

INDIAN STATISTICAL INSTITUTE

THIRTY-EIGHTH ANNUAL REPORT

April 1969—March 1970

Volume I



203 BARRACKPORE TRUNK ROAD
CALCUTTA-35

INDIAN STATISTICAL INSTITUTE

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Secretary: Professor P. C. Mahalanobis, F.R.S., D.Sc., F.N.I.

Joint Secretary: Shri P. Ray.

Members of Council: 1. Shri S. K. Acharyya, Bar-at-Law; 2. Dr. B. P. Adhikari, M.Sc. (Cal.), Dr.ca.Sc. (Paris); 3. Dr. Bani Prasad Banerjee, B.E., M.S., Ph.D.; 4. Shri G. Basu, B.A., F.S.A.A., F.C.I.S., F.C.A., F.C.I.W.A., J.P.; 5. Dr. U. P. Basu*, D.Sc., F.N.I.; 6. Dr. N. Das, Ph.D. (London), I.C.S. (Retired); 7. Shri Arun Kumar Dutt; 8. Professor H. C. Ghosh, M.A., P.R.S.; 9. Shri Shyamal Krishna Ghose; 10. Shri D. B. Lahiri, M.Sc., F.N.I.; 11. Shrimati Nirmal Kumari Mahalanobis; 12. Dr. B. S. Minhas, M.A., Ph.D.; 13. Dr. Aabok Mitra, M.A., D.(Econ)So.; 14. Dr. R. Mukherjee, M.Sc. (Cal), Ph.D. (Cantab); 15. Dr. C. R. Rao, M.A., M.Sc., Ph.D., So.D. (Cantab), F.N.I., F.R.S.; 16. Dr. L. D. Sanghvi, M.Sc., Ph.D. (Columbia); 17. Dr. Amartya Sen, M.A., Ph.D. (Cantab); 18. Shri Satish Chandra Sen, M.A., LL.B.; 19. Dr. B. R. Seeshachar, D.Sc., F.N.I.; 20. Shri B. G. Verghese**, M.A. (Cantab).

Government nominees on the Council (Rule 6.1 b) (1): 1. Cabinet Secretary (Shri B. Sivaraman), or his representative; 2. Joint Secretary, Ministry of Finance, Department of Expenditure, Government of India, (Shri B. N. Maheswari); 3. Director, Central Statistical Organisation and ex-officio Joint Secretary, Department of Statistics (Dr. Uttam Chand).

Co-opted members (Rule 6.1(c): Nil.

*Ex-officio Members (Rule 6.1(d**):* Secretary of each local branch: 1. Bombay Branch: Professor P. N. Phutane (1969-70); 2. Kerala Branch: Dr. (Mian) A. George (1969-70); 3. Mysore State Branch: Professor Srinagabhushana (1969-70).

* Died on 1 December 1969.

** Resigned.

*** Branch Chairman's name shown under additional Vice-Chairman.

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INTRODUCTION

Genesis: The idea of starting the Indian Statistical Institute was conceived by Professor P. C. Mahalanobis and a group of young men who had gathered round him in the nineteen-twenties (1920-31), being interested in applying statistical methods to the solution of practical problems. There was already a workshop, so to say, for this purpose in what came to be known as the Calcutta Statistical Laboratory, which was located in the room of Professor Mahalanobis, then professor of physics in the Presidency College, Calcutta. A public meeting, called over the signatures of Pramatha Nath Banerjee (Minto Professor of Economics), Nikhil Ranjan Sen (Ghose Professor of Applied Mathematics) and P. C. Mahalanobis, was held on 17 December 1931, with the late Sir R. N. Mookerjee in the chair. This meeting adopted a resolution which led to the establishment of the Indian Statistical Institute which was registered on 28 April 1932 as a non-profit distributing learned society under the Societies Registration Act XXI of 1860. A part-time computing clerk was the only worker the Institute had in the first year of its existence, the total expenditure being below Rs. 250. The Indian Statistical Institute Act of 1959 recognized the Institute as an institution of national importance and empowered it to confer degrees in statistics, thus giving the Institute the status of a university. From 1 July 1960 the Institute, through its Research and Training School, has been conducting courses leading to the degrees of Bachelor of Statistics (B.Stat.), and Master of Statistics (M.Stat.), and a doctorate degree (Ph.D.) is also being awarded, with provision for a higher doctorate (D.Sc.) degree. In 1961, the idea of the Institute having "Unity in Diversity" as its motto and the banyan tree as its crest, emerged as a result of discussions between the late Sir Ronald A. Fisher, and Professor P. C. Mahalanobis and was immediately supported by Shri C. D. Deshmukh, the President of the Institute from 1945 to 1964, who translated the English words into the Sanskrit version incorporated in the crest.

History of Activities: Since its inception, the Indian Statistical Institute has been trying to carry out an integrated programme of theoretical studies combined with practical applications of statistical methods through project work. Some of these projects raised theoretical problems whose solution led to original contributions to statistical theory. The Institute's project work involved close collaboration with the Government, and it used to be done for a long time on business-like lines for both private enterprises and the Government, with contract grants for specified purposes. The Institute was built up in fact by the untiring efforts of Professor P. C. Mahalanobis and the sincere devotion of a handful of young trained scientific workers including H. C. Sinha, S. S. Bose, R. O. Bose, S. N. Roy and others. These young men helped to lay the foundation of the Institute. They worked for an ideal on a modest allowance which the Institute could pay from 'business earnings'. Individual training had started in 1932 under the inspiring guidance of the late S. S. Bose

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who joined the laboratory as senior assistant in 1931. Through him, the Institute gained a wide circle of friends and sympathisers. The lack of trained statisticians and computers led to the establishment of training courses in 1939, and the award of certificates of competence from 1938. The Institute's educational activities expanded with passing time, and included co-operation with international agencies for training programmes in South East Asia. Dr. H. C. Sinha took a leading part in the foundation of the Indian Statistical Institute in 1931-32 and took up the work of the Institute with vigour as its Honorary Joint Secretary. He rendered invaluable services in making the work of the Institute known abroad. Sudhir Kumar Banerji was associated with the Institute since its inception. He used to look after the business and financial management with ability until his death. The actual management of the Statistical Publishing Society was in his able hands.

Earlier publications by Professor P. C. Mahalanobis were on physical anthropology (1922) and two meteorological memoirs (1923) in which errors of observation were separated from physical deviation in correlational analysis. The work in meteorology led to large scale project studies in the early days of the Statistical Laboratory which were mainly concerned with two problems. The first was the control of floods, in Bengal and Orissa, on which reports were submitted in 1927, 1931 and 1940. The results of this work were partly immediate, in the adoption of adequate measures for flood control in North Bengal and partly long-term, coming to fruition in such schemes as the Damodar Valley Corporation and the Hirakud Dam Project. Professor Mahalanobis published a paper on errors of agricultural field trials in 1926, which established contact with Ronald A. Fisher almost immediately and resulted in the introduction in India of the Fisherian "design of experiments," before these methods were adopted in any other country outside Britain. Professor P. C. Mahalanobis and the late S. S. Bose published a series of statistical notes for agricultural workers in the *Indian Journal of Agricultural Science* (1932-38). Theoretical work on the design of experiments was started in the nineteen thirties and received a great impetus with R. A. Fisher's first visit to the Institute in 1938 which led to the Institute workers making important contributions to this subject field; among whom mention may be made of R. C. Bose now in the USA, and Quazi Motahar Hosain (Pakistan). On the applied, side, Subhendu Sekhar Bose helped in a significant way until his untimely death in 1938.

The earlier work on anthropometry had also provided the basis for contributions in multivariate analysis with the formulation of the D^2 Statistics ("Mahalanobis generalised distance") in the mid- and late nineteen twenties. R. C. Bose who joined the Institute in 1933 obtained the exact distribution of the generalised distance (D^2 -Statistics) and developed the general problems of classification and discrimination with S. N. Roy who joined the staff in 1935. Important work in multivariate analysis was done by the late S. N. Roy in the Institute. Work on these problems still continue in the Institute, having been followed up by Professor P. C. Mahalanobis' formulation of Fractile Graphical Analysis in 1958.

Another development is worth recording. On the basis of a note submitted by Professor P. C. Mahalanobis, the University of Calcutta with the active support of the late Dr. Syama Prasad Mookherjee, then President, Councils of Post-graduate Teaching in Arts and Science, decided to establish a post-graduate Department of Statistics, the first of its kind in India, from July 1941, with Professor P. C. Mahalanobis as Honorary Head of the Statistics Department. During this period, the University department was located in the Institute which provided some members of the teaching staff, accommodation and other facilities.

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It is of interest to mention that seven students including C. R. Rao and H. K. Nandi joined the course for the masters degree in Statistics in July 1941. The whole of the Calcutta University Department of Statistics was evacuated with the Institute to Giridih in early 1942 during the Second World War.

In 1936, theoretical and field studies were started, at the desire of the Government of India, to develop sample surveys for the improvement of estimates of production of agricultural crops. These studies led to continuing annual crop surveys in Bengal from 1941, and also to important theoretical developments in the design of sample surveys which secured for the Institute a leading position in the world in this subject.

During the Second World War, the Institute became involved in the study of demographic problems. A detailed tabulation of the 1941 population census was abandoned by the Government owing to the exigencies of war. Professor Mahalanobis, however, succeeded in persuading the Government to retain a small sample of the original census slips. On the basis of this sample, the Institute prepared the detailed tables of demographic statistics for the 1941 census. Since then, studies in demography have been continuing in the Institute.

Research on estimation and distribution theories continued during the war and gradually led to the Institute becoming an internationally known centre for research in mathematical and theoretical statistics.

During the nineteen fifties, the Institute developed important types of project work. The National Sample Survey, initiated by the Government of India in 1950, with the help of the Institute, is a continuing and the most comprehensive socio-econometric survey in the world today. Statistical Quality Control was started in 1953 and gradually developed into a training and consultancy service to industry on an India-wide basis, and is fulfilling a basic need in promoting the industrial progress of the country. D. B. Lahiri has made important contributions to the design of sample surveys and J. M. Sengupta to experimental studies.

The most important development of the Institute's work during the nineteen fifties was its significant contribution to economic planning. The studies on planning were inaugurated at the Institute in Calcutta in November 1954 by the late Prime Minister Jawaharlal Nehru, and the Draft Plan Frame for the Second Five Year Plan was prepared on the basis of these studies, and submitted to the Prime Minister in March 1955. The Institute's Planning Unit has since then worked in close collaboration with the Perspective Planning Division of the Planning Commission, and the National Sample Survey data have been found to be of great help in this work.

Educational Programmes : All over the work, during the last thirty years or so, statistical methods are being increasingly used in new fields of work. This is clearly seen in the number of books which has been published during this period, surveying the applications of statistics in many separate individual fields of natural sciences, such as geology, which would once have been thought quite remote from the statistical field.

The Institute was given powers to award degrees by an Act of Parliament, sponsored by the late Prime Minister Nehru, and passed in 1959. This, together with the recognition

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of statistics as a key technology, has resulted in a new approach to the teaching of statistics in the Institute, which is also expressed in its research programme.

In universities, it was for a long time the practice to provide courses at the post-graduate level in a single subject like mathematics, physics, biology, economics, etc. During the latter part of the nineteenth century, it became necessary to develop new educational programmes in two important fields, namely, medicine and engineering, because it was essential for the professional students to have some knowledge of and skills in a number of scientific disciplines.

