 with the object of catering to the requirements of workers at reasonable cost.

Giridih Office. Certain important items of work relating to National Sample Survey and studies on sampling methods in population census based on the 1941 census enumeration slips of Hazaribagh district were done at the Giridih Centre of the Institute.

6.2. STAFF

The Institute suffered an irreparable loss in the death of Sudhir Kumar Banerjee, one of the oldest workers of the Institute, who passed away on 20 February 1962, after a prolonged illness. The Council of the Institute passed a resolution condoling his death at its meeting held on 19 March 1962, as follows:

"Resolved that the Council places on record its deep sense of loss at the death of Sudhir Kumar Banerjee on the 20th February 1962 at the early age of 48. He worked as the personal assistant to the Director from the foundation of the Indian Statistical Institute and the chief concern of his life was the welfare of the Institute. He looked after the management of the Institute with single-minded devotion and almost single-handed built up a strong organisation for *Sankhyā: The Indian Journal of Statistics*. He enjoyed the confidence of his fellow workers and was a great cementing force within the Institute. By his dignity of character and untiring labour he contributed in a most significant manner to the growth of the Institute and his loss will be truly irreparable."

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Shrimati Chameli Bose left the Institute on 7 November 1951, to take up the post of Deputy Director in the State Statistical Bureau, West Bengal. The following technical assistants also went away during the year to take up appointments elsewhere on dates mentioned against their names: Shri Kiran Chandra Seal (1 July 1951), Shri Amitabha Ghosh (21 July 1951), Shri Sibendra Das Gupta (10 October 1951), Shri Damodar Datta (24 October 1951), Shri Nitai Datta (25 October 1951), Shri Tapash Bagchi (10 November 1951), Shri Sushil Kumar Gupta (10 November 1951).

Shri Sambhunath Halder, one of the old workers of the Institute, who joined the West Bengal Statistical Bureau in May 1946, came back to the Institute on 21 February 1952. Shri Samindra Gupta also rejoined the Institute on 3 January 1952, after a period of service in the West Bengal Statistical Bureau for a little over 7 years.

Mr. A. Weber of the University of Geneva, Switzerland, joined the Indian Statistical Institute on 30 October 1951. He will stay here for about a year and during this period he will participate in the teaching and sampling work of the Institute.

Shri Ajit Kumar Biswas, a junior technician, resigned on 24 July 1951 and left for U.S.A. with a scholarship from the U.S. Government.

6.3. MACHINE TABULATION SECTION

The section saw considerable activities and changes during the year under review. A number of B.T.M. (Hollerith) machines, e.g., 2 tabulators, 1 sorter and 1 collator were given up and I.B.M. machines installed, viz., 2 tabulators (of which one has get alphabetical feature), 1 sorter, 1 collator, 1 reproducer (with mark-sensing device), 1 calculating punch, 1 Electronic Statistical Machine together with a summary punch and 1 Electric Alphaprint punch. Incidentally, this is the first installation of I.B.M. machines in India.

Besides the expansion of the machine unit detailed above, a new unit of this section, viz., the Technical unit was constituted to check up the work done in the Punching unit as also the Machine unit.

The card-passage and the hours spent on different types of machines during the year under review were as follows:

Type of machine	Card-passage (10 ⁵)	Hours
Sorter	70.4	8206
Tabulator	5.9	6120
Reproducer	3.2	3480
Multiplicator	1.7	2422
Collator	4.2	1031
Elec. Stat. Machine	5.5	569
Punchers & Verifiers	3.0	2978

Altogether 31 different types of jobs were undertaken during the year, of which by far the heaviest was in connection with the analysis of the data collected in course of the National Sample Survey.

6.4. PHOTOGRAPHIC SECTION

During the latter part of the year under review the photographic section was transferred to Barranagar, and the equipment augmented by the purchase of a Photoat machine. The year's work included 5,815 microfilm copies from books, journals, charts and tables. 174 maps and 210 other large size items were photographed. The section dealt with 2,472 bromide enlargements. Number of ferro-prints processed by the section was 104, and 46 acre plates were prepared.

6.5. COST ACCOUNTS SECTION

This section, as in previous years, played an important role in the (i) assessment of Computer-months spent on different projects, and (ii) evaluation of output-units into money-value.

The incentive bonus system was in operation throughout the year. A total of Rs. 45,000 was paid to 80 piece-rate workers as incentive bonus over and above their basic salary of about Rs. 96,000.

7.0. ACTIVITIES IN THE LOCAL BRANCHES

7.1. BOMBAY BRANCH

Council: The following office-bearers were elected at the meeting held on 20 June 1951:—President: Shri V. L. Mohita; Vice-Presidents: Professor C. N. Vakil, Dr. V. R. Khanolkar, Shri. L. S. Vaidyanathan, Mr. R. G. Suraiya, Dr. N. S. R. Sastry; Treasurer: Shri K. M. Premchand; Joint Secretaries: Shri V. V. Divatia, Shri K. S. Rao.

INDIAN STATISTICAL INSTITUTE

During the year 4 meetings of the Council were held.

Sample Survey Work: The analysis of the data collected during the survey into the Economic Conditions of Middle Class Families was completed by the middle of April and a draft report on the same was prepared for circulation.

At the request of Professor P. C. Mahalanobis the Council agreed to conduct the National Sample Survey in Bombay City on behalf of the parent Institute. Staff for this work was recruited from the persons who had worked in the Middle Class Family Budget Enquiry conducted by the branch and also from the students of the School of Economics and Sociology, University of Bombay.

Econometrics: During the period under review research in Econometrics progressed well. Some of the difficult questions connected with the application of Mathematical Statistics to economic data were tackled by developing the necessary test procedures. Notice of the results obtained were given at the thirty-ninth session of the Indian Science Congress by Shri K. S. Itao. Applications of the D^2 -statistic of Professor Mahalanobis to regional and temporal distributions of economic variables were indicated at Patna. Computations involved in the project are being carried out by the Applied Statisticians.

Training in Economic Statistics: The training course in Economic Statistics attracted as many as 84 students. On the completion of the course examination was held in March 1951. Thirty-one students appeared at the examination and twenty students were declared successful.

Quality Control: The lectures on Quality Control, which commenced in January 1951, concluded in April 1951. With a view to applying Quality Control Methods in the Textile Industry, exploratory work was done in Khatau Mills and Kohinoor Mills. On the strength of the results gathered, suggestions were made for improving the working of the machines.

At the instance of Shri D. S. Joshi, the Secretary, Development Department of the Bombay Government, work was taken up in the Government Central Press and suggestions for improving the working of the machines and operators were made.

Institute Examinations: On behalf of the parent Institute this branch arranged for the conduct of the Statistician's Diploma Examination in Bombay Centre in August-September 1951.

Visitors from abroad: A number of distinguished foreign Statisticians and Econometricians visited Bombay. A reception to the delegates was arranged at the air port and Professor Vakil presented them with an address of welcome on behalf of the Institute.

Lectures by Mr. L. H. C. Tippett, Dr. Hamaker, Prof. Tinbergen and Dr. G. Rasch of Copenhagen were arranged by the Institute. Besides the above mentioned gentlemen a delegation of Russian Statisticians, Prof. R. G. D. Allen, Prof. M. A. Copeland, Dr. P. J. Bjerre, and Prof. A. Lindler also came to the Bombay branch of the Institute.

7.2. POONA BRANCH

Due to the sad death of Rao Bahadur D. L. Sahasrabudhe, the local President, during the year under report, the life-membership dropped to 5. A new life member, Shri V. M. Dandekar, was however added bringing the number to 6. Pending election of a new President, Principal D. R. Gadgil acted as President. Shri N. V. Sovani, the Local Secretary, went abroad on a Rockefeller Fellowship to study problems of economic development. In his place, Shri V. M. Dandekar was elected the Local Secretary. As in earlier years, the Branch conducted the Statistician's Diploma Examination of the Institute.

8.0. MISCELLANEOUS

8.1. PROFESSOR P. C. MAHALANOBIS'S TOURS AND CONFERENCES

Professor P. C. Mahalanobis spent nearly 4 months (21 April 1951 to 17 August 1951) in Europe and U.S.A. During this period he attended a large number of official conferences and meetings of learned societies, the more important of them being the sixth session of the U.N. Statistical Commission in New York and the fifth convention of the American Society for Quality Control in Cleveland. He also visited U.S.S.R. as a delegate of an Indian Cultural Mission at the invitation of the All Union Society for Cultural Relations with Foreign Countries, U.S.S.R. (VOKS).

8.2. ECONOMIC STATISTICS UNIT AT DELHI SCHOOL OF ECONOMICS

A small unit consisting of a Senior Statistician and a Junior Statistician started functioning from 18th July of the current year. The Unit is working on a basis of co-operation between research institutions and took part in both teaching and research work in Economic Statistics. In the present year, the teaching work was confined to the Economic Statistics papers in the M.A. Course of Delhi University, and as a part of research, the Unit worked on an investigation into the methodology of social accounting and the study of the economic conditions of townships near Delhi, besides assisting Ph.D. students in their survey work.