Sir Ronald Fisher summed up the position of statistics as "the key technology of the present century" in 1962, pointing out that a technologist must talk the language of both theoreticians and practitioners. The education of a technologist must, therefore, have a broad base. A technologist has to see both sides of the fence, and is the channel through which alone the knowledge and skills of others can be made effective. Fisher said, "It is, I believe, in recognizing statistics as the key technology of our century, that we can appreciate the special features of the Indian Statistical Institute. . . . What the scientists have to do with statistics lies in the part they must play in the education of any competent statistician."

Statistics, as a new technology, is concerned with the use of the most economic and efficient methods of observation, measurement, survey, and experimentation, and of the processing of data for the drawing of valid inferences. The scope of statistics thus extends over the whole range of both the natural and the social sciences.

C. R. Rao who had joined the Institute as a student in January 1941 and who became Director, Research and Training School, in 1964, has been pursuing the policy of developing statistics as a key technology and extending applications of statistical methods in many new fields. His interest has been thus focussed not only on theoretical-mathematical studies but also on practical applications including in recent years Statistical Quality Control.

The courses leading to the B.Stat., or M.Stat. degrees have been formulated to cover a wide range of subjects, somewhat analogous to courses in medicine and engineering. Pure mathematics and theory of probability are of basic importance. Theoretical and different branches of applied statistics, naturally, form a large part of the teaching programme. Because of the special needs of India, a great deal of attention is given to the economics of planning. In these three groups of subjects, mathematics, statistics, and economics of planning, the course includes a good deal of knowledge of basic results and facts, besides theory and methodology.

In addition, facilities are provided for the students to become familiar with the methods of observation, measurement, survey, and experimentation in a number of scientific subjects. Here the emphasis is not so much on the content of knowledge of facts, or of theories, but on methods; and the stress is, therefore, on practical courses and statistical analysis and the interpretation of data.

Research Policy: Ronald Fisher had pointed out "that the science with which the student is to become acquainted must be genuine research in its own right, not what is

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eloquently called a 'mock-up' for the use of students only." It is, therefore, the policy of the Institute to establish small, high level, research units in both the natural and social sciences, to offer facilities for research and training in the use of statistical methods in practice.

The Government of India approved this policy in a communication from the Cabinet Secretariat dated 15 June 1962 in the following terms :

"Government accept the view that statistics being a new technology, it should be open to the Indian Statistical Institute to establish and maintain research and study units in subjects other than theoretical and applied statistics to offer facilities for research and application of statistical methods and for the provision of training in such methods. The number of such units would depend on the availability of really able research scientists and also on the funds available to the Institute. Similarly, in furtherance of the purposes as set out in Section 5 of the Indian Statistical Institute Act, the Institute may establish and maintain units for the study of different languages (including translation units, library science, documentation, etc.) and for auxiliary studies and teaching in different subjects including humanities."

In this plan, each research unit would be concerned with a particular theme. Where there is more than one professional scientist in the same unit, they may either work jointly on the same topic or on different topics, which would, however, be related to a central problem. Each research paper may be independent, but the results would be capable of being added together to supply a more comprehensive picture of different aspects of the central theme.

This thematic programme of research is particularly useful in underdeveloped countries. In a large department or the faculty of a University, scientists often work on unrelated topics with practically no possibility of communication, or the exchange of views and criticisms among them. Scientists in a small research unit working on related groups of subjects can easily communicate with one another; a miniature scientific community can thus be established with the possibility of a free exchange of views and criticisms. Such scientific cells can then gradually build up a scientific community in the country as a whole.

The concept of a thematic programme for each research unit is also useful in preventing the growth of large units with a big staff dealing with a multitude of subjects. The Institute's policy is to have small units of pioneering research arranged in a horizontal or parallel pattern of organization. The Institute's policy is also to encourage joint projects of research and advanced studies by collaboration between two or more research units within the Institute and also with other universities, institutions and organizations.

The Institute's small research units are thus intended to play a quadruple role.

(i) Each unit will contribute to the teaching of degree courses in statistics, familiarizing students with types of problems, and methods of observations, measurement, and experiment, in its own field of natural science.

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(ii) Each unit will actively engage in a programme of pioneering research, which will throw up problems of a statistical nature from time to time, some of which may well stimulate the evaluation of new statistical methods.

(iii) It is also hoped that the research units will be able to act as a liaison between workers in similar fields of science in universities and Government organizations, on the one hand, and the research statisticians of the Institute, on the other, to promote the spread of knowledge of statistical methods in scientific research in India.

(iv) Some of these research units have also been functioning in a very encouraging way as the meeting place for active collaboration between the scientists in India and guest scientists from abroad. Such collaboration is an important role of the Institute.

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PART I: GENERAL REVIEW OF THE WORK DURING THE YEAR

1. GENERAL ADMINISTRATION

1.1. *Membership*: The year 1969-70 started with 81 life members (including 5 honorary life members), 387 ordinary and 7 institutional members on the roll. During the year, 53 ordinary members and 2 institutional members were enrolled and 6 ordinary members became life members. One ordinary member resigned and, according to information available to the Institute, 2 life members and 1 ordinary member died. During the year, membership in respect of 35 ordinary members were terminated by the Council of the Institute (meetings dated 10 September and 18 December 1969) in terms of Rules 3.1 of the Rules of the Institute. At the end of the year, therefore, the total membership was 491 consisting of 85 life (including 5 honorary life members), 397 ordinary and 9 institutional members.

Suitable action is being taken for revising the list of membership as suggested in the previous year's report. The revision would be carried out in due course after obtaining the Council's permission. Eighty-five sessional members and 193 student members were enrolled during 1969-70, compared with 79 sessional members and 168 student members in the previous year. Seasonal and student members are enrolled for one year at a time.

1.2. *Annual General Meeting*: The Annual General Meeting and the adjourned Annual General Meeting were held on 31 October and 19 December 1969 respectively, to transact certain specified agenda of business. The meeting mourned deeply the death of Shri N. C. Chakravarti, Joint Secretary. The meeting held on 31 October 1969 dealt with the election of the President, Vice-Presidents, Honorary Vice-President and office-bearers and members of the Council, consideration of the balance-sheet, statement of accounts etc., appointment of auditors for term 1969-70, recognition and formation of the Board of Trustees for the ISI-GPF, report about (a) action taken on the proceedings of the previous general meetings dated 31 October and 20 December 1968, (b) action taken in respect of the report of the Review Committee.

Owing to certain unavoidable reasons, there was some delay in placing the final accounts before the auditors. As a result, the audited report for 1968-69 and the balance-sheet as at 31 March 1969 could not be considered in the Annual General Meeting held on 31 October 1969. The meeting was, therefore, adjourned to 19 December 1969 to be held at the City Office of the Institute at 27B Camac Street, Calcutta-16. This adjourned meeting adopted the auditors' report with the audited statement of accounts and balance-sheets for the year ended 31 March 1969 submitted by Messrs. Price Waterhouse, Post & Co., earlier approved and recommended for adoption by the Governing Body of the Research and Training School and the Council of the Institute and the Finance Committees of these two bodies.

The election of President, all Vice-Presidents, Honorary Vice-President, all office-bearers and members of Council was due this year.

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The name of President, Vice-Presidents, Honorary Vice-President, Chairman, Vice-Chairman and other office-bearers and members of the Council after the election on 31 October 1969 are given in *Annexure 1*.

The auditors' report, audited statement of accounts for the year 1969-70 and the balance sheet as at 31 March 1970 submitted by Messrs Price Waterhouse, Post & Co. are given in Part III.

1.3. *Meetings of Council*: The Council of the Institute met eight times during the year on 12 April, 26 June, 22 August, 19 September, 30 October, 18 December 1969 and 24 January and 21 March 1970.

1.4. *Meetings of the Governing Body of the Research and Training School*: The Governing Body of the Research and Training School met five times during the year on 12 April, 22 August, 30 October, 18 December 1969 and 24 January 1970.

1.5. *Meetings of the Finance Committees*: The Finance Committee of the Council and the Finance Committee of the Governing Body of the Research and Training School jointly met on 29 October 1969 (adjourned to 30 October 1969) and 17 December 1969 to consider the auditors' report, the audited statement of accounts and balance sheet as at 31 March 1969, revised budget estimates for 1969-70 and tentative budget proposals for 1970-71.

1.6. *Membership of the Governing Body and Finance Committees*: Names of members of the Governing Body of the Research and Training School and of the Finance Committees of the Council and the Governing Body are given in *Annexure 1*.

1.7. *Institute Staff*: Professor P. C. Mahalanobis held the office of the Honorary Secretary and Honorary Director of the Institute throughout the period. Dr. C. R. Rao continued as the Director of the Research and Training School.

Shri N. C. Chakravarti, Honorary Joint Secretary, continued as a special officer on a part-time basis to look after certain constitutional, secretarial, legal and other matters till his death on 19 October 1969.

Shri S. Basu continued as Honorary Joint Secretary up to 31 October 1969 with headquarters at Delhi. He also continued as an officer-on-special duty up to 31 May 1969. Shri P. N. Zutshi, Special Officer, was empowered to function as Administrative Officer at Delhi from 1 September 1969 and was appointed a Joint Secretary from 1 November 1969.

Shri P. Ray continued to work as Joint Secretary and Administrative Officer throughout the period.

1.8. *New Appointments*: The staff of the Institute was strengthened during the year by the addition of the following persons. The date of joining is shown against each name:

1. Dr. Sanjit Bose, M.A. (Econ.), Ph.D. (Econ.), (*Planning, Delhi*): 1 April 1969;
2. Dr. V. V. Menon, B.Sc. (Hons.), M.Stat., D.Phil. (Oxford), (*R.T.S.*): 1 April 1969;
3. Dr. Y. R. K. Sharma, M.A. (Math.), M.Sc. (Stat.), Dr. es. Sc. (Paris), (*R.T.S.*): 1 April 1969;
4. Shri P. N. Zutshi, M.A. (Lucknow), M.A. (Cambridge, Pure and Applied Maths.), Lord Hardinge Gold Medalist and Lord Chalmersford Gold Medalist, Associate Fellow of

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the Royal Aeronautical Society (London), (*Adm., Delhi*): 1 April 1969; 6. Dr. K. C. Malhotra, M.Sc. (Anthrop.), Ph.D. (Anthrop.) (Poona), (*R.T.S.*): 6 April 1969; 6. Sm. Alokannanda Mitter, M.A. (*R.T.S.*): 1 June 1969; 7. Dr. T. V. Hanurav, M.A. (Math.), Ph.D. (Stat.), (*R.T.S.*): 28 August 1969; 8. Dr. T. S. Chidambaram, M.Stat., Ph.D. (Operations Research, USA) (*S.Q.C.*): 2 March 1970; 9. Shri Kalyan Daagupta, B.E.: 12 March 1970.

Dr. Mihir K. Chakravarty (*Electronics*) who had been working at the Edinburgh University for the last three years, rejoined on 2 March 1970.

Dr. T. Krishnan (*R.T.S.*), after teaching for two years at the Southampton University rejoined on 1 October 1969.

1.9. *Retirement*: The following worker retired on the date mentioned:

Shri Sarat Banerjee, B.Sc., Diploma in Librarianship (*Library*): 30 June 1969.

1.10. *Obituary*: The Council recorded its deep sense of sorrow at the death of Shri N. C. Chakravarti, Joint Secretary of the Institute, who passed away on 19 October 1969. The Institute had the privilege of having Shri Chakravarti's association in different capacities since 1934 till his death. He made a substantial contribution to the development of the Institute and was the custodian of its history and tradition. By his death, the Institute has sustained an irreparable loss.

Shri Kamal Mukherjee (*Administration*) died on 19 December 1969 at the age of 46. He joined the Institute in August 1943 and served it for more than 26 years. He had endeared himself to his colleagues by his gentle manners. The Institute lost in him a very devoted worker.

1.11. *Review Committee*: It was noted in the Annual Report of 1968-69 that some of the decisions of the Council in respect of certain recommendations of the Review Committee and the Deshmukh Committee had been implemented and that certain other issues, regarding which there was a difference between the Review Committee's and the Deshmukh Committee's recommendations, were considered in different meetings of the Council.

On 12 April 1969, the Council considered the statement tabled by the Prime Minister in Parliament in December 1968 regarding the Government's decision on the recommendations of the Review Committee. It may be mentioned in this connection that till that date no decision regarding the reorganization of N.S.S. had been taken by the Government. In the same Council meeting, the Council reiterated its earlier decisions regarding the Executive Committee, merger of funds, development of computers, etc., over which there was a difference of views. In July 1969, a three-man Committee, headed by Shri B. Sivaraman, Cabinet Secretary, Government of India, visited the Institute and had discussions with senior workers of the Institute and representatives of the Workers' Organisation regarding the reorganisation of the N.S.S. After that, the Cabinet Secretary had separate informal discussions with different categories of workers on the same issue.

Shri K. P. Goethakrishnan, Deputy Secretary, Department of Statistics, in his letter of 5 March 1970 forwarded to the Institute the Government resolution regarding the reorganisation of the N.S.S. and the tentative proposals of the Government in respect of the absorption of the N.S.S. staff and a portion of the common services staff, and requested the Institute Council and the ISIWTO to send their views on these proposals.

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On 21 March 1970, the Council meeting in Delhi to consider the above letter, resolved that it would be advisable to have the Government proposals regarding various connected issues, such as accommodation, equipment, furniture, Survey Research Centre, N.S.S. records etc., and to consider them along with the proposals already received from the Government in order to enable the Council to consider all the issues as a whole and to help in the settlement and implementation of future arrangements for the work of the N.S.S.

Further developments will be reported in due course.

2. RESEARCH AND TRAINING SCHOOL

The Research and Training School carried out its training and research activities under the guidance of the Director, Dr. C. R. Rao.

2.1. Training Programmes

2.1.1. *New Courses* : Besides the regular courses leading to the B.Stat. and M.Stat. degree, diplomas and certificates, the Institute conducted the following new courses during the year 1969 :

1. A Specialisation Course in Technometrics for post-M.A. students.
2. A post-graduate evening course leading to a diploma in Statistical Quality Control and Operations Research in Bombay and Madras.
3. Arrangements were made for the training of Indian Statistical Service probationers in some special fields of statistics.
4. A two-year research course in economics leading to the Ph.D. degree in Delhi and Calcutta.
5. A teachers' training course of nine-months' duration on the education and speech rehabilitation of deaf and hard-of-hearing children was introduced at the request of the Education Directorate, Government of Tripura.
6. A special seven-week course on Mathematical Geology was organised in March-April 1969 with the assistance of Professor A. B. Vistelius, Steklov Institute of Mathematics, Leningrad, for the benefit of research scholars and university teachers in Geology.

Most of these courses would become regular features of the Institute's training programme from the next academic year. A full list of courses is given in the Prospectus of Degrees, Diplomas and Certificates, 1969-70.

2.1.2. *Admissions to Degree and Training Courses* : The selection tests for admission to the B.Stat., M.Stat. degrees and post-M.A./M.Sc. research courses leading to registration for the Ph.D. degree as well as other diploma and certificate courses of the Institute were held in July 1968 at eleven centres : Bangalore, Bombay, Calcutta, Delhi, Giridih, Hyderabad, Lucknow, Madras, Trivandrum, Varanasi and Waltair. The selection of candidates to the courses were made by committees with representatives from the Institute of Agricultural Research Statistics and the Central Statistical Organisation.

2.1.3. *Summer School* : The ninth session of the Advanced Summer School Programme for Statisticians was conducted during May/June 1969 at Waltair. The course,

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devoted to Statistical Methods in Biological Sciences, was attended by 36 teachers and scholars from universities and research organisations. The course consisted of approximately 150 lectures and 30 practical sessions.

2.2. Research Activities

The units for applied research and science laboratories attached to the Research and Training School, together with the names of the heads of units, are as follows:

Rhea S. Das (*Appraisal*), Sudhir Ranjan Das (*Anthropometry and Human Genetics*), Prabhat Ranjan Pal (*Biochemistry*), Bhupendra Chandra Das (*Biometry*), Subodh Kumar Roy (*Botany*), Jogabrata Roy (*Computer Science*), Trupapur Antony Davis (*Crop Science*), Mansupadom Venkateswarier Raman (*Demography*), Deb Kumar Boso (*Economic Research*), Ratan Lal Brahmachary (*Embryology*), Sohan Lal Jain (*Geology*), Monimohan Mukherjee (*National Income Research*), Durgaprasad Bhattacharyya (*Pre-Census Population Studies*), Sibabrata Chatterjee (*Psychometric Research and Service*), Ramkriahna Mukherjee (*Sociology*) and T. N. Srinivasan (*Planning and Regional Survey, Delhi*).

Subodh Kumar Roy was the Dean of Studies, Asoko Moitra was in charge of training at the International Statistical Education Centre, Sujit Kumar Mitra was in charge of the Summer School and Jogabrata Roy in charge of the evening courses at Calcutta and the branches of the Institute.

2.2.1. Important Topics of Research

The research work done at the Institute during the year 1969-70 is embodied in 222 research papers sent for publication, besides mimeographed technical reports. A list of these papers and abstracts is given in Volume II. The subjects of research are Statistics, Mathematics, Economics, Computer Science and several social and natural sciences for which small research units are maintained. A selected list of the more important topics, selected from the wide variety of subjects covered in these papers, is given below*.

A. *Mathematical statistics and probability*: Generalised inverse of matrices, theory of least squares, multivariate analysis, characterisation of univariate and multivariate normal distributions, sampling theory, sufficient statistics, Bahadur representation of quantiles, function of finite stationary Markov chains, characteristic functions, and generalised stable laws.

B. *Mathematics and numerical analysis*: Analytic and co-analytic sets, discrete Borel spaces, topological spaces, repeated interchange graphs, powers of trees and other graphs, characterisation of graphs, connected graphs, number theory, and radix-conversion of numbers.

C. *Natural Sciences*: Placental enzyme study, electrophoretic study of haemoglobin variants, growth inhibition produced on *E. Coli* by sixteen naturally occurring amino acid hydrazides, age-related changes of immunological proteins, intervarietal interactions in rice, possible association of leaf arrangement and fruit-yield in the economically important oil palms, inhibition of first embryonic mitosis by the application of cholamphenicol, stratigraphy and sedimentation of Pre-Cambrian rocks.

* For details regarding research in National Sample Survey, please see the chapter on N.S.S.

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D. *Computer Science and Computer Development* : Design of special purpose computer for use in scientific research and information retrieval, statistical theory of the propagation of rounding-off of errors in numerical algorithm.

E. *Demography and Sociology* : Demographic trends in India since 1872, construction of life tables in West Bengal in various periods, studies in the sociology of education, contemporary social situation and the quantification of social science information of India.

F. *Psychometry* : Validity study of the non-language test of verbal intelligence, construction of college aptitude test battery.

G. *Phonetics and Linguistics* : Phonetic structure of Indian languages, structure of meaning in the Bengali language and work on non-lexical meaning in the Serbo-Croatian language, phonological structure of the Serbo-Croatian language.

H. *Economic Research* : The Economic Research Unit, Calcutta, conducted research on the following problems during 1960-70 :

- (i) Engel elasticities for consumer items based on NSS data.
- (ii) An investigation into the problems and needs of electricity development in the eastern region of India.
- (iii) Productivity indices for manufacturing industries in India.
- (iv) Industrial licensing policy in India.
- (v) A sample survey to study some of the characteristics of industrial labour of Greater Calcutta area.
- (vi) Analytical reviews of the Indian economy.
- (vii) A study on the trend and cyclical analysis of time series of selected indicators of Indian economy.
- (viii) An analysis of the trend of steel prices in 1950-65, its relation to the demand allocation of steel between different States.
- (ix) A study of trends in agricultural productivity during 1960-68.

I. *National Income Research* : The National Income Research Unit, Calcutta, conducted research on the following problems during 1969-70 :

- (a) (i) Studies on different aspects of growth of the Indian economy based on national income and other aggregative statistics.
 - (ii) Methodological studies and critical study of data used under (i).
- (b) A study on the post-independence growth of the Indian economy.
 - (i) to obtain associations between the size distribution on the one hand and other customary national income distributions on the other;
 - (ii) to obtain some quantitative hypotheses about levels of activity in the coming year.
- (c) A study on the price basis of national accounts in India.

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(d) A study on the growth of capital formation and savings in India for the period 1900-1965.

J. *Pre-Census Population Studies : Pre-Census Population Project* : The Pre-Census Population Project, sponsored by the Registrar-General, India, is being conducted in collaboration with the Indian Statistical Institute and the Registrar-General, India.

(i) *Publication of report on Pre-Census Population estimates* : The purpose of the pre-census population studies is to compile material on the population of India up to 1872, when the first census was planned, and to edit and publish them in eight volumes—Volume I relating to the period up to 1800 and one volume for each decade from 1801 to 1871. One volume entitled, *Report on the Population Estimates of India, 1820-30*, was published in 1965. The work of another volume entitled, *Report on the Population Estimates of India, 1811-1820*, with additional material for 1820-1830, was almost completed. This Report contains contemporary estimates or results of the enumeration during the period 1811-1830 for India as a whole, for all its presidencies and districts, as well as for other tracts of Indian States together with data on famines, pestilence, cultivation, level of living etc., mostly from unpublished manuscript sources procured from several archives of India and the India Office Library.

(ii) *Preparation of Pre-Census Atlas* : The work on a pre-census atlas continued. A map of India showing district boundaries of 1961 was prepared. Arrow Smith's map of India, 1820, showing the political boundaries of that period was superimposed on the map of 1961; political boundaries of each old tract were identified with the present area; thereafter, the comparable population was worked out. Similar old maps of India, former Indian States, provinces, and districts are being obtained from the National Archives, Asiatic Society, etc., for the same purpose.

(iii) *A Bibliography on Socio-economic Conditions of India, 1871-1961* : The work on this bibliography started in September 1969. About 25,000 volumes of books were selected and most of them physically verified to catalogue and note the contents. A complete inventory of the British Parliamentary Papers on India, 1871-1949, was prepared, as well as a full catalogue of the census publications from 1871 to 1961. The publication is being planned in two volumes. The first volume will contain the writings of individual authors and the second will contain Government publications. The draft manuscript of the first volume entitled, *A Socio-economic Bibliography of India, 1871-1961, Vol. I—Non-Government Publications* is being despatched for publication to the Director, Indian Institute for Advanced Study.