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9. STATEMENT OF ACCOUNTS
Indian Statistical Institute : Revenue Accounts for the Year ending 31 March 1952

	Dr.		Cr.		Liabilities of this year*		Total
	Rs.	As. P.	Rs.	As. P.	Rs.	As. P.	
To Membership fees			2,610	0 0			
" Training fees and other receipts—							
" Miscellaneous receipts .. .	1,730	13 3					
" Training fees .. .	4,323	0 0					
" Examination fees .. .	5,083	0 0	11,036	13 3			
" Block grants: Government of India:							
" Ministry of Finance:							
General grant s/c 1950-51 .. .	75,000	0 0					
General grant s/c 1951-52 .. .	4,50,000	0 0	5,25,000	0 0			
National Sample Survey:							
(a) Statistical work, Special Studies and Training .. .			9,02,000	0 0			
(b) Special Coop Survey .. .			2,11,000	0 0			
(c) National Sample Survey work in West Bengal .. .			78,000	0 0			
(d) West Bengal Combined Operations .. .			1,28,000	0 0			
(e) Amount outstanding on account of (i) Short-check of Patwari Records .. .			19,481	4 9			
(ii) National Sample Survey work in West Bengal and Andhama .. .			29,757	7 0			
(iii) Printing of schedules, map collection, and supplying crop-cutting equipment .. .			61,427	11 0			
" Newspaper Reading Survey .. .			7,000	0 0			
By Salary and allowance (including scholarship)			9,21,897	14 9			
" Dearness allowance .. .			2,51,214	9 0			
" Contribution to Provident Fund			40,472	11 0			
" Debit to Development fund .. .			94,000	0 0			24,000 0 0
" Printing expenses .. .			7,777	8 3			7,777 8 3
" Books and materials .. .			12,686	0 0			12,686 0 0
" Laboratory equipment .. .			39,139	8 2	2,913	9 3	42,053 1 5
" House rent .. .			25,331	3 6	2,560	0 0	27,891 3 6
" Stationary store purchases, furniture and fixtures .. .			71,505	3 6	1,116	13 9	72,622 1 3
" Postage, advertisement, telephone and electric charges, and contingencies .. .							
" Repairs and maintenance of buildings, motor vehicles etc. .. .			1,48,397	5 0	993	13 6	1,49,391 2 6
" Bank charges and interest .. .			7,995	7 0	—	—	7,995 7 0
" Auditor's fee .. .			2,890	0 0	—	—	2,890 0 0

* Figures are shown here to indicate the true position of expenditure of this year.

INDIAN STATISTICAL INSTITUTE

To Cinchona Survey in Madras	6,500 0 0	To Workers' Circulating Library	888 5 3	—	888 5 3
" Government of West Bengal, Department of Food	1,200 0 0	Workers' Welfare and other amenities .. .	12,554 11 0	—	12,554 11 0
" Old suspense account	45,478 9 10	Hire and maintenance of Tabulating machines etc., cost of cards and cabinets and stationeries .. .	1,40,685 9 6	43,352 12 3	194,038 5 9
" " " (Field Section)	4,631 0 9	Examination expenses ..	9,047 15 9	—	9,047 15 9
" Deposit account	8,211 1 3	Other small enquiries ..	425 5 6	—	425 5 6
" Advance from other funds	30,000 0 0	Visiting Professor and Fellowship	17,613 8 9	—	17,613 8 9
" Outstanding liabilities to British Tabulating Machine Co., I.B.M.Co., and others:	51,412 0 9	Publication and Society type of activities ..	6,659 10 11	—	6,659 10 11
		International Statistical Conferences .. .	6,400 8 3	—	6,400 8 3
		Developments at Director's office .. .	7,219 0 3	—	7,219 0 3
		Repayment of liabilities for previous year ..	1,30,994 5 10	475 0 0	131,469 5 10
		Repayment of amount in deposit	19,967 13 3	—	19,967 13 3
		Suspense, advance etc., with Barranagar, Calcutta, Delhi, Giridih, Field Section etc. ..	71,606 0 1	—	71,606 0 1
		Expenses incurred for printing and despatching activities on behalf of the Chief Director, N.S.S. .. .	15,988 7 0	—	15,988 7 0
		Change balance: Cash in hand	2,437 4 4	—	2,437 4 4
		Rs.	20,70,523 15 10	61,412 0 9	21,21,936 0 7

6, EASTINGS STREET, CALCUTTA,
The 21st May, 1932.

Examined and Found Correct.
P. C. NAHAI & Co.
Chartered Accountants.

ANNUAL REPORT FOR 1951-52

Indian Statistical Institute : Revenue Accounts for the year ending 31st March, 1952

Dr.		Cr.	
<i>Land & Buildings</i>			
	Ra.	As.	P.
To Grant received from the Government of India, Ministry of Finance	2,00,000	0	0
" Advances received from—			
(a) Statistical Publishing Society	21,800	0	0
(b) Supervision Fee Fund	27,000	0	0
(c) Development Fund	23,000	0	0
	Ra.	2,71,800	0 0
			Ra.
To Repayment of advances on account of expenses incurred for construction of Institute Building in 1950-51			1,09,561
" Expenses incurred on account of Institute Building in 1951-52			1,44,867
" Advances towards cost of materials, labour charges etc.			17,925
" Closing balance: Cash in hand			655
			Ra.
			2,71,800 0 0
<i>Work on Population Census Data 1941</i>			
<i>Transfer of Y-ships and Preparation of Age Tables, and Preparation of Occupational Tables and Studies on Bharu ships.</i>			
(Government of India, Ministry of Home Affairs)			
	Ra.	As.	P.
To Opening balance	89,145	15	9
By Salary and dearness allowance			51,798
" Travelling expenses			719
" House rent, stationery, stores, postage, printing and other contingencies			10,801
" Rental and maintenance of Tabulating machines, cost of cards, cabinets, etc.			7,595
" Closing balance			18,232
	Ra.	89,145	15 9
			Ra.
			89,145 15 9

Examined and Found Correct.
F. C. NANDI & Co.
Chartered Accountants.

6, HARTING STREET, CALCUTTA
7th May, 1952.

Indian Statistical Institute : Revenue Accounts for the Year ending 31 March, 1952

Dr.		Cr.	
Research and Training (Government of India, Ministry of Finance).			
	Rs.	As.	P.
To Grant received from the Government of India	75,000	0	0
(a) 8/6 1950-51	4,50,000	0	0
(b) 8/6 1951-52	5,25,000	0	0
Membership fee	2,610	0	0
Training fee	4,223	0	0
Examination fees	5,093	0	0
Other receipts	1,730	13	3
	Rs.	As.	P.
	67,568	15	0
By Amount spent over and above actual receipts in 1950-51 now adjusted	24,000	0	0
.. Funding of salary foregone by Professor F. C. Mahalanobis*	2,69,971	13	0
.. Salary and allowance (including scholarships and other honoraria)	11,685	16	3
.. Travelling expenses	12,686	0	0
.. Books and journals	7,333	12	0
.. Laboratory equipment	2,741	13	0
.. House rent	40,113	5	0
.. Stationery, postage, printing, telephones, electric charges and other contingencies	53,727	0	0
.. Rental & maintenance of Tabulating machines and cost of cards, cassettes, etc.	9,847	15	0
.. Telephone expenses	426	5	6
.. Other enquiries	426	5	6
.. Visiting Professors and Fellowship	17,013	8	9
.. Society type of activities	6,650	10	11
.. International Statistical Conferences	6,400	8	3
.. Development at Director's discretion	7,219	0	3
.. Closing balance	531	12	7
	Rs.	As.	P.
	6,38,646	13	3

* To create a separate fund to be called "Development Fund" vide Resolution No. 6 passed by the Council on the 20th March, 1952.

6, HASTINGS STREET, CALCUTTA,
The 21st May, 1952.

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

ANNUAL REPORT FOR 1961-62

Indian Statistical Institute : Revenue Accounts for the Year ending 31 March, 1952

Dr.		Cr.	
<i>National Sample Survey Statistical Work, Special Studies and Training</i> (Government of India, Ministry of Finance)			
	Rs.	As.	P.
To Opening balance (adjusted)	426	2	0
" Grant	9,02,000	0	0
	Rs.	As.	P.
By Salary and dearness allowance	6,58,328	14	0
" Travelling expenses	17,958	10	3
" Stationery, postage, printing, house-rent and other contingencies	2,03,138	2	0
" Rental & maintenance of Tabulating machines, cost of cards etc.	1,23,783	11	6
" Closing balance	1,240	12	3
	Rs.	9,02,426	2 0
<i>National Sample Survey West Bengal Combined Operations</i> (Government of India, Ministry of Finance)			
	Rs.	As.	P.
To Opening balance	10,813	14	9
" Suspense a/c	4,821	0	9
" Grant this year	1,28,000	0	0
	Rs.	1,43,634	15 8
By Salary and dearness allowance	1,03,043	13	0
" Travelling expenses	12,225	4	0
" Stationery, stores, printing, postage, house rent and other contingencies	19,296	7	6
" Rental & maintenance of Tabulating machines, cost of cards etc.	8,951	12	3
" Closing balance	118	10	9
	Rs.	1,43,634	15 8

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

4, EASTERN STREET, CALCUTTA,
The 21st May, 1952.