(iv) A paper entitled, "Growth of Population in India and Pakistan, 1801-1961", by P. C. Mahalanobis and D. Bhattacharyya was submitted to the General Congress of the International Union for Scientific Study of Population held in London in September 1969. The paper contains a series of combined population estimates for India and Pakistan for each decennial point from 1801 to 1961, connected with the census series from 1871 to 1961.

K. *Planning* : The research work done during the current year, at the Planning Unit, Delhi, falls into eight broad fields : (i) Studies on the structure of the

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Indian economy; (ii) Theory of development planning; (iii) Planning in India; (iv) Studies on Indian agriculture; (v) Research on international trade theory; (vi) Foreign trade policy and planning in India; (vii) Econometrics of consumer demand; and (viii) Studies in educational planning.

A brief account of the research work is given below :

(i) *Studies in the Structure of Indian Economy* : A study on the input-output relations among 144 sectors for the Indian economy for 1964-65, involved the preparation of an input-output table for 1964-65 covering 144 sectors. (Discussion Paper No. 46).

Research is in progress on marginal capital ratios for broad sectors during the four five-year plan periods.

A study is being made on the combined cross-section-cum-time-series study of joint stock companies in the jute-textile industry for investigating investment and production functions.

A case study relating to the industrial growth in India during the three plan periods will be finalized shortly. The paper on "Profit, profit variability and firm size" was revised.

(ii) *Theory of Development Planning* : A monograph on "Development Planning : A Theoretical Analysis", prepared jointly with Professor A. K. Dixit, University of California, Berkeley, U.S.A., will be published in the series entitled, "Mathematical Economics Texts" jointly by Holden-Day Inc., San Francisco, USA (U.S. edition) and Oliver and Boyd Ltd., Edinburgh, Scotland (European edition).

A note on the optimum growth and wealth effects will be published shortly in the *International Economic Review*.

A study was conducted on the problem of price vector in planning models. Suitable methods for measuring changes in the price structure when there are changes in the structure of technical-coefficients, indirect taxes, wages, and profits were evolved and the problem of making a planning model responsible to changes in the price structure over time discussed. A paper embodying the result of this study was presented at the ninth Indian Econometric Conference, Patna, December 1969.

A paper was prepared on "Equilibrium Growth and Economic Obsolescence of Machines" (published in the quarterly, *Journal of Economics*).

A paper on "Choice of Techniques" was presented at the Conference on Economic Development of South-East Asia held under the auspices of the International Economic Association, Kandy, Ceylon, June 1969.

(iii) *Planning in India* : A monograph prepared on "Fourth Plan : Objectives and Policy Frame" is a critical study of the Fourth Plan Draft, with comments on the policy frame for agricultural production, buffer stocks and the prospects for price stability, the policy frame for self-reliance.

A paper on "Rural Poverty, Employment and Growth" attempts to draw a statistical outline of the poor in the rural sector alone, identify the rural poor into broad land-holding and other occupational classes, assess the likely impact of a "radical" land-redistribution

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policy on the lot of the rural poor and indicate some crucial defects in the present approach towards rural development and suggest an alternative programme for tackling the problem of rural employment and growth.

(iv) *Studies on Indian Agriculture* : A paper on "The problem of Marketed Surplus of Cereals" was prepared jointly with Kalpana Bardhan (published in *Economic and Political Weekly*, June 1969).

A note on "Trends in Land Relations in India" was prepared.

A study has been made on the basis of a theoretical and empirical analysis of crop-sharing tenancy in agriculture (Discussion Paper no. 50).

A broad comparison of the recent policy and performance of Chinese and Indian agriculture has been made.

(v) *Research on International Trade Theory* : A study was made on "Optimum Trade and Development Policy in a Dual Economy." A paper based on this study (Discussion Paper No. 45) was presented at the annual meeting of the Econometric Society, New York, December 1969.

(vi) *Foreign Trade Policy and Planning in India* : The study on import substitution is in progress. Preliminary results indicate that there was little import substitution in the fifties but the picture has changed since the beginning of 1960 in respect of intermediate goods but not for investment goods.

A paper on "Impact of Variations in the supply of Foreign Resources on the Growth of the Indian Economy : 1969-70 to 1970-81" was prepared for the Commission on International Development (Pearson Commission) appointed by the World Bank.

A study was made on "Interaction between Domestic and Foreign Resources in Economic Growth : Some Experiments for India." Discussion Paper No. 41 based on this study is to be published in H. B. Chenery (Ed.): "Essays on Development Planning," Harvard University Press, U.S.A.

An econometric analysis of the import-structure for a broad group of commodities is in progress.

(vii) *Econometrics of Consumer Demand* : An attempt has been made to project the levels of consumption in 1970-71 and 1975-76 (rural and urban India) employing a formulation for demand projection based on Indirect addilog Engel curves which give rise to variable income elasticities for ten commodity groups and are compared with projections based on linear double-log formulation. A paper based on this study was presented at the Ninth Indian Econometric Conference, Patna, December 1969.

In a paper prepared jointly with Dr. N. S. Iyengar, Osmania University, Hyderabad, on "An econometric model of consumer behaviour to measure income and price effects on household expenditures" an attempt has been made to measure the effects of income and prices on household expenditures by considering a non-linear system of demand curves which possess the properties of homogeneity and symmetry in addition to that of addilog model of Houthakker.

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A paper, "Econometric study of monthly consumption expenditure in rural Uttar Pradesh", was published in the *American Journal of Agricultural Economics* (February 1960).

A study on the estimates of the non-monetised consumption expenditure by rural and urban areas and the contributions of public authorities to private consumption expenditure in India is in progress.

A study on the pattern of consumer expenditure of the middle class urban population, presented at the Seventh Indian Econometric Conference, has been revised.

(viii) *Studies in Educational Planning*: A project on "Linear programming model of Indian education" is in progress.

(ix) *Other Econometric Studies*: A paper on "Choice of techniques" was presented at the Conference on Economic Development of South-East Asia held under the auspices of the International Economic Association, Kandy, Ceylon, June 1960.

A paper, "A note of approximations to finite sample movements of estimators whose exact sampling distribution is unknown," was presented at the Far Eastern Meeting, Econometric Society, June 1969.

A note prepared on "Savings policy and full employment: an invariance theorem" will be published as Technical Report No. Econ. 13/69, Indian Statistical Institute.

A paper on "A computational algorithm for the determination of Von Neumann ray" prepared jointly with Dr. D. K. Bose, Economic Research Unit, was presented at the Ninth Indian Econometric Conference, Patna. A paper was prepared on "A new proof of the non-substitution theorem."

(x) *Documentation (and translation) for planning experience of other countries*: Selected material from French and Russian books and articles were translated.

L. *Regional Survey*: The following work was done in the Regional Survey Unit, Delhi.

(i) *Studies on Regional Patterns, Variations and Synthesis*: Mapping the formal and functional structure which has been completed. was based on a study of the variables related to physical complexes, resource structure (agricultural and natural resources), urban-industrial patterns, flow-patterns etc. The analysis and synthesis of spatial patterns are in progress.

(ii) *Regionalisation*: As a part of the fundamental study, the work on regionalization is in progress. This study attempts a critical assessment of the work done so far on regionalization (both academic and applied) and examines the scope and limitations of such studies in the context of regional development and national planning in India. It is by now recognized that a regional framework would be essential in the preparation of the plans at different area levels. The purpose of this study is to highlight this point of view by case studies at appropriate area levels.

A paper has been prepared high-lighting (a) the techniques for identifying differential regional development, (b) the strategy for improving less-developed area, and (c) the techniques to determine the spatial flows and linkages for use in the spatial development framework of physical activities.

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(iii) *Central Place Model as a framework for regional development* : The spatial regularities of central places in selected regions of India were analysed in relation to the theoretical framework of the Central Place Model and the resource-base and space relations. A paper on Central Place Model as a spatial framework for regional and national planning was prepared.

Study of Central Place Linkages in South India : About 800 central places including metropolises, cities and towns of South India have been ranked by a composite index of urbanization-inducing variables. Six orders of central places have been identified. The compilation of data on specific functions by central places has been completed. These data are now being processed for evolving a composite functional index between a pair of central places, which in turn, will be used along with route distances to work out the hierarchical central place linkage pattern on the basis of a procedure formulated during the course of the work. The linkage patterns thus identified will be analysed subsequently to show their utilities in spatial development planning.

(iv) *Area Studies* : A design of work relating to the physical spatial development framework in a selected area has been prepared. A paper on 'Maps for analysis and the preparation for an area development framework' has been prepared.

(v) *Topical Studies* : Irrigation zones in the Punjab and Haryana have been identified on the basis of data on PET (Potential Evapo-transpiration) values, rainfall, soil characteristics and depth and quality of sub-soil water.

A report on 'Geography and Planning' was prepared jointly by V. L. S. Prakas Rao, Delhi University, and Dr. L. S. Bhat for the Indian Social Science Research Council.

M. Electronics Division

The work of the Electronics Division during the year may be broadly classified under the following: (i) Theoretical Research, (ii) Experimental Research, and (iii) Design, development and construction.

Among the types of research conducted may be mentioned :

(i) *Theoretical Research* : 1. Applied Probability, 2. Particle Physics.

(ii) *Experimental Research* : 1. Memory Technology, 2. Pattern-recognition, 3. Speech research was conducted in consultation with Professor Djordje Kostic, Director, Institute for Experimental Phonetics and Speech Pathology, Belgrade, Yugoslavia. Among other items, the work constituted of the statistical processing of linguistic materials obtained from spectrographic and other analysis of Bengali and some other Indian languages for determining the acoustic cues.

(iii) *Design, development and construction* : Preliminary investigations have been made on the special purpose digital computer for information retrieval and statistical applications.

Some progress has been made in the digital data communication link between the ISIJU-1 Computer at the Jadavpur University and the ISI, Baranagar.

The design fabrication of a number of equipment for people of defective hearing was undertaken, and these will be delivered soon to the Government of Tripura. Some appliances were designed and fabricated for use in laboratories.

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2.3. Statistical Quality Control (SQC)

The Statistical Quality Control Division of the Institute was established in the early fifties with the object of fostering the growth and development of the use of SQC and allied techniques in Indian industries by assisting them in organising systematic quality control to secure quality assurance and quality improvement in their output of goods and services, as well as an increase in production and reduction in costs. At present, there are nine operating units located in important industrial centres of the country, viz., Bangalore, Baroda, Bombay, Calcutta, Coimbatore, Delhi, Madras and Ernakulam, with a sub-unit in Trivandrum through which its activities are carried out. A special Training and Promotional Unit is located in Calcutta. The work of the SQC Units is organised through a comprehensive programme under the broad classification of (i) promotion, (ii) training, (iii) plant service, and (iv) research.

The promotional activities during the year were conducted through participation in and organising of symposia, seminars, conferences, pilot surveys and in-plant demonstration projects, and serving on expert bodies in the field, etc.

Intensive training programmes and appreciation courses were conducted for industrial and other organisations at different levels. In-plant training courses were specially designed to suit the needs of individual plants.

The plant services to a variety of industries were aimed at organising total quality control systems.

The Training and Promotional Unit of the Division located in Calcutta continued its programme of work viz., the running of the whole-time, one-year, post-graduate diploma course in SQC and OR, organisation of a special course on Technometry, circulation of literature and the publication of the monthly news-letter, *QC News*.

The first year's programme of the Evening Courses in SQC and OR at Madras and Bombay was successfully completed. The Madras Course was upgraded into a two-year post-graduate Diploma Course, as in Bombay, from the 1969-70 session.

Mr. L. H. C. Tippett, an international expert on SQC, visited the country during the year and the Institute arranged his programme.

A Symposium on Quality Control in Developing Countries was organised in Calcutta from 27 to 29 October 1969.

Promotional Activities: The technical officers of the Division gave 83 lectures and talks to industrial and management personnel, members of professional bodies and other institutions. The units organised 18 seminars and symposia; they also sponsored and attended 27 seminars and conferences, jointly with other industrial and professional bodies like the National Productivity Council, Institution of Engineers, Local Productivity Council, Textile Association of India, Indian Dairy Research Institute, Indian Dairy Science Association etc. Several top management seminars in which Mr. L. H. C. Tippett took part, were organised in Bangalore, Davangere, Madras, Coimbatore, Delhi and Calcutta. In collaboration with other organisations, the units also organised special seminars for medium and small-scale industries in different regions. The SQC unit personnel also issued 40 promotional reports.

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Publications : QC News : The monthly news-letter 'QC News', issued by the Division in order to disseminate knowledge in the practical applications of quality control and advances made in the field, was regularly issued during the year.

The second volume of the *Applications of Quality Engineering and Operations Research*, containing 44 case studies, was released by the SQC Unit, Madras.

The first volume of the papers presented at the Fourth All India Conference on Quality Control, held at Madras in December 1967, was brought out as a priced publication. The volume contains 57 papers in the field of (i) foundry and engineering, (ii) textiles, (iii) chemicals and pharmaceuticals, (iv) electricals and electronics, (v) food and miscellaneous, (vi) civil construction, and (vii) small-scale industries.

The Units published six technical papers and prepared 49 training and other manuals pertaining to industries.

Symposium on Quality Control in Developing Countries : An All India Symposium on Quality Control in Developing Countries was organised in Calcutta from 27 to 29 October 1969. About 200 delegates from all over India representing industries and 14 delegates from the European Organisation for Quality Control participated in the symposium. Fifteen papers by Indian delegates and 7 papers by foreign delegates were presented and discussed in the symposium which provided a unique opportunity for the exchange of experience at an international level.

Training : The most important factor contributing to the development of quality control is training. Although the units were handicapped by the lack of manpower, persistent efforts were made to deploy the available resources for imparting training to persons at different levels—management, technical personnel and plant workers—during the year. The units conducted 11 general courses attended by 288 persons and 13 other special courses which were attended by 429 persons. Thirty-three in-plant courses for plant personnel were organised at different levels and 1,626 persons were covered.

At the request of the Ministry of Defence, Government of India, in-plant training courses and one special advance course were organised for the defence personnel covering 80 persons.

In the full-time, post-graduate Diploma Course in SQC and OR, specially devised to train engineers, technologists, scientists and statisticians in Statistical Quality Control, to a level of professional competency, and conducted by the Training and Promotional Unit in Calcutta, 31 students had been undergoing training, of whom 21 were sponsored by industrial organisations in the public and private sectors.

The post-graduate evening course in SQC—OR in Madras was developed into a full-fledged, two-year Diploma Course during the year. Twenty-seven students had been undergoing training in the five-year and 11 in the second-year batch of this course.

In the two-year evening post-graduate Diploma Course in SQC—OR in Bombay, 32 students were admitted to the first year and 27 to the second-year classes.

New Course in Technometry : The newly-started M.Stat. specialisation course in "Technometry" was restricted to the carefully selected five students in the Training and

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Promotional Unit, Calcutta. The theoretical content of the course in SQC and allied techniques is at a higher level than the Diploma Course and is expected to strengthen the research activities in the field.

The Units also imparted on-the-job training to the junior staff and apprentices. Thirteen apprentices of the last year's batch completed their training and 14 new apprentices were recruited for training during the period. The field training for the students of the diploma courses in SQC—OR was also organised and supervised by the Units.

The Unit staff participated in training programmes relating to SQC-OR and allied subjects of sister organisations like the Productivity Councils, Institutes of Management, Institutes of Engineers, Administrative Staff College, Hyderabad, Small Industries Service Institutes, etc.

The Units provided the teaching faculty for the B.E. degree course at some colleges where SQC had been introduced as an elective subject at the suggestion of the Institute.

The total number of technical personnel covered by all these courses is 2,343, against 1,165 in the previous year.

Plant Service : The units serviced 90 plants including several projects on a membership basis, during the period. Thirty-three new organisations were taken up for regular servicing, while the units withdrew from 21 plants after assisting them to organise their own quality control systems. Four hundred and thirty-seven technical reports were submitted to the plants on the projects undertaken by them. In several enterprises, service has been in greater depth and oriented towards self-reliance in organising for quality, with the training of plant personnel as the core of the programme.

Foreign Experts : Mr. L. H. C. Tippett of the U.K., the renowned statistician and author, and an expert in the field of quality control arrived in India on 16 September 1969 on a four-month assignment to the Institute under the Colombo Plan Technical Assistance Scheme. He left on 17 January 1970.

Taking advantage of his visit, the Units organised several management programmes, seminars, lecture programmes and visits to plants followed by intimate discussions. The technical staff of the Units had detailed discussions with Mr. Tippett on different aspects of quality control in which he had highly-specialised knowledge and experience.

Linison with Other Organisations : The SQC Units worked in close cooperation with organisations like the Indian Standards Institution, National and Local Productivity Councils, Institutes of Production Engineers, Small-scale Industries Service Institutes, Management Associations, Operations Research Societies, Universities and other Governmental and scientific agencies. The programme of collaboration included participation in seminars, conferences, training programmes, contribution of papers, organisation of special courses and similar programmes.

Research : The technical staff were engaged in contributions to the growth of knowledge in the field of SQC and allied techniques. They are evolving new approaches, modifying old methods or devising new formulae, to meet the challenge of the varied types of problems that they come across in course of their work. Eleven papers contributed to conferences and seminars were based on the results of this applied research. The units also piloted a few interesting research projects in the field of Operations Research.

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2.4. Library

The Central Library at Baranagar had a collection of 1,34,883 books and bound journals, 32,477 reprints, monographs, specialised technical reports and also a large collection of maps, microfilms and photoprints. The Library received 2,543 current periodicals—882 through subscriptions, 1,012 on an exchange basis and 660 as gifts. The services of the branch libraries at Bombay, Bangalore, Baroda, Cochin, Coimbatore, Delhi, Girdih, Madras and Trivandrum are co-ordinated with the Central Library service to serve the researchers, students and staff working at those centres.

Membership : The total membership of the Library increased to 2,087 including 1,667 research and other staff members of the Institute, students attached to the RTS, 166 outside student members, 72 seasonal members and 38 Institute members. One hundred and forty-two persons (non-members) were given special permission to use the Library during the period.

Acquisition : The Library acquired 1,685 books, 600 official reports and also received 200 books on an exchange basis and 2,000 books as gifts. Thirty-five new periodicals were added to the Library, of which 26 were received on subscription, 2 on an exchange basis and 7 as gifts. The Library also acquired back-runs of 17 periodicals on mathematics and statistics to make the collection more comprehensive. As in the past, the Library continued the exchange arrangements with 164 foreign and 65 Indian institutions and received periodicals and other serials in exchange for the *Sankhyā : The Indian Journal of Statistics*, from these institutions. The Library also received scientific and technical publications in Russian and Japanese languages on exchange for publications of equal value from the Lenin State Library; the Fundamental Library of Social Sciences, USSR; the Library of the USSR Academy of Sciences; M. E. Saltykov Schedrin State Public Library, USSR, and the Institute of Developing Economics, Tokyo, Japan.

Accession : 6,420 books and other documents were accessioned, of which 1,537 were official reports and data books, 2,937 were purchased, 209 were received on an exchange basis and 1,757 as gifts.

Technical processing : The Library classified 1,424 books and 102 official reports and catalogued 2,674 books and 102 official reports. The number of book classifications and catalogue cards revised were 56 and 252 respectively. During the period, 449 reprints were also catalogued and added to the reprints collection; 10,438 cards were filed and 815 books were added to the Library collection. The Library processed and indexed 1,292 old files, 7,330 maps and 2,650 newspapers.

Circulation : 27,880 books and 7,461 journals were issued on reference and 12,594 books on lending. Besides, 1,078 official reports, 178 maps, 50 newspapers and 52 old files were issued for reference use. The Library sent 121 books and journals to Branch libraries. In the inter-library loan transactions with 22 local and outstation libraries, the Library borrowed 50 books from, and loaned 86 books to those libraries.

Reference and bibliographic services : The Library issued documentation lists, reading lists etc. on different subjects and compiled bibliographies on request. One hundred and sixty-two questions posed by the readers were answered by the staff during the period.

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Publications: The Library continued to bring out regularly the *List of Selected Periodicals*, *Index to Statistical Literature*, and the *Monthly Bulletin*.

Translation Service: The Translation Unit provided the research workers with translations from foreign languages and translated 90 documents. Of those, nineteen documents from Russian, four from German, one from Spanish and four from Japanese were translated into English and one each from English into French and Russian. The total number of pages of translation from Russian was 426, from German, 43; from Japanese, 100; from Spanish, 23; from English into French, 1; and from English into Russian, 4. Oral translations were also provided to the specialists on demand.

Photography and Reprographic Service: 1,350 photographs, 145 slides and technical colour photomicrographs of 44 biological specimens were prepared for the scientific departments of the Institute. The Reprography Unit and the Photography Unit microfilmed 5,016 pages of reading materials and provided 6,400 pages of photoprints. The Library extended its reprographic service to twelve outside organisations including the Ministry of Rural Development, Research Branch, Mount Mukulu, Zambia.

Circulating Library: The Workers' Circulating Library had a collection of 23,978 books and the total number of members was 1,651. The Circulating Library added to its collection 722 books, of which 108 books were in English, 457 in Bengali, 66 in Hindi, 46 in Urdu and 45 in Oriya and discarded 143 worn-out books. The Circulating Library issued, during the year, 40,268 books and sent 942 books to the Branch libraries.

2.5. Documentation Research and Training Centre (DRTC), Bangalore

The important features of work in the Documentation Research and Training Centre (DRTC) during the year included the following:

Training of Students: Four of the five students admitted to the 1968-69 course were declared eligible to receive the Associateship in Documentation, after the completion of their course on 31 December 1969. One student of the 1966-67 course secured distinction in the final examination of the Associateship in Documentation. Five students were admitted to the 1969-70 course which commenced on 15 April 1969. Five papers were contributed by students to the Seventh DRTC Annual Seminar on Documentation, 1969.

Research Work: The main subjects in which research was done were: 1. Structure and Development of Subjects, 2. Classification, 3. Computer-aided Document Finding System, 4. Library Cataloguing, and 5. Librametry: Application of Statistical Analysis in Library Science.

Publications: The members of the staff contributed 56 articles to periodicals in library science.

The preparation of *Colon Classification*, Ed. 7, was continued.

The following reports were issued:

1. "Colon Classification, Ed. 7: A preview" by S. R. Ranganathan pp. 50.
2. "Cataloguing Research in India" by G. Bhattacharyya, pp. 80.
3. Proceedings, DRTC Annual Seminar (7) (1969), pp. 650.