INDIAN STATISTICAL INSTITUTE

Indian Statistical Institute : Revenue Accounts for the year ending 31 March, 1952

	Dr.	Cr.
	<i>National Sample Survey: Special Crop Survey Work</i> (Government of India, Ministry of Finance)	
	Re. As. P.	Re. As. P.
To Grant	2,11,000 0 0	
		By Salary and dearness allowance 1,64,048 12 0
		" Travelling expenses 21,898 12 0
		" Stationery, stores, postage, printing, house rent and other contingencies 24,118 3 0
		" Closing balance 998 5 0
	Re. 2,11,000 0 0	Re. 2,11,000 0 0
	<i>National Sample Survey: In West Bengal</i> (Government of India Ministry of Finance)	
	Re. 78,000 0 0	
To Grant	78,000 0 0	
		By Salary and dearness allowance 62,707 10 0
		" Travelling expenses 8,210 10 0
		" House rent, stationery, stores, postage, printing and other contingencies 6,825 5 0
		" Closing balance 165 7 0
	Re. 78,000 0 0	Re. 78,000 0 0

6, HASTINGS STREET, CALCUTTA,
7th 21st May, 1952.

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

ANNUAL REPORT FOR 1951-52.

Indian Statistical Institute . Receipts and Payments Account for the Year ending 31 March, 1952
Statistical Worker's Provident Fund

RECEIPTS	Ra. As. P.	Ra. As. P.	PAYMENTS	Ra. As. P.
To Opening balance:	Ra. As. P.	Ra. As. P.	By Withdrawal of workers' own contribution	4,821 15 0
(a) Government paper at cost	84,472 13 4	2,87,572 0 0	" Payments of Institute's contribution to workers withdrawing their accounts	2,371 13 0
(b) Cash in hand & bank	1,43,098 2 8		" Payments of Interest to workers withdrawing their a/c	255 3 0
Workers' own contribution to the Fund	40,472 11 0	80,845 6 0	" Loan to workers (net)	4,053 0 0
" Institute's contribution to the Fund	40,472 11 0	80,845 6 0	" Closing balance:	
" Interest on investment:			Investment in Government paper (at cost)	1,67,705 13 8
Government Paper	2,889 12 0	8,704 12 0	Cash at Bank and hand	1,39,248 12 4
Institute	5,835 0 0	1,035 7 0		
Interest received against loan given to Institute workers	1,035 7 0			
	Ra. As. P.	Ra. As. P.		Ra. As. P.
	3,18,257 9 0	3,18,257 9 0		3,18,257 9 0

Examined and Found Correct.
P. C. NARAI & Co.
Chartered Accountants.

6, HARRISON STREET, CALCUTTA,
The 21st May, 1952.

INDIAN STATISTICAL INSTITUTE

10.0. APPENDICES

10.1. LIST OF PAPERS PUBLISHED IN 1951-52

1. BASU, D. (1951): On the independence of linear functions of independent chance variables. *Int. Stat. Confs. India*, 1951.
2. BASU, D. (1951): On the limit points of relative frequencies. *Sankhyā*, Vol. 11, Parts 3 & 4.
3. BASU, D. (1951): A note on the power of the best critical region for increasing sample size. *Sankhyā* Vol. 11, Part 2.
4. BHATTACHARYYA, S. AND JOSHI, (Mrs.) K. (1951): A note on the size of agricultural holdings and its relation with the ownership of major capital equipment and live-stock in the state of U.P. *Int. Stat. Confs. India*, 1951.
5. BHATTACHARYYA, S. AND BASU, S. (1951): On the non-market production in the agricultural industry of U.P with reference to employment of labour and disposal of the produce. *Int. Stat. Confs. India*, 1951.
6. BOSE, C. (1951): Some further results on errors in double sampling technique. *Sankhyā*, Vol. 11, Part 2.
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8. CHANDA, K. C. (1951): On the relative efficiency of Wilks' and Pitman's test. *Int. Stat. Confs. India*, 1951.
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18. GAYEN, A. K. AND ROY, G. C. (1951): Income structure in India. *Int. Stat. Confs. India*, 1951.
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LIST OF PAPERS (Contd.)

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38. MATHAI, A. (1951): Estimation of parameters from incomplete data with application to design of sample surveys, *Sankhyā* Vol. 11, Part 2.
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50. RAO, S. R. AND SOM, R. K. (1951): On the applicability of large sample tests for moving averages and autoregressive series to series of short length—An experimental study, Pt. II. Autoregressive series, *Sankhyā*, Vol. 11, Parts 3 & 4.
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53. SEAL, K. C. (1951): On errors of estimates in various types of double sampling procedure. *Sankhyā* Vol. 11, Part 2.
54. SEN, S. B. (1951): Recent improvements in agricultural statistics in India. *Int. Stat. Confs. India*, 1951.
55. SOM, R. K. (1951): A note on the income distribution of rural Bengal. *Int. Stat. Confs. India*, 1951.
56. SOM, R. K. AND RAY, (Miss) K. (1951): Some aspects of the strike movement in India, 1927-45. *Int. Stat. Confs. India*, 1951.

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10.2. LIST OF REPORTS SUBMITTED

1. *Crop Survey, West Bengal.*
 - (a) Third progressive estimate of area under Rabi crops, 6 April 1951.
 - (b) First progressive estimate of outturn of Rabi crops, 6 April 1951.
 - (c) Sub-divisional estimates of area and yield of winter rice (Aman) crop for the years 1940-50 and 1950-51, 24 April, 1951.
 - (d) Final estimate of Rabi crops during 1950-51, 8 May 1951.
 - (e) Thanawiso estimate of Aman (clean rice) for four years 1947-48 to 1950-51, 2 July 1951.
 - (f) Thanawiso estimates of Aus (clean rice) for three years 1948-49 to 1950-51, 10 July 1951.
 - (g) Thanawiso estimates of Aus and Aman (clean rice) for three years 1948-49 to 1950-51, 19 July 1951.
 - (h) Statement showing the estimated average yield, sampling error and total production of jute, Aus and Aman crops (in terms of dried and cleaned products) by districts based on data collected in crop-cutting surveys by the random sampling method in the year 1949-50, 18 September 1951.
 - (i) Table showing the outturn of winter paddy in different police stations in the Birbhum district in 1950-51, 16 February 1952.
2. *Estimate of potato seed requirements.*

Table showing the quantity of potato seeds used in 1950-51 and quantity of potato seeds required for the year 1951-52, 11 October 1951.
3. *Population Project (Y-slips).*
 - (a) Means of livelihood and industries tables of independent and partly independent persons based on Y-slips for the state of Punjab (I), 9 April 1951.
 - (b) Do. for the state of Uttar Pradesh, 8 May 1951.
 - (c) Do. for the state of Madhya Pradesh, 6 July 1951.
 - (d) Do. for the state of Bombay, 2 August 1951.
4. *Newspaper reading survey.*

Report submitted to Amrita Bazar Patrika on 23 August 1951.
5. *Crop Survey results for East Bengal.*

Estimates of area under jute, Aus and Aman crops during the years 1943-44 to 1946-47 by random sampling method, 26 October 1951.

10.3. LIST OF OFFICERS ON DEPUTATION, 1951-52

1. Barborah, M. C. (*Directorate of Agriculture, Assam*).
2. Narula, D. D. (*University of East Punjab*).
3. Narula, S. (*University of East Punjab*).
4. Bhattacharyya, C. C. (*University of Calcutta*).
5. Guba, M. (*University of Calcutta*).

10.4. LIST OF TRAINEES WHO COMPLETED THE TWO YEARS' TRAINING COURSE IN MAY 1951

1. Das, S. C. (*Orissa*), 2. Pansar, B. R. (*East Punjab*), 3. Sarma, D. V. N. (*Madras*), 4. Singh, M. (*East Punjab*), 5. Singh, S. N. (*Uttar Pradesh*), 6. Subramaniam, N. (*Madhya Pradesh*), 7. Verma, S. K. (*Madhya Pradesh*).

10.5. LIST OF TRAINEES, 1951-52

2nd Year Class

1. Basu, S. (*West Bengal*), 2. Dar, S. N. (*Kashmir*), 3. Hariharan, K. (*Madras*), 4. Krishnamurthi, D. V. R. (*Madras*), 5. Lal, R. S. (*Uttar Pradesh*), 6. Roy, D. (*West Bengal*), 7. Sarma, G. L. (*Rajasthan*), 8. Venkataraman, M. V. (*Madhya State*).