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The DRTC continued to collaborate with the Sarada Ranganathan Endowment for Library Science in the editing and publication of the quarterly, *Library science with a slant to documentation*.

Seminars, conferences and lectures : The Seventh Annual Seminar on Documentation, held from 15 to 19 December 1968 in the DRTC, was inaugurated by Dr. V. M. Ghatage, Member, Board of Directors, Hindustan Aeronautics Ltd. More than a hundred delegates participated. The subjects discussed were : 1. Subject Analysis for Document Finding Systems, 2. Quantification and Librametric Studies, and 3. Management of Translation Service. Eighteen propositions, arising out of the 29 papers (two from abroad) contributed to the seminar, formed the basis for the discussions. The staff and trainees of the DRTC contributed 14 papers and three reports to the seminar.

Fourteen visiting professors from India and abroad delivered lectures at the DRTC during the year. Nine talks were given by the DRTC staff in other organisations.

The members of the staff participated actively during the year in—

- (i) A refresher course in Classification organised by the DRTC,
 - (ii) Seminar on Education and Libraries organised by the United States Information Service, Hyderabad,
 - (iii) Seminar on Education for Librarianship and Librarianship for Education, organised by the British Council, Madras, at which two papers were contributed by the DRTC staff,
 - (iv) Seminar on Information, sponsored by the Defence Scientific Information and Documentation Centre, New Delhi, at which the DRTC staff contributed six papers,
 - (v) Evening Course on Computer Systems, Applications and Management, organised by the Indian Institute of Industrial Engineering, Bangalore Chapter,
 - (vi) National Library Week organised by the Mysore Library Association and the Department of Public Libraries, Government of Mysore.
- (bii) Open House Discussion on Sub-contracting in Industries organised by the Small Industries Service Institute and the Institute of Management, Bangalore, at which two papers were presented by the DRTC staff.

Consultations : At the request of the Small Industry Extension Training Institute, Hyderabad, the DRTC worked out a scheme for the establishment of a National Documentation Centre for Small Enterprises. Consultation service in the organisation of their libraries is being provided to the Mysore Chamber of Commerce and the Ramakrishna Ashrams.

Library : During the year, the library received 250 books, 60 reports and three periodicals.

Nine propositions were discussed at the weekly meetings of the Library Research Circle. Thirteen weekly colloquia were also organised.

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3. INTERNATIONAL STATISTICAL EDUCATION CENTER (ISEC), CALCUTTA

The ISEC was started in 1950 jointly by the International Statistical Institute and the Indian Statistical Institute with financial assistance from the UNESCO; the Government of India has been giving a grant since 1952-53. The management of the ISEC is vested in a tripartite Board of Directors consisting of four nominees of the International Statistical Institute including the Chairman (Professor P. C. Mahalanobis since 1950) and three ex-officio members; two representatives of the Indian Statistical Institute; and the Cabinet Secretary as the Government representative.

The Twentythird Term (June 1969-March 1970) had twentyeight trainees from thirteen countries in the Middle-East, South and South-East Asia, the Far East and also from the Commonwealth countries of Africa. The Government of India awarded 17 fellowships for the foreign trainees in the Twentythird Term, under the Technical Cooperation Scheme of the Colombo Plan (16), and the Special Commonwealth African Assistance Plan (1). There were four trainees outside the Colombo Plan or SCAAP for the regular course from the Fiji Islands (1), Republic of China (Taiwan) (2), and the Republic of Iraq (1). There were three more trainees for the special courses from India, Indonesia and Japan.

The Twentythird Term opened on 2 June 1969. English is the medium of instruction at the Centre. The training imparted included lectures, laboratory work, project training, assisted reading and field work. The first three months at Calcutta were devoted to general Statistical Methods including Auxiliary Mathematics, Computational Techniques, Probability Theory, Numerical Mathematics, Sampling Techniques, Economics, Economic Statistics and Statistical Organisation and Procedure. As in the previous terms, a six-week training in governmental statistics was given at the Central Statistical Organisation, New Delhi, during October-November 1969. From January 1970 up to the end of March 1970, specialisation courses on an individual basis were given in the following fields: Large Scale Sample Surveys, Economic Planning, Data Processing, Vital Statistics and Demography. During November 1969-January 1970, general lectures on a more advanced level were given on Probability Theory, Vital Statistics and Demography, Sampling Theory, Statistical Distributions, Inference, Large Scale Sample Surveys, with special reference to National Sample Surveys, Advanced Statistical Methods, Analysis of Variance and Elements of the Theory of Design of Experiments, Economic Statistics and Economic Planning.

In the final examinations, all trainees of the regular course were successful and were recommended Certificates of Merit.

4. NATIONAL SAMPLE SURVEY

National Sample Survey Project: This Division of the Indian Statistical Institute functions as the technical wing of the Government of India's National Sample Survey Organisation.

The twenty-third and twenty-fourth rounds of the regular National Sample Survey and the Annual Survey of Industries for 1967 and 1968 were in operation during the period under review. About five different, country-wide enquiries were conducted in the socio-economic surveys. The special intergrated schedule, covering all economic aspects of a household, was again included in the current year's programme. A new survey on household

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trade was initiated in the twenty-fourth round. Special (QT) schedules were prepared, by copying down selected items from various detailed schedules, for a quick tabulation of important results.

The activities of the Division covered the following types of work during the year :

(a) statistical planning of the surveys including sample designs, concepts and definitions, methods of collecting primary information, selection of sample villages and urban blocks, preparation of schedules of the different enquiries, training of field workers and technical work relating to field enquiries;

(b) programming of statistical processing and the laying down of detailed specifications;

(c) conducting field work in the State of West Bengal and the city of Bombay, together with experimental researches for the improvement of sampling design and techniques; and

(d) the processing of NSS data and preparation of statistical reports based on them

The processing and tabulation work covered data collected in the eighteenth to twenty-fourth rounds of socio-economic surveys and the Annual Survey of Industries, 1966 and 1967.

The tabulation and processing work was carried out in Calcutta (Baranagar), Delhi and Giridih. The number of schedules scrutinised was about 3.2 lakhs, the number of cards punched was about 67.8 lakhs and there were about 254.9 lakh card passages.

The equipment consisted of sixteen tabulator units with necessary auxiliary machines, of which eight units were at Calcutta, four at Delhi and four at Giridih.

The field work of the twenty-third round (NSS) in West Bengal was completed in June 1969 and that of the twenty-fourth round which commenced in July 1969 is still in progress.

Out of 22 items of end-results committed to be delivered to the Government of India in accordance with the Programme of NSS Processing Work for 1969-70, 9 items were duly completed and delivered to the Government within the period under review and another two items were expected to be delivered within the grace period of one month. The work on the remaining items was in an advanced stage of completion.

The preliminary work on planning and sample designing for the twenty-fifth round of the NSS has already been taken up. The different aspects of integrating the NSS Crop Survey and the proposed Timely Crop Reporting Scheme were studied. Information on the availability of transport facilities between adjacent tehsils and tehsil-wise areas under different major and minor crops were collected with the help of the field staff. The selection of rural samples (villages) for the NSS was started after fresh stratification.

Special and Pilot Enquiries : In connection with the joint enquiry by the Registrar General's Office and the Indian Statistical Institute undertaken in 92 villages in West Bengal to study the extent of response error in reporting births and deaths (May-July 1967), a sample verification of unmatched vital events was carried out in 17 villages and a note giving the results of their verification was submitted to the Government during the year.

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The field work in connection with the pilot enquiry on employment and unemployment, started in December 1968, was nearing completion and the work of first-stage tabulation on the basis of six visits was in progress during the year.

Seminar on Data Collection Techniques in NSS : A seminar on data collection techniques employed in the National Sample Survey, was held at the Indian Statistical Institute from 23 to 25 June 1969. The seminar, sponsored by the Central Statistical Organisation in collaboration with the Directorate of the NSS and the Indian Statistical Institute, was inaugurated by Professor P. C. Mahalanobis. About 60 papers were presented and discussed in the seminar.

Training : The training programmes in survey techniques were arranged for research apprentices of the RTS, members of the Indian Statistical Service, statistical officers from Government departments and the trainees of the International Statistical Education Centre (ISEC) and the UN, UNAIID, FAO and other fellowship holders. A specialisation course in large-scale surveys was conducted for the ISEC trainees. Regular classes on sampling theory were held for the M.Stat. I, ISEC and officer's training courses of the RTS.

Some of the senior staff attended meetings of the Advisory Committees related to NSS work and programme, participated in regional training conferences and also took part in the Indian Science Congress, and the All-India Econometric and Agricultural Conference, where they presented papers.

A list of papers published is given in Annexure 2 and those sent for publication by staff members is given in Volume II.

Twenty-six NSS draft reports approved for printing were revised in the light of the comments received from the Central Statistical Organisation (C.S.O.) and finalised versions of the reports were submitted to the Government for printing. Nine draft reports were prepared and submitted to the Government of India during the period (*Annexure 3*).

Nineteen draft reports prepared by different State Governments on the basis of the NSS State Sample data forwarded to the Institute by the CSO, were examined and the Institute's comments on them were communicated to the CSO during the year (*Annexure 3*).

The staff members prepared ten technical papers and one working paper during the year.

Special Studies Unit : The following developmental studies were carried out during the period under review.

(a) *Experimental land-utilisation surveys* : During June 1969-March 1970, experimental land-utilisation and yield surveys covering the major crops of the autumn, winter and spring seasons were carried out in the southern regions of West Bengal to study the relative merits of alternative methods of sample selection at different stages of sampling. Twenty-eight investigators split into two parties surveyed two sets of sample villages (first-stage units) drawn according to two different probabilities. In one set of samples the first-stage units, i.e., villages, were selected with probabilities proportional to population measures and the second-stage units, i.e., plots, were selected with probability proportional to area.

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(b) *Type-study on cotton yield* : In order to ascertain a suitable method for the yield estimation of cotton, experiments were carried out in a set of fields in a village near Nagpur, during November-December 1969. In each field, circular cuts of 2 different sizes (4' radius and 6' radius) and rectangular cuts of size 33' x 16½' were taken. Rows selected with equal probability were also harvested.

(c) *Type-study on tobacco yield* : A scheme, with a view to evolve a suitable technique for the yield estimation of tobacco, has been carried out at a suitable centre in Cooch-Behar, North Bengal, during January-February 1970. The study is expected to add further information to what has already been obtained during our earlier studies at Guntur in 1963-64.

(d) *Study on the accuracy of eye-estimated proportion of area under crop* : In order to study the merits of the eye-estimated proportion of area and absolute area under specified crops against actual measurement of that area, experiments are being carried out in a set of fields in Baruipur, West Bengal. The work, started in March 1969, is expected to be completed by end of April 1970.

5. PROFESSIONAL EXAMINATIONS

The following professional examinations were held during the year : Statistician's Diploma Examination (May and November 1969), Computer's Certificate Examination (May and November 1969), Statistical Field Survey Examinations (November 1969 only), Punched Card Machine Examinations (May 1969 only). The details of candidates appearing for the various examinations are given below.

The May 1969 session examinations were held during 20-31 May and the November 1969 session examinations were held during 17-29 November.

During November 1969, the professional examinations were held in Bombay, Calcutta, Delhi, Giridih, Lucknow and Madras, at the usual centres. In the May session, however, Bangalore was also included as an additional centre, because of options exercised by a number of candidates for that centre.

The Statistician's Diploma examination continued to draw the largest number of candidates. The next in the list has been the Computer's Certificate Examination. The number of candidates for the other examinations have been rather small, for sometime past. Consequently, the Statistical Field Survey Examinations were held once a year only in November, and the Punched Card Machine examinations were held once a year only in May.

Statistician's Diploma Examination : During 1969, 80 candidates (43 in May; 37 in November) passed in one or more papers.

Computer's Certificate Examination : During 1969, 29 candidates (9 in May; 20 in November) passed in one or more papers.

Statistical Field Survey Diploma Examination . In November 1969, two candidates passed in one paper each.

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Statistical Field Survey (Junior and Senior) Examinations: Two candidates for the Junior Certificate and one for the Senior Certificate passed in all the papers for which they had registered in November 1969.

Punched Card Machine Operator's Certificate Examination: Only four candidates passed in one or more papers for this examination in May 1969.

Number of candidates qualifying for the award of Diplomas and Certificates in Professional Examinations: The number of candidates, who completed the entire professional examinations, and qualified for the award of diplomas and certificates during 1969, are given below:

Statistician's Diploma Examination: Only 6 (3 in May; 3 in November) during 1969.

Computer's Certificate Examination: Only 10 candidates (3 in May; 7 in November) qualified for the Computer's Certificate in 1969. There was a marked improvement in the registration of candidates for this examination in 1969.

Statistical Field Survey Examinations:

- i) *Diploma:* Only one candidate qualified in 1969.
- ii) *Certificate:* No candidate qualified for the Senior Certificate Examination in 1969.

Two candidates qualified for the Junior Certificate Examination in 1969.

Punched Card Examinations:

- i) *Data Processing Diploma:* No candidate qualified for the complete examinations in 1969.
- ii) *Machine Operator's Certificate:* Only 2 candidates qualified for the certificate examination in 1969.

Award of Diplomas: On the basis of 1969-70 professional statistics examination results, 7 candidates were declared eligible for the award of diplomas (6 SD; 1 SFSD).

6. SEVENTH CONVOCATION

The Institute held its Seventh Convocation for awarding the B.Stat., M.Stat. and Ph.D. degrees on 24 January 1970. Certificates were also distributed at the function to the trainees of the International Statistical Education Centre, and diplomas to the successful candidates in the Statistician's Diploma and Diploma in Statistical Quality Control. Professor S. N. Bose, F.R.S., President of the Institute, presided and Dr. R. L. M. Synge, F.R.S., Nobel Laureate, delivered the Convocation Address. Shri K. P. S. Menon, Chairman, welcomed the guests, members and students. Dr. C. R. Rao, F.R.S., Director, Research and Training School, made the annual review, Professor S. N. Bose, F.R.S. gave the presidential address and Shri B. Sivaraman, Cabinet Secretary, Government of India, also spoke. Professor P. C. Mahalanobis, F.R.S., made the concluding speech.

Seven candidates were awarded the Ph.D. degree, 74 the M.Stat. degree and 19 the B.Stat. degree. Fifty-five candidates were awarded diplomas in applied statistics, and 16

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the Statistician's Diploma. Certificates were awarded to 28 students of the International Statistical Education Centre.

NUMBER OF CANDIDATES WHO RECEIVED DEGREES, DIPLOMAS AND CERTIFICATES

Sl. No.	degree/diploma	number of candidates		Total
		1968	1969	
1.	Ph.D.	2	5	7
2.	M.Stat.	31	43	74
3.	B.Stat.	14	5	19
4.	Diplomas in Applied Statistics :			
4.1	Computer Science	5	2	7
4.2	Demography	2	1	3
4.3	Econometrics and Planning	-	1	1
4.4	SQC Diploma	20	15	35
5.	Associatehip in Documentation	4	5	9
6.	Statistician's Diploma	13	3	16
7.	Certificates of the I.S.E.C.	-	28	28
	Total	91	108	199

7. SYMPOSIA AND CONFERENCES CONDUCTED BY THE INSTITUTE

The Memorandum of Association of the Institute gives it a dual role : one is that of an academic body conducting high-level teaching and research and another of a society for the dissemination of knowledge and the maintenance of professional standards. As a Society, it has the power to hold meetings, and arrange lectures, seminars, discussions and conferences. From the very inception, the Institute accepted this wider responsibility.

7.1. Seminar on India's Social Situation

A seminar on India's Social Situation was held at Calcutta, under the auspices of the Institute, from 27 January to 1 February 1969. National Professor S. N. Bose, President of the Institute, presided and Dr. V. K. R. V. Rao, eminent economist and Union Minister for Transport and Shipping, inaugurated the seminar.

7.2. Seminar on Bengali Acoustic Phonetics

An invitational seminar on Bengali Acoustic Phonetics was held in Calcutta on 19 and 20 February 1969, under the chairmanship of Professor Djordje Kostic, Director, Institute for Experimental Phonetics and Speech Pathology, Belgrade, Yugoslavia, and Visiting Professor at the Institute. In his inaugural address, National Professor Suniti

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Kumar Chatterji described the seminar as the first of its kind in India. The seminar stressed the need for and importance of linguistic research in India. A number of problems was raised and the Institute hopes to investigate them in the near future.

7.3. *Seminar on Documentation*

The Seventh Annual Seminar on Documentation was held at the Documentation Research and Training Centre, Bangalore, from 15 to 19 December 1969. The subjects discussed were: 1. Subject Analysis for Document Finding Systems; 2. Quantification and Librametric Studies; and 3. Management of Translation Service. More than a hundred delegates participated.

7.4. *Symposium on Quality Control in Developing Countries*

A symposium on Quality Control in Developing Countries was held at Calcutta from 27 to 29 October 1969. National Professor S. N. Bose, President of the Institute, presided and Shri Ajoy Kumar Mukherjee, Chief Minister of West Bengal, inaugurated the symposium. More than 200 delegates from India and from Yugoslavia, France, Netherlands Spain, Switzerland and Poland attended.

8. VISITING SCIENTISTS

A number of distinguished foreign scientists participated in the research, training and other scientific activities of the Institute during the year. Some of them came to the Institute on invitation, some came under the different cultural exchange programmes and spent fairly long periods at the Institute to assist in the regular work, while others came for short periods and gave lectures and seminars. Most of them were available for consultations by research workers and teachers of the Institute.

I. The following scientists visited the Institute on invitation and worked for fairly long periods during the year 1969-70. The duration of the visit is mentioned within brackets against each name.

MR. N. M. BLAKE, a colleague of Professor R. L. Kirk, John Curtin School of Medical Research, Australian National University, Canberra, Australia (30 November-20 December 1969) advised the Anthropometric and Human Genetics Unit on experimental techniques in human genetics.

PROFESSOR LODIK NIKOLAEVICH BOLSHEV, Head, Statistical Department, Steklov Mathematical Institute, USSR Academy of Sciences; Professor of Mathematical Statistics of Probability and Statistics Chair, University of Moscow, USSR (5-25 February 1970). *Series of lectures: Empirical Bayes Procedures.*

DR. N. E. BRUSILOVSKY, Vice-Director, "Nauka" Publishing House, USSR Academy of Sciences; DR. O. K. DRYES, Director, Oriental Literature Publishing House, USSR Academy of Sciences; and PROFESSOR LEOPOLD M. BLOUSOV, Scientific Editor, Central Department of Oriental Literature, "Nauka" Publishing House, Moscow (9-27 April 1968) came in connection with the printing and publishing project to be started by collaboration between the USSR Academy of Sciences and the Institute with management by the Statistical Publishing Society. The scientists visited Bombay from 23 to 24 April 1969.

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PROFESSOR H. GRÄNBERG, F.R.S., Head, Department of Animal Genetics, University College, London; Honorary Director, Experimental Genetics Research Unit, Medical Research Council, United Kingdom (22 December 1969-25 January 1970) came as a visiting professor to deliver lectures and hold seminars in Calcutta and Delhi. He also advised on some projects in genetics.

DR. YURI LEONIDOVICH GUZHOV, Reader in Plant Breeding and Genetics, Patrice Lumumba Friendship University, Moscow (16 November 1969-14 February 1970) came under the Indo-Soviet cultural and scientific exchange programme to do research in cytology. Dr. Guzhov collected plant material for cytological investigations and a plant breeding programme. He acquainted himself with the seed multiplication programme of the main Indian crops and with the programme and method of teaching cytogenetics and plant breeding in the Indian universities. Dr. Guzhov visited several institutions, universities and research stations in India.

PROFESSOR G. KALLIANPUR, Institute of Technology, School of Mathematics, University of Minnesota, USA (10 October 1969-20 February 1970) conducted advanced seminars and also gave a regular course on "Gaussian Processes" for research students.

DR. R. L. KIRK, John Curtin School of Medical Research, Australian National University, Canberra, Australia (13-21 April 1969) came on his third visit during 1969-70. Dr. Kirk had initiated during his earlier visits some projects on human genetics in collaboration with the Anthropometric and Human Genetics Research Unit. During the year, he had discussions with the Unit members regarding the research on human genetics, particularly, the joint projects on placental and red cell enzyme variants. He visited the rural and suburban areas where field work was conducted in connection with the joint enzyme research. He was in Bombay from 23 to 24 April 1969. *Lectures and Seminars*: (i) Genetics of birth weight and growth patterns in infants; (ii) Recent advances in human genetics; (iii) Interaction between Haptoglobin types and ABO blood groups.

PROFESSOR DJORDJE KOSTIC, Director, Institute for Experimental Phonetics and Speech Pathology, Serbian Academy of Sciences, Belgrade, Yugoslavia (2 December 1969-11 April 1970) came on a second visit to the Institute in connection with the programme of fundamental linguistic research being carried out in collaboration with the Indian Statistical Institute and the Institute for Experimental Phonetics and Speech Pathology. Under the programme, a study was undertaken last year of Bengali speech sounds, which will be published shortly. Further studies of Bengali phonetics and a similar study of Hindi phonetics have been undertaken during the current year.

PROFESSOR NORMAN WINGATE PIRIE, F.R.S., Head, Biochemistry Department, Rothamsted Experimental Station, Harpenden, Herts, United Kingdom (11 December 1969-20 February 1970) came to set up a laboratory at the Institute for the exploring the possibilities of producing protein from green leaves to supplement food requirements in India. Professor Pirie, accompanied by Mrs. Pirie, visited Bangalore, Bombay, Coimbatore and Madras in connection with his research assignment.

DR. PAMELA L. ROBINSON, University College, London (27 January-17 April 1970) visited to advise on the programme of geological research in the Geological Studies Unit. She spent some time in the field areas in Central India.

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DR. (MRS.) M. A. ROMANOVA, Mathematical Geologist, Steklov Institute of Mathematics, USSR Academy of Sciences, Leningrad (14 February 1970-28 April 1970) has been working on an international geological survey project. She came to the Institute as a guest-scientist and conducted surveys in different areas of the country.

PROFESSOR R. L. M. SYNGE, F.R.S., Nobel Laureate, School of Biological Sciences, University of East Anglia, Norwich, U.K. (18-30 January 1970) came on a fourth visit to deliver the Convocation Address, "Poisons in Plants: Some Biological and Human Implications", at the Seventh Annual Convocation of the Indian Statistical Institute on 24 January 1970. He visited Bangalore and Coimbatore in connection with his research assignment. Professor Synges who has shown considerable interest in the research on mixed cropping conducted by the Botany Research Unit, had visited earlier in 1965, 1966 and 1967.