1st Year Class

1. Bhattacharyya, M. L. (*West Bengal*), 2. Das, B. (*Orissa*), 3. Dubey, S. D. (*Bihar*), 4. Ghosh, H. S. (*West Bengal*), 5. Mukherjee, A. K. (*Rajasthan*), 6. Padmanavan, M. (*Madras*), 7. Ramakrishnan, C. S. (*Chittur-Cochin*), 8. Ramakrishnan, V. (*Travancore*), 9. Sinha, D. (*West Bengal*)*, 10. Srikantham, K. S. (*Madras*), 11. Srinivasan, U. (*Madras*), 12. Subramaniam, T. A. (*Madras*), 13. Sundaram, P. M. (*Travancore*), 14. Sunderarajan, T. V. (*Madras*), 15. Miara, R. K. (*Madhya Pradesh*)*.

*Discontinued.

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Computers' Training Class

1. Aitch, B. B., 2. Banerjee, C. D., 3. Bhattacharyya, B. L., 4. Bhattacharyya, N. G., 5. Biswas, S. C., 6. Chowdhury, A. C., 7. Chowdhury, N. R., 8. Das, C. R., 9. Das, P. K., 10. Dasgupta, P., 11. Dutta, N. K., 12. Dutta, R. K., 13. Ghosh, L. M., 14. Guha, S. K., 15. Majumdar, A. B., 16. Majumdar, P. R., 17. Majumdar, S. K., 18. Mitra, B. K., 19. Moitra, A. K., 20. Mukherjee, M. N., 21. Mukherjee, S. K., 22. Ogra, M. K., 23. Palit, B. N., 24. Paul, H. K., 25. Paul, S., 26. Paul, S. K., 27. Prosd, N. K., 28. Roy, P. K., 29. Rudra, G. G., 30. Son, P. C., 31. Thakur, A. K.

10.6. LIST OF TRAINEES IN THE INTERNATIONAL STATISTICAL EDUCATION CENTRE, THIRD TERM (January-June 1952)

1. Afghanistan: 1. Abdul Ali.
2. Burma: 2. Mg. Khinlat, 3. Daw Sann Shin, 4. Daw Tin Yi.
3. Cambodia: 5. Thach Sary.
4. Ceylon: 6. L. N. Perera* 7. W. Rasaputram*.
5. India: 8. M. H. Ali, 9. S. S. Chinoy, 10. D. Hota, 11. D. D. Jain, 12. O. P. Kapoor, 13. Jaa Mohammed, 14. Y. S. Naik, 15. M. L. A. Rao, 16. O. C. Sharma, 17. N. C. Sinha, 18. S. Ranbir Singh, 19. K. Subbareddy.
6. Indonesia: 20. B. Halim*, 21. K. H. Hoo*.
7. Iraq: 22. Ali Al-Khalisi.
8. Japan: 23. C. Ozaki.
9. Malaya: 24. Laidin Bin Alang Musa.
10. Pakistan: 25. Muzaffar Ahmed*, 26. A. A. A. Choudhury*, 27. Md. Z. Hasan, 28. K. M. Jahiruddin, 29. S. T. M. Naqvi, 30. A. M. N. Tabarak Hossain.
11. Philippines: 31. L. V. Abalos*(Mr.), 32. L. Aizate, 33. M. Garcia, 34. S. Sarmiento, 35. P. Veridiano*, 36. M. Versovia.
12. Thailand: 37. V. Chayachinda, 38. V. Sarosaphana*, 39. C. Suvangitti*, 40. J. Watanasirikul*.

*Awarded Fellowship.

10.7. EXAMINATION RESULTS TRAINING SECTION FINAL EXAMINATION—1951

The following students are declared to have passed their final examination, 1951, after having completed the regular two-year course of professional training in the Indian Statistical Institute:—

1. Sadhu Cheron Das (Orissa), 2. B. R. Pansar (East Punjab), 3. D. V. N. Sarma (Madras), 4. Malvinder Singh (East Punjab), 5. S. N. Singh (Uttar Pradesh), 6. N. Subramaniam (Madhya Pradesh), 7. S. K. Verma (Madhya Pradesh).

COMPUTER'S CERTIFICATE EXAMINATION—1951

PART 1A: SECTION I

One hundred and twenty-three candidates registered themselves of whom ninety-three appeared. The following forty-eight are declared to have passed:—

1. Acharya, Barada, 2. Adhikary, Ananta Kumar, 3. *Ahmed, Md. Shazif, 4. Aitch, Bimal Bandhu, 5. *Banerjee, Nisankar, 6. Barua, Sujata Sobak, 7. Basu, Srikumar, 8. Bhattacharyya, Bhawani P., 9. Bhattacharyya, Mukti, 10. Bhattacharyya, Mukul Kumar, 11. Biswas, Harendra Nath, 12. Biswas Chowdhury, Jitendra Narayana, 13. Chakravarti, Kalipada, 14. *Chakravarti, Madhab Ch, 15. *Chakravarti, Sukumar, 16. Chanda, Malay Kumar, 17. Chatterjee, Mohit Kumar, 18. Chatterjee, Sakti Parla, 19. Choudhury, Ranjit, 20. Das, Nagenidra Chandra, 21. *Dey Chittaranjan, 22. Ghosh, Manu Rani, 23. Goswami, Bonoy, 24. Guha, Nareesh Narayana, 25. Gupta, Bina, 26. Kar, Pranosh Chand, 27. Maitra, Arun Kumar, 28. Mazumdar, Subinlal Kantil, 29. Mitra, Kalipada, 30. Mridha, Manmatha Nath, 31. Mukherjee, Mukti Nath, 32. Mukherjee, Nihar Ranjan, 33. Mukhopadhyay, Nirod Baran, 34. Nandi, Ranjit Kumar, 35. Palit, Subodh Kumar, 36. *Panchanan, Asim Kumar, 37. Paul, Bojoy Krishna, 38. Paul, Haro Kriahna, 39. Paul, Sunil Kumar, 40. Paul, Swaraj Kanta, 41. Prosd, Nanda Kishore, 42. *Roy, Sukumar, 43. *Rudra, Gaur Gopal, 44. Saha, Geeta, 45. Sen Gupta, Homendra Kumar, 46. Sinha, Nirmal Kumar, 47. Sircar, Ranjit Lal, 48. Tapadar, Susil Kumar.

*Denotes Distinction.

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PART IA: SECTION II

One hundred and thirty-one candidates registered themselves of whom ninety-eight appeared. The following twenty-eight are declared to have passed:—

1. Ahmed, Md. Shafiq, 2. Banerjee, Nisakar, 3. Bhattacharyya, Kartik Ch., 4. Biswas, Arun Kumar, 5. Biswas Chowdhury, Jitendra Narayan, 6. Chakravarti, Arun Kumar, 7. *Chakravarti, Sukumar, 8. Chakravarti, Kalipada, 9. Chandra, Maloy Kumar, 10. Chatterjee, Mohit Kumar, 11. Chatterjee, Santi Ranjan, 12. Chatterjee, Ranjit Kumar, 13. Choudhury, Ranjit, 14. Das, Madhu Mangal, 15. Das Gupta, Birendra Kumar, 16. Das Gupta, Leela, 17. De, Nitai Chand, 18. Dey, Ananta Mohan, 19. Ghosh, Manoj Kanti, 20. Ghosh, Manu Rani, 21. Homo Roy, Purnendu Bh., 22. Maitra, Arun Kumar, 23. Panchanan, Asim Kumar, 24. Paul, Sunil Kumar, 25. *Roy, Dulal, 26. Roy, Sukumar, 27. *Rudra, Gaur Gopal, 28. Sen Gupta, Biraj Mohan.

PART IB: SECTION I

Eighty-seven candidates registered themselves of whom sixty-seven appeared. The following four are declared to have passed:—

1. Chakravarti, Sukumar, 2. Dutta, Gour Benodo, 3. Dutta, Harandra Nath, 4. Gupta, Subimal.

PART IB: SECTION II

Eighty-eight candidates registered themselves of whom sixty-one appeared. The following thirteen are declared to have passed:—

1. Biswas, Harandra Nath, 2. Biswas, Sudhir Chandra, 3. Chakravarti, Madhab Ch., 4. *Chakravarti, Sukumar, 5. Chandra, Maloy Kumar, 6. Dey, Chittaranjan, 7. Dey, Sudhangshu Ranjan, 8. *Dutta, Harandra Nath, 9. *Gupta, Subimal, 10. Nag, Adhir Ch., 11. Roy, Radha Raman, 12. Roy Chowdhury, Chiranjib Chakravarty, 13. *Rudra, Gaur Gopal.

PART IC: SECTION I

Forty-four candidates registered themselves of whom thirty-four appeared. The following six are declared to have passed:—

1. Chakravarti, Sukumar, 2. Das, Pranbandhu, 3. Guha, Ajoy Kumar, 4. Paul, Bishnu Pada, 5. Sarkar, Abinash, 6. Sen Gupta, Abani Kumar.

PART IC: SECTION II

Thirty-two candidates registered themselves of whom twenty-three appeared. The following four are declared to have passed:—

1. Chakravarti, Sabita, 2. Chakravarti, Sukumar, 3. Guha, Ajoy Kumar, 4. Roy, Radha Raman.

STATISTICIAN'S DIPLOMA EXAMINATION—1951

A. GENERAL PAPERS

PAPER I (Theoretical)

Forty-two candidates registered themselves of whom twenty-four appeared. The following six are declared to have passed:—

1. Athavalo, Vaman Sankar, 2. Chellawamy, T., 3. Dogra, Prithviraj, 4. Jayachandran, K., 5. Rangarajan, Rajagopala, 6. Tulpule, V. S.

PAPER II (Theoretical)

Thirty-six candidates registered themselves of whom eighteen appeared. The following seven are declared to have passed:—

1. Chellawamy, T., 2. Dogra, Prithviraj, 3. Honwad, V. S., 4. Koti, N. N., 5. Pantambekar, V. J., 6. Rangarajan, Rajagopala, 7. Roy, Tapan Kumar.

PAPER III (Theoretical)

Thirty-one candidates registered themselves of whom sixteen appeared. The following six are declared to have passed:—

*Denotes Distinction.

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1. Dhuvle, Shalini, 2. Narasimhan, R. G., 3. Puntambekar, V. J., 4. Ramachandran, C. A.,
5. Ramamurthi, H., 6. Viswanath, S.

PAPER VI & VII (Practical)

Twenty-two candidates registered themselves of whom fifteen appeared. The following three are declared to have passed:—

1. Dogra, Prithviraj, 2. Jayachandran, K., 3. Viswanath, S.

B. SPECIAL PAPERS

PAPER IV (Theoretical)

Nineteen candidates registered themselves of whom fourteen appeared. The following thirteen are declared to have passed:—

Name	Subject
1. Bahadur, Shivendra	Anthropometry
2. Chellawamy, T.	Vital Statistics & Population Studies
3. *Choudhury, Prasanta	Economic Statistics
4. Dhavle, Shalini	Vital Statistics & Population Studies
5. Gopalkrishna, C. G.	Quality Control
6. Jawle, M. P.	Economic Statistics
7. Narasimhan, R. G.	Quality Control
8. Pradhan, Kusum Ramarno	Quality Control
9. *Ramachandran, C. S.	Quality Control
10. Ramamurthi, H.	Quality Control
11. Rangarajan, Rajagopala	Probit Analysis
12. Vaman, Godakari Hemlata	Quality Control
13. Viswanath, S.	Quality Control

PAPER V (Theoretical)

Nineteen candidates registered themselves of whom fourteen appeared. The following twelve are declared to have passed:—

1. Bahadur, Shivendra	Sample Survey (Applied)
2. Chellawamy, T.	Sample Survey (Theoretical)
3. *Dhavle, Shalini	Sample Survey (Applied)
4. *Gopalkrishna, C. G.	Probit Analysis
5. Narasimhan, R. G.	Probit Analysis
6. Pradhan, Kusum Ramarno	Probit Analysis
7. Ramachandran, C. S.	Probit Analysis
8. Ramamurthi, H.	Probit Analysis
9. Rangarajan, Rajagopala	Actuarial Statistics
10. Singh, Ajaib	Mathematical Theory of Sampling Distribution
11. Vaman, Godakari Hemlata	Probit Analysis
12. *Viswanath, S.	Mathematical Theory of Sampling Distribution

I. PAPER VIII (Practical)

Thirteen candidates registered themselves of whom ten appeared. The following four are declared to have passed:—

Name	Subject
1. Gopalkrishna, C. G.	Quality Control & Probit Analysis
2. Narasimhan, R. G.	Quality Control & Probit Analysis
3. Ramachandran, C. S.	Quality Control & Probit Analysis
4. Vaman, Godakari Hemlata	Quality Control & Probit Analysis

*Denotes Distinction.

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II. The following candidates are declared to have passed only in one half of Paper VIII

Name	Subject
1. Pradhan, Kusum Ramarao	Quality Control
2. Ramamurti, H.	Quality Control
3. Rangarajan, Rajagopala	Actuarial Statistics

STATISTICAL FIELD SURVEY EXAMINATION—1951

A. JUNIOR CERTIFICATE

PART IA

Three hundred and twenty-three candidates registered themselves of whom two hundred and ten appeared. The following eighty-eight are declared to have passed:—

1. Adhikari, Ananta Kumar, 2. Banerjee, Chandidas, 3. Banerjee, Lal Mohan, 4. Banerjee, Mahendra Nath, 5. Banerjee, Nagendra, 6. Banerjee, Prafulla, 7. Batabyal, Sisir Kumar, 8. Bhattacharjee, Manilal, 9. Bhattacharjee, Norodo Haran, 10. Chakravarti, Benoy Ranjan, 11. Chakravarti, Kalipada 12. Chakravarti, Khagendra Mohan, 13. Chakravarti, Mukhan Lal, 14. Chakravarti, Nanigopal 15. Chakravarti, Robati Mohan, 16. Chakravarti, Sulil Chandra, 17. Chakravarti, Saroj Chandra, 18. Chakravarti, Sovarsanjan, 19. Chatterjee, Abani Mohan, 20. Chatterjee, Abani Ranjan, 21. Chatterjee, Durga Sankar 22. Chatterjee, Gurudas, 23. Chatterjee, Harindra Nath (I), 24. Chatterjee, Harendra Nath (II), 25. Chatterjee, Nanigopal, 26. Chatterjee, Narayan, 27. Chatterjee, Ram, 28. Choudhury Indu Bhushan, 29. Choudhury, Sudhir Chandra, 30. Das, Agni Kumar, 31. Das, Hemanta Bhushan, 32. Das, Nidhuranjan, 33. Das, Sailendra Bojoy, 34. Das, Siddheswar, 35. Das Gupta, Sulhuranjan, 36. Datta, Prabhat Chandra, 37. Datta, Rampada, 38. Datta, Sudhir Lal, 39. Dey, Ajit Kumar, 40. Dey, Bidhu Bhushan, 41. Dey, Khagendra Chandra, 42. Dey Nirod Ranjan, 43. Dey, Ranendra, 44. Dey, Rupendra Kumar, 45. Dey, Sudhangsu, 46. Dey, Suresh, 47. Ganguly, Nanigopal, 48. Ganguly, Phanindra Mohan, 49. Ghosh, Haripada, 50. Ghosh, Mohini, 51. Ghosh, Nerode Ranjan, 52. Ghosh, Radhika Prasanna, 53. Gope Prabhullav, 54. Guha, Mahitaran, 55. Halder, Sarat Chandra, 56. Ghosh, Amarendra, 57. Karmakar, Bishnupada, 58. Kundu, Jatindra Nath, 59. Majumdar, Gopal, 60. Majumdar, Santimoy, 61. Mandal, Monomohan, 62. Mukherjee, Jiban Bendhu, 63. Mukherjee, Kamalakhsha, 64. Mukherjee, Prangopal, 65. Mukherjee, Santi Kumar, 66. Nag, Manindra Lal, 67. Naha, Birendra Chandra, 68. Nandi, Chittaranjan, 69. Nandi, Santirnan, 70. Palbar, Jagadish Chandra, 71. Pyno, Aswini Kumar, 72. Roy, Arjya Nath, 73. Roy, Dharendra Nath, 74. Roy, Gopinath, 75. Roy, Sukumar, 76. Saha, Ananta Kumar, 77. Saha, Gopiballav, 78. Sarbhajana, Bankim Chandra, 79. Sarkar, Birendra Kumar, 80. Sarkar, Bhabushi Chandra, 81. Sarkar, Nihar Kumar, 82. Sarma Sarkar, Sudhangshu, 83. Sukin, Gopal Das, 84. Seal, Girija Kanta, 85. Sen, Anil Chandra, 86. Sen, Paresh Chandra, 87. Shome, Kalipara, 88. Thakurta, Birendra Nath,

PART IB

Three hundred and twenty-three candidates registered themselves of whom two hundred and six appeared. The following forty-four are declared to have passed:—

1. Banerjee, Chandidas, 2. Banerjee, Mahendra Nath, 3. Bhattacharjee, Manilal, 4. Biswas, Ranoda Kumar, 5. Bose, Sushil Kumar, 6. Chakravarti, Mukhan Lal, 7. Chakravarti, Nanigopal, 8. Chakravarti, Sulil Chandra, 9. Chakravarti, Saroj Chandra, 10. Chatterjee, Abani Mohan, 11. Chatterjee, Abani Ranjan, 12. Chatterjee, Durga Sankar, 13. Chatterjee, Harendra Nath (I), 14. Chatterjee, Narayan, 15. Choudhury, Indu Bhushan, 16. Choudhury, Sudhir Chandra, 17. Das, Agni Kumar, 18. Das, Nidhuranjan, 19. Das, Sailendra Bojoy, 20. Das, Siddheswar, 21. Dey, Bidhu Bhushan, 22. Dey, Nerode Ranjan, 23. Dey, Ranendra, 24. Dey, Sudhangshu Ranjan, 25. Dey, Suresh, 26. Ghosh, Haripada, 27. Guha, Mahitaran, 28. Hossain, Kazi Ahmed, 29. Karmakar, Bishnupada, 30. Mistry, Sushil Kumar, 31. Mukherjee, Prangopal, 32. Naha, Birendra Chandra, 33. Nandi, Chittaranjan, 34. Nandi, Santirnan, 35. Roy, Dharendra Nath, 36. Roy, Choudhury, Nani, 37. Sarkar, Jagadindu, 38. Sarkar, Madhusudan, 39. Sarkar, Nihar Kumar, 40. Sarkar, Umesh Chandra, 41. Sen, Anil Chandra, 42. Sengupta, Mani Bhushan, 43. Sinha, Benoy Bhushan, 44. Thakurta, Birendra Nath.

*Denotes Distinction.

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PART IC

One hundred and fifty-nine candidates registered themselves of whom eighty-six appeared. The following twenty-four are declared to have passed:—

1. Banerjee, Ananta Lal, 2. Banerjee, Chandidas, 3. Biswas, Kamalash Chandra, 4. Chakravarti, Mukhan Lal, 5. Chakravarti, Nihar Ranjan, 6. Chakravarti, Rebuti Mohon, 7. Chakravarti, Sali Chandra, 8. Chakravarti, Saroj Chandra, 9. Chakravarti, Sovaranjan, 10. Chatterjee, Abeni Ranjan, 11. Chatterjee, Harindra Nath (II), 12. Chatterjee, Phani, 13. Choudhury, Sudhir Chandra, 14. Das, Agni Kumar, 15. Dasgupta, Sulhiranjan, 16. Datta, Rampada, 17. Dey, Norodo Ranjan, 18. Dey, Suchangshu Ranjan, 19. Ghosh Majumdar, Sanitmoay, 20. Halder, Sarit Chandra, 21. Roy, Dhirendra Nath, 22. Saha, Gopiballav, 23. Sarkar, Nihar Kumar, 24. Sen, Anil Chandra.

B. SENIOR CERTIFICATE

PART IIA

Twenty-nine candidates registered themselves of whom seventeen appeared. The following four are declared to have passed:—

1. Banerjee, Chandidas, 2. Bhattacharjee, Bhubarup, 3. Chakravarti, Saroj Chandra, 4. Chakravarti, Sovaranjan.

PART IIB

Twenty-eight candidates registered themselves of whom seventeen appeared. None passed.

10.8. APPRECIATIONS AND OBSERVATIONS

At the invitation of the Government of India, the International Statistical Conferences were held in New Delhi from the 5th to the 11th December and in Calcutta from the 16th to the 18th December, 1951. The United Nations Sub-Commission on Statistical Sampling also held its 5th session in Calcutta from the 19th December, 1951 to the 2nd January, 1952. The Indian Statistical Institute acted as the host society and the meetings of the International Statistical Conferences and of the United Nations Sub-Commission were held in the Indian Statistical Institute in Calcutta. The dedication ceremony of the new building of the Institute at 203 Barrackpore Trunk Road, Calcutta-35 was also performed during the above sessions by Professor R. A. Fisher on the 17th December, 1951 (which was the twenty-first anniversary of the inaugural meeting of the Institute which was held on the 17th December, 1931). The Institute thus had the privilege of welcoming a large number of distinguished statisticians from abroad who came to participate in the Calcutta meetings and had the opportunity to see the work of the Institute. Many of the visitors recorded their appreciation of the Institute's activities. At the desire of the Government of India, the Sub-Commission on Statistical Sampling made a review of the methods used by the Institute in sample surveys. Extracts from the report of the Sub-Commission and observations on the work of the Institute made by visiting scientists are reproduced below.

EXTRACTS FROM THE REPORT ON THE FIFTH SESSION OF THE UNITED NATIONS SUB-COMMISSION ON STATISTICAL SAMPLING: DECEMBER, 1951

The Sub-Commission was asked by the Indian Government to review the methods used by the Indian Statistical Institute. The Sub-Commission has not had the opportunity to examine in detail the whole of the Institute's activities, nor would this be a proper task for the Sub-Commission to undertake. The Sub-Commission has, however, given considerable attention to one side of the Institute's activities, namely, the improvement of agricultural statistics on the acreages and yields of the various crops. The results of this examination are described in a previous section. From this section it would be seen that the Institute has carried out a great deal of pioneer work in this field which has resulted in major improvements in the application of sampling techniques to the estimation of the acreages and yields of agricultural crops. The surveys conducted in the provinces and States of Bihar and Bengal (later West Bengal) have enabled accurate estimates of the acreages and yields of jute and rice in these areas to be obtained for the first time. As a result of these activities and their stimulating effect on the work of other organizations objective methods for the estimation of the yields of agricultural crops have reached a more advanced state of development in India than in any other country in the world.

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The Sub-Commission has also briefly examined the work being undertaken by the National Sample Survey. This Survey has been designed by the Institute and the necessary statistical analysis of the results are carried out by the Institute. The Sub-Commission is much impressed by the high promise of this survey and its potential value in providing data not only on National Income but also on many other economic and sociological problems.

In the opinion of the Sub-Commission the Institute is making a major contribution to the development of the subject of statistics in India and to its practical application to the need of the modern state. Similar organizations are badly needed in many other parts of the world.

(Professor Darmois in the Chair during the consideration of item)

THE INDIAN STATISTICAL INSTITUTE IN RELATION TO NATIONAL ORGANIZATION

During the twenty years of its existence the 'Indian Statistical Institute' has developed several facets of national, and even to some extent, of international importance. It has in several aspects the character of

- (i) A Learned Society devoted to the increase of national knowledge in statistical science.
- (ii) A Professional Organization extending recognition of professional statisticians in various employments.
- (iii) A commercial non-profit distributing Corporation capable of carrying out on economic terms projects of fact-finding and analysis for State and Central Governments, and for Commercial and Industrial Organizations.
- (iv) A teaching centre for pure and applied statistics at Under-graduate and Post graduate level.
- (v) A Publishing House analogous with the University Press of many Western Universities.

It is, I believe, principally of the fourth of these aspects that National Planning should take account and make use, for with the great extension, in recent years, both of abstract or mathematical statistics, and of its applications in the economic, administrative and scientific life of modern nations, there has grown up as ever before the need of centres for the concurrent study of mathematical Statistics, and of its several specific applications. A similar need, which I believe to be rather closely analogous, has been felt in Western nations for Technological Institutes, in which the most advanced methods of applied physics may be studied concurrently with the facilities offered by modern engineering. This dual need has created great Institutes, of which many examples might be given, but of which the Massachusetts Institute of Technology is typical, which differ in structure and organization from the traditional University, being particularly charged with the task of bridging the gulf which separates purely academic studies from effective execution and in which consultant work for Industry is a duty required of the Professors.

The history of the Indian Statistical Institute shows it to have been progressively shaping its organization towards the fulfilment of such a task in relation to the constantly expanding applications of statistical methods. In particular, it has taken the lead in the original development of the techniques of Sample Surveys, the most potent fact-finding process available to modern administrations, while at the same time it has harboured a series of brilliant mathematicians of world reputation in mathematical statistics. What is most striking is that the mathematical work has been constantly linked with work on the projects, so that practitioners in the applied fields can learn inensibly the uses of mathematical analysis and the mathematicians can receive the vivifying stimulus of seeing their devices applied in practice. It is the organic unity of theory and practice that has given the Institute its unique status at the present time.

In the course of National Planning such an Institution may be either used or wasted. It will be wasted if planning consists of a dull conformity to a blue print of ready-made and foreign conception. It can only be used if planning can recognize the aptitude of this spontaneous growth as a national resource peculiarly fitted to the current changes of the modern world. Difficulties of organizations may well require its segregation in the future into several economically autonomous, yet closely linked organizations, with different specified tasks. Nevertheless, an organic unity of personnel should be preserved as the only guarantee of harmonious development. In this way it can become a model for similar institutions badly needed by all forward looking communities.

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OBSERVATIONS OF FOREIGN VISITORS: DECEMBER, 1951

PROFESSOR M. H. BELZ (*University of Melbourne, Australia*): The work of the Institute is known throughout the world, and this visit by members of the International Statistical Institute is expressive of the regard in which the Indian Statistical Institute is held. I am sure it will have continuous success and I wish it all good fortune.

DR. MORRIS A. COPELAND (*Cornell University, U.S.A.*): When I came to India last September I had only a faint conception of the progress of statistical work in India. My association with ISEC has enabled me to see the Indian Statistical Institute in operation, and having soon it I can understand how that great progress has been possible. The achievements of the Institute in the face of all its difficulties should be an inspiration and encouragement to statistical workers throughout the world.

MR. TORE DALENIUS (*Statistician, Social Board, Stockholm, Sweden*): Every one with a personal knowledge of Professor P. C. Mahalanobis and his colleagues would have been able, some years ago when the plans of creating a statistical institute in Calcutta were first outlined, to make an exact forecast: those plans will be fulfilled.

Today I have the great favour of studying the Indian Statistical Institute and its work. I am struck by the well developed team work between workers in all phases of a statistical project. Studying the work carried out here will prove most fruitful for us coming from country where the development in statistics has not been so strong as here in India. I am sure, moreover, that the Indian Statistical Institute will continue to keep its leading position in its efforts to make statistics a useful tool for carrying out work aiming at progress in all fields of human activities.

DR. W. EDWARDS DEMING (*Sampling Adviser to the Bureau of the Budget, Washington, D.C.*): I have known Professor Mahalanobis since 1933, by correspondence, and had the honour of being invited here in 1947. The building of this great Institute is an intellectual and physical achievement of lasting importance.

DR. A. ROSS ECKLER (*Deputy Director, United States Bureau of the Census*): I feel that the Indian Statistical Institute has done a most remarkable job in developing complex statistical technique and having them carried out in the face of technical problems of unusual complexity. Congratulations and best wishes for continuation of this wonderful work.

PROFESSOR J. B. S. HALDANE, F.R.S. (*University of London*): The Indian Statistical Institute is unique in the following respect. The world contains a number of statistical institutes which are efficiently run. It also contains a number of men, who have made great advances in statistical method. But except in the Indian Statistical Institute I know of no case where such a man is head of a great statistical organisation, and is able to design the methods which it uses, and even to experiment with such methods. This fact implies that Professor Mahalanobis chooses his materials for investigation at random, but chooses his subordinates with an extreme bias in favour of efficiency.

DR. P. M. HAUSSER (*University of Chicago, U.S.A.; late Director, U.S. Bureau of the Census*): My visit to the Institute has been more than a satisfactory experience. I expected to see much, because the contribution of Institute staff members to the literature speaks for itself. What I saw was even more than I expected. The Institute is a statistical oasis in what is still largely the world statistical desert. It meets the highest standard of statistical theory and practice by whatever criteria are applied. What we need is more such Institutes—not only in the less developed countries but also in the world at large.

MR. PH. J. IDENBERG (*Director General, Central Bureau of Statistics, The Hague, Netherlands*): I already know that you had created in the Indian Statistical Institute an institution which can bear comparison with the best there is in this field in the world. It has been of the greatest importance to me to have been permitted to look at this work at close range. I return to my country impressed with the firm conviction that we shall have to add to our statistical machinery, though being developed very well according to the old standard of judging, a mechanism that will permit us of making sampling investigations, like those you have built up.

PROFESSOR K. KOCK (*Director, Central Bureau of Statistics, Stockholm*): It was with great interest I took part in the meetings and it was a privilege to meet so many eminent Indian statisticians. I know

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beforehand something of what Indian statisticians had contributed in the statistical field, but studying on the spot what you have done and are doing gives a much more clear conception. We are planning to introduce the same methods you are already using for crop estimates.

PROFESSOR A. LINDEK (*Federal University of Technology, Zurich and University of Geneva; President, Biometric Society*): Let me take this opportunity to say how much I admire the Institution which you have built up during the last 20 years. It was my good fortune and my privilege to see the Indian Statistical Institute in operation during the 5 months of my stay in Calcutta. The theoretical researches achieved in the I.S.I. are well known by all statisticians; the teaching of statistics is also up to the highest standards. What is less well known and what impressed me most favourably is the intimate connexion between theoretical research and applied work in the I.S.I. The applications range from work in meteorology, agriculture and industry to anthropology and medicine, to mention only a few fields. The statistical techniques involved include the usual procedures as well as special methods which you and your co-workers had to develop to solve some of the practical problems.

In my opinion there can be no doubt that the Indian Statistical Institute is today well for theoretical research, as well as for practical application the most active, successful and outstanding Statistical Organization in the world.

MR. HERBERT MARSHALL (*Dominion Statistician, Ottawa, Canada*): It was a great pleasure for me to visit the Statistical Institute and be a witness of its official dedication ceremony. I was very much impressed with the imagination, determination, high technical personnel, industry and general efficiency which have made it possible to advance from small beginnings to the magnificent achievement of the present. May it go on to greater and greater success.

MR. J. W. NIXON (*Ex-Chief, Statistical Division, International Labour Office, Geneva, Switzerland*): I was very favourably impressed with the work of the Indian Statistical Institute and the high quality of the reports and studies undertaken. In its magnificent new building, the Institute will, I hope, continue its excellent work of the last 20 years. The publications of the Institute and especially its periodical "Sankhyā" reach a very high standard and the Institute, as a whole, is an Institute of which India should be proud.

DR. G. PARENTI (*Florence University, Italy*): I was very much impressed by my visit to the Statistical Institute. All is modern, clean and well organized and the people look working there with pleasure.

DR. B. A. PAREZ (*Professor of Physics, Philippines*): It is a special privilege to have the opportunity to see the Indian Statistical Institute in its operations. This really stands as a centre of statistical learning to which the rest of the countries of Asia and Far East particularly look to in their individual hopes of developing a system whereby statistics is taking a greater role in the execution of their national policies. The Institute is an inspiration to peoples looking forward to a state of better life through science.

DR. G. RASCH (*State Serum Institute, Copenhagen, Denmark*): During my visit to the Indian Statistical Institute, where I have enjoyed the hospitality of Professor Mahalanobis for 3 weeks, I have been strongly impressed by the great advantage with which scientific methods have been used within governmental statistics. And, frankly, I heartily envy the opportunities of the Institute for giving a free or almost free service to minor projects of interest to it.

My wish for the future of the Institute goes in the direction of an expansion of the theoretical side of its work, including an addition of one or two theoretical statisticians to the staff serving the big projects.

DR. STUART A. RICE (*Assistant Director, U.S. Bureau of the Budget; President, International Statistical Institute*): The Indian Statistical Institute especially, but also statisticians everywhere, may well be proud of its achievements in developing statistics in India. The new building, which I have had the pleasure of seeing in its final stages of completion, is a visible evidence and symbol of the Institute's accomplishments. It is a pleasure and an honour to pay tribute to Professor and Mrs. Mahalanobis and all of their co-workers who have had the vision to bring aspiration into being as realities. I am glad that the International Statistical Institute could be here to witness this consummation of its sister Institute's hopes for name of its own.

PROFESSOR MILTON DASILVA RODRIGUES (*University of São Paulo, Brazil*): I took a special pleasure in re-reading the literature I had on the Indian Statistical Institute; that added to the direct knowledge I had the opportunity of gathering on the occasion of the Statistical Conferences, convinced me of the

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uniqueness and high quality of that Institute, where so many excellent scholars are efficiently contributing with a rare spirit of self-denial to the progress of India and the advancement of science.

PROFESSOR G. FINDLAY SHIRRAH (*University of Dublin, Eire*): Since I left India twelve years ago after thirty years' service I am most impressed by the great advances made in Indian statistics. In the official field these advances have been stimulated by the work of Professor Mahalanobis, F.R.S. and his able body of assistants in the Institute.

DR. K. WAGNER (*President of the German Statistical Society*): I admire the courage and success with which you overcome the enormous difficulties of yours in the Indian Statistical Institute. . . . I can assure you that the high level of the work done under your direction by the Indian Statistical Institute has made a deep impression upon me. I wish you and your colleagues best success in the future.

MR. T. Y. WU (*ECAPE, Bangkok*): The work of the Indian Statistical Institute impressed me so much and I cannot help recalling the history of a similar Institute in China with which I worked from the beginning. It was the Nankin Institute of Economics, attached to the Nankin University, Tientsin China, beginning 1927, and devoted majority of the work in statistical investigations. The story of the two institutes are very similar, both started with a small budget as private institutions, depending mainly on contributions on work project basis. With the Nankin Institute completely destroyed in the first day of the war, July 1937, and its activities discontinued, I sincerely congratulate the success of the Indian Institute which contributed so much in various field in statistics.

11. PROCEEDINGS OF THE COUNCIL OF THE INDIAN STATISTICAL INSTITUTE DATED THE 24th MAY, 1952.

A meeting of the Council of the Indian Statistical Institute was held at 2-30 p.m. on Saturday, the 24th May 1952 at the Statistical Laboratory, Presidency College, Calcutta.

Present : N. Chakravarti in the Chair. Chameli Bose, A. R. Sinha, K. N. Chakravarti and S. C. Sen (*Joint Secretary*).

1. Proceedings of the meeting of the Council held on 10th May 1952 were read and confirmed.
2. *Annual Report and audited statement of accounts for 1951-52* : S. C. Sen, Joint Secretary, placed before the Council the draft Annual Report as well as the audited statement of the accounts of the Indian Statistical Institute for the year ending 31st March 1952. He stated that the accounts had been audited by Messrs. P. C. Nandi & Co., Chartered Accountants.

Resolved that the draft Annual Report and the audited statement of accounts of the Indian Statistical Institute for the year ending 31st March 1952 be approved for submission to the Annual General Meeting.

3. N. Chakravarti enquired if the statement showing the assets and the liabilities of the Institute, as agreed upon in the Council meeting held on 8th May 1951 was ready for presentation to the Council.
- S. C. Sen, Joint Secretary, replied that the statement was under preparation and was expected to be ready in about five weeks' time.

Sd/- N. CHAKRAVARTI
Chairman.

Confirmed
Sd/- S. K. BANERJI
9-7-52.

Sd/- S. C. SEN,
Joint Secretary.

PROCEEDINGS OF THE ANNUAL GENERAL MEETING OF THE INDIAN STATISTICAL INSTITUTE DATED 30th MAY, 1952.

The Annual General Meeting of the Indian Statistical Institute was held at 5-30 p.m. on Friday, the 30th May 1952 at the Presidency College, Calcutta.

Present : Sri D. K. Mitra, N. C. Banerjee, S. Raja Ran, P. K. Chatterjee, Pankaj Kumar De, H. Ghosh, J. M. Sengupta, D. Sarkar, A. R. Sinha, Chameli Bose, N. Chakravarti, A. Mittal, S. Haldar, A. Burmanroy, S. K. Bose, Rajen Roy, N. C. Chakravarti, T. Choudhury, N. Ghosh, K. N. Chakravarti (*Registrar*) and S. C. Sen (*Joint Secretary*).

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In the absence of the President and any of the Vice-Presidents, Sri Nistaran Chakravarti was voted to the chair.

Proposed by Sri S. C. Sen
Seconded by Prof. K. N. Chakravarti

At the very outset, with the permission of the Chair, Sri Nihar Chandim Chakravarti made a reference to the sad and untimely death, on the 20th February 1952, of Sulhir Kumar Banerjee, one of the oldest and most devoted workers of the Institute, who had never spared himself in work and who had rendered invaluable services to the Indian Statistical Institute. He then requested the Chair to move a suitable resolution and to forward a copy of such resolution to the bereaved family.

The Chairman wholeheartedly associated himself with the proposal and the following resolution moved from the Chair was carried unanimously, all standing in silence for one minute as a mark of reverence.

"That this Annual Meeting of the Indian Statistical Institute places on record its deep sense of loss at the sad and untimely death of Sulhir Kumar Banerjee, one of the oldest workers of the Institute, who by his indefatigable labour and rare devotion rendered invaluable services to the Institute and contributed to its growth from its very inception to its present condition. He enjoyed the confidence of his fellow workers and was a great cementing force within the Institute. His loss will quite be irreparable."

Resolved that a copy of the resolution be sent to the members of the bereaved family.

1. *Annual Report & Audited Accounts*: The Chairman stated that the Annual Report of the Institute for the year ending 31st March 1952 having been already circulated among the members of the Institute, it may be taken as read.

Sri S. C. Sen, Joint Secretary, moved for adoption of the Annual Report together with the statement of Audited Accounts for the year ending 31st March 1952.

This was seconded by Sri N. C. Banerjee.

The Chairman then invited comments on the draft Annual Report and the statement of Audited Accounts from the members. In the absence of any comments from the members present, both the Annual Report and the Audited Accounts for the year 1951-52 were unanimously adopted.

2. *Election of Office-bearers and members of the Council*: The Chairman stated that in accordance with the Bye-laws of the Institute relating to elections a list of persons nominated by the Council for the year 1951-52 had been circulated to members on the 14th May 1952. No other nomination has since been received by the Joint Secretary and as such the persons nominated by the Council should be considered as having been duly elected. He then declared the following persons duly elected as office-bearers and members of the Council of the Institute for the year 1952-53

President

The Hon'ble Sri C. D. Deshmukh

Finance Minister, Government of India, New Delhi.

Vice-Presidents

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

University of Calcutta.

Prof. D. R. Guigil

Gokhale Institute of Politics & Economics, Poona.

Sri K. P. Goenka

Calcutta.

Sri G. L. Mehta

Delhi.

Sir Birendranath Mookerjee

Messrs. Martin Burn Ltd., Calcutta.

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

Calcutta.

Sir B. Rama Rau

Governor, Reserve Bank of India.

Sir Shri Ram

Delhi Cloth & General Mills, Delhi.

Treasurer

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

Calcutta.

Secretary

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

Calcutta.

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Joint-Secretaries

Sri Nihar Chandrn Chakravarti, M.A.

Asst. Secy. to the Govt. of West Bengal, Dept. of Agriculture, Forests & Fisheries, Calcutta.

Sri S. C. Sen

Members of the Council

Dr. S. K. Banerji, D.Sc.

Calcutta.

Srimati Chameli Bose, B.Sc. (Lond.)

State Statistical Bureau, Govt. of West Bengal, Calcutta.

Prof. K. N. Chakravarti

Calcutta.

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

Director, State Statistical Bureau, Govt. of West Bengal.

Sri M. Ganguli, B.Sc. (Lond.)

Statistician, Indian Jute Mills Association, Calcutta.

Prof. H. C. Ghosh, M.A., P.R.S.

Chief Director, National Sample Survey, Govt. of India, New Delhi.

Sri Nirmal Charan Ghosh

Calcutta.

Prof. K. B. Madhava, M.A., A.I.A.

Mysore.

Sri K. C. Mahindra

Calcutta.

Prof. Bholanath Mukherjee, M.A., P.R.S.

Scottish Church College, Calcutta.

Dr. U. S. Nair, M.A., Ph.D. (Lond.)

University of Travancore, Trivandrum.

Sri Pitambar Pant, M.Sc.

New Delhi.

Dr. B. Ramamurti, M.Sc., Ph.D.

Central Statistical Organization, New Delhi.

Dr. C. R. Rao, M.A., Ph.D. (Cantab.)

Calcutta.

Dr. V. K. R. V. Rao, M.A., Ph.D.

Delhi School of Economics, Delhi.

Dr. N. Sundararama Sastry, M.A., M.Sc., Ph.D. (Lond.)

Director of Statistics, Dept. of Research & Statistics, Reserve Bank of India, Bombay.

Sri J. M. Sen, M.Ed.

Calcutta University.

Sri Sadasiv Sengupta, M.Sc. (Dacca), B.Sc. (Lond.)

Statistical Officer, E. I. R., Calcutta.

Sri A. R. Sinha, M.A.

Calcutta.

3. *Appointment of Auditors* : Resolved that Messrs. P. C. Nandi & Co., Chartered Accountants, who have been the Auditors of the Institute for the last few years, be appointed Auditors of the Institute for the year 1952-53.

Proposed by Sri N. C. Banerjee

Seconded by Sri Nihar Chandrn Chakravarti.

4. *Miscellaneous* : The Chairman then invited remarks and suggestions in regard to the work of the Institute, in general.

Sri A. R. Sinha suggested that current issues of important journals should be made available in the Calcutta office.

Sri N. C. Chakravarti stated that books of the Circulating Library were not readily available in Calcutta. He suggested that steps should be taken to remedy this state of things.

Prof. K. N. Chakravarti explained the circumstances under which the greater portion of the library had been transferred from Calcutta with the result that whenever any book from the Circulating Library was requisitioned, it had to be brought from Baranagar. This naturally gives rise to delay. He assured the members that as soon as the entire library could be housed in the same place the issue of books and journals would be made as promptly as desired.

Sri A. Burmanroy suggested the publication of the reports of the Institute for the general public.

Sri N. C. Chakravarti stated that many of the reports on surveys financed by Government have already been published and he named a few more which would soon be published by the West Bengal Government. He further stated that the Institute had submitted some reports of a confidential nature and if the resources of the Institute permit, appropriate authorities might be approached asking for sanction to the Institute for their publication.

Sri S. C. Sen stated that there were two classes of reports—reports which were primarily of theoretical or technical interest and reports which dealt mainly with factual information. In arranging a programme of publications with limited resources it would be necessary to give priority to the former.

With a vote of thanks to the Chair, proposed by Sri Nihar Chandrn Chakravarti and seconded by Prof. K. N. Chakravarti, the meeting came to a close.

Sd/- N. CHAKRAVARTI,
Chairman.

Sd/- S. C. SEN,
Joint Secretary.