MR. L. H. C. TIPPETT, former Director-in-Charge, Spinning, Weaving, Physics and Economics Department, Shirley Institute, Diabury, Manchester, U.K., came to the Institute (16 September 1969-17 January 1970) under the Colombo Plan as an adviser in total quality control systems. He participated in several top management seminars in Bangalore, Calcutta, Coimbatore, Davangere, Delhi and Madras. In Bombay, he delivered a lecture on "Quality, Productivity and Statistics" on 23 October 1969. In connection with his visit, the SQC Units also organised several management programmes, seminars, lecture programmes and visits to plants followed by discussions. He participated in the Symposium on Quality Control, 27-29 October 1969, Calcutta. The technical staff also benefited from the detailed discussions with him on quality control.

DR. (MRS.) TATIANA VLADIMIROVNA VRSHTORIKOVA, Reader in Botany, Patrice Lumumba Peoples' Friendship University, Moscow (16 November 1969-14 February 1970) visited under the Indo-Soviet cultural and scientific exchange programme. She collected tropical and sub-tropical plant materials for morphogenetic investigation, conducted experiments on morphogenesis of vegetative organs of Leguminous plants and compiled information on the Botany curriculum and the method of teaching Botany in the Faculties of Botany and Agriculture of the Indian universities. She visited several institutions, universities and botanical gardens in India.

PROFESSOR A. B. VISTELIUS, Head, Laboratory of Mathematical Geology, Institute of Mathematics, USSR Academy of Sciences, Leningrad (4 March 1969-4 June 1969) came on a second visit, under the programme of exchange of scientists between the Indian Statistical Institute and the Soviet Academy of Sciences, to work on a research project with the assistance of the Geological Studies Unit. He visited Singbhum, Giridih, Jabalpur, Hyderabad, Bangalore, Ernakulam and Madras and several places in India to collect specimens of granite rocks in connection with his project for the study of granite rocks from different parts of the world. He visited the manganese mines near Tirodi, Madhya Pradesh, and discussed problems of mutual interest with the Director, Manganese Ore India Ltd. at Nagpur. He paid a short visit to the Gondwans rocks exposed near Bheemaram, Andhra Pradesh.

Professor Vistelius was the main speaker at a course of lectures on Mathematical Geology, attended by several Indian specialists in the field from a number of Indian universities and research organisations and organised by the Indian Statistical Institute from 21 March to 14 May 1969. Lectures: (i) Elements of mathematics for geologists (ii) Selected problems of Mathematical Geology.

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PROFESSOR F. VOORL, Director, Institute for Anthropology and Human Genetics, University of Heidelberg, Federal Republic of Germany (21 August 1969-26 September 1969) carried out anthropometrical research at Purulia in collaboration with the Anthropometric and Human Genetics Research Unit.

DR. (MISS) ELIZABETH WHITCOMBE, Social Research Council, United Kingdom (19 June 1968-9 April 1969) conducted research on land reforms and rural development at the Planning and Regional Survey Unit, Delhi. *Seminar*: Agricultural development in Uttar Pradesh (Delhi and Calcutta).

II. The following scientists paid short visits and gave lectures and/or seminars :

DR. RAOJURAJ BARADUR, Department of Statistics, Chicago University, USA (5-12 April 1969 and 28-30 July 1969). *Five lectures*: Theory of large deviation and its application to inference.

SHERI A. BALAOOPAL, Chairman, Local Library Authority, Kozhikode, Kerala (24 November 1969). *Lecture*: Library legislation in Mysore and Kerala. (*D.R.T.C., Bangalore*).

PROFESSOR I. L. BRATYCHKOV, Computer Centre, Leningrad University; Department of Mathematics and Numerical Analysis (21-25 March 1969). *Lecture*: Soviet computer system, MINSK II.

MR. LOUIS BROMER, Chief, Biostatistics Branch, Federal Health Programs Service; Mental Health Administration, U.S. Public Health Service (15-20 October 1969). *Seminar*: Applications of statistics to research in U.S. Public Health Service hospitals.

PROFESSOR MICHAEL BRUNO, Hebrew University, Jerusalem, Israel (30 September 1969). *Seminar*: Development of the economy of Israel.

SHERI H. S. CHANDRAMOULI, Indian Telephone Industries Ltd., Bangalore (17 July 1969). *Lecture*: Networks (*D.R.T.C., Bangalore*).

PROFESSOR HOLLIS B. CHENERY, Harvard University, U.S.A. (6 January 1970). *Seminar*: Economic development and structural change (*Planning Unit, Delhi*).

MR. P. J. CHESTER, British Publishers' Mission to India (3 November 1969). *Round Table Discussion*: Libraries and publishing industry (*D.R.T.C., Bangalore*).

DR. D. I. DANILOV, Cultural Department, USSR Embassy in India, New Delhi (18 September 1969). *Lecture*: Soviet foreign policy.

PROFESSOR J. B. DOODLAS, Department of Statistics, University of New South Wales, Australia (5-12 February 1970). *Lecture*: Composition of contagious distributions.

DR. B. P. FILATOV, Department of Economics and History, Moscow State University, USSR (4 October 1969). *Seminar*: Lenin's economic policy.

PROFESSOR G. W. GEAR, Illinois University, U.S.A.; Visiting Professor, Indian Institute of Technology, Delhi (5-7 June 1969). *Lectures*: (i) High-speed compilation of efficient object code, (ii) An interactive graphic modelling system.

DR. JOHN HOLMES, Department of Geography, University of New England, New South Wales, Australia (27 August 1969-1 September 1969). *Seminar*: Theory of Plan sampling and its applications to geographical research (*Planning Unit, Delhi*).

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DR. N. SAINIVASA IYENGOOR, Department of Econometrics, Osmania University, Hyderabad (17 and 24 May 1969). *Lectures*: (i) Current trends in mathematical economics, (ii) Income and price effects on household expenditure.

PROFESSOR T. ISHIDA, Department of Political Science, Institute of Social Sciences, University of Tokyo, Japan (21-25 September 1969). *Lecture*: Social and political systems of Japan.

PROFESSOR THOMAS KALATHI, Electrical Engineering Department, Stanford University, USA (13-20 February 1970). *Lecture*: Radom-Nikodym deviates with respect to Wiener and related measures.

DR. CARL F. KOSSACK, F.A.O. Data Processing Division (17-19 February 1970). *Lecture*: A generalised approach to statistical classification.

PROFESSOR ANNE O. KREUGER, University of Minnesota, U.S.A. (24 January 1970). *Seminar*: Evaluation of restrictionist trade regimes.

DR. E. N. KUMAROV, Department of Indian History, Institute of Asia, Moscow State University, USSR (16 April 1969). *Lecture*: Lenin and India.

PROFESSOR KELVIN LANCASTER, Columbia University, USA (28 August 1969). *Seminar*: Operational applications of new theory of consumer behaviour (*Planning Unit, Delhi*).

MR. D. W. LANGRIDGE, School of Librarianship, North-Western Polytechnic, London (7-19 December 1969). *Lectures*: (i) Work of the classification research group in U.K., (ii) Classification of humanities, (iii) Book indexing (*D.R.T.C., Bangalore*).

PROFESSOR LOUIS LEFEBER, Brandies University, U.S.A.; Visiting Professor, Institute of Economic Growth, Delhi University (29 November 1969). *Seminar*: Trade and minimum wages (*Planning Unit, Delhi*).

DR. MICHAEL LEPTON, Institute of Development Studies, University of Sussex, U.K. (6 October 1969). *Seminar*: Resource transfer between agriculture and rest of the Indian economy (*Planning Unit, Delhi*).

SHRI P. D. MALOAVKAR, Principal Director, Small Industry Extension Training Institute, Hyderabad (18 February 1970). *Lecture*: Information needs of small industries (*D.R.T.C., Bangalore*).

DR. MICHAEL S. SCOTT-MORTON, Associate Professor, Sloan School of Management, M.I.T., U.S.A. (26 August 1969). *Lecture*: Implications for researchers and computer users of recent developments in the computer field.

DR. V. RAMACHANDRAN, Regional Director, National Productivity Council Bangalore (13 August 1969). *Lecture*: Newer concepts of management (*D.R.T.C., Bangalore*).

DR. A. RAMAKRISHNAN, Director, MATSCIENCE, Madras (30 September 1969). *Lecture*: Seven lamps of quantum mechanical architecture (*D.R.T.C., Bangalore*).

DR. T. RAMAKRISHNAN, Indian Institute of Science, Bangalore, (23 October 1969). *Lecture*: Trends in molecular biology (*D.R.T.C., Bangalore*).

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DR. B. L. S. P. RAO, Indian Institute of Technology, Kanpur (5 May 1969). *Lecture* : The Bernstein-Von Mises theorem for Markov processes and applications.

SHRI N. P. RAO, Defence Science Documentation Centre (D.E.S.I.D.O.C.), New Delhi (6 October 1969). *Lecture* : Utility of scientific information (D.R.T.C., Bangalore).

DR. P. S. R. S. RAO, University of Rochester, U.S.A. (18 July 1969). *Lectures* : (i) Independent samples and regression estimators, (ii) The non-response problem.

DR. D. K. ROYCHODHURI, Department of Statistics, Ohio State University, U.S.A. (19 September 1969). *Lecture* : Kirkman's schoolgirl problem.

DR. T. S. SANTHANAM, Institute of Mathematical Sciences, Madras. (10 December 1969). *Lecture* : What is the universe made of ?

PROFESSOR A. K. SARAN, Indian Institute of Advanced Study, Simla (24 August 1969 — 1 September 1969). *Lecture* : Planning social change and the council of achieving society.

DR. MELVIN F. SHAKIN, Department of Operations Research and Statistics, New York State University, USA (6 January 1970). *Lecture* : Game theory approaches to negotiations and marketing.

DR. S. K. SINOH, World Bank; Harvard University, U.S.A. (12 January 1970). *Seminar* : New models of production relations (Planning Unit, Delhi).

MRS. MARY STEVENS, Lecturer in Library Science, University of Toronto, U.S.A. (28 March 1970). *Lecture* : Education for library and information science in North America (D.R.T.C., Bangalore).

PROFESSOR I. M. SOSINSKY, Department of Automation and Computer Techniques, Institute of Electronic Equipment, Moscow, USSR (21-25 March 1969). *Lecture* : Soviet computer system. MINSK II.

DR. D. S. TRACY, University of Windsor, Canada (21-28 July 1969). *Lectures* : (i) Matrix derivatives, (ii) Products of Polykays with a combinatorial method.

PROFESSOR J. P. S. UDROTI, Department of Advance Study in Sociology, University of Delhi (27-31 August 1969). *Seminar* : Science and Swaraj : Reflections on nationalism and internationalism in social science.

DR. R. K. UMERJEE, Department of Physics, Collego Station, Texas A & M University, U.S.A. (28 July-5 August 1969). *Lecture* : Coupled channel schrodinger equation model for neutron-alpha and deuteron-triton scattering.

DR. S. R. S. VARADHAN, Courant Institute, New York, U.S.A. (24 November 1969-10 December 1969). *Lectures* : Diffusion processes (a series).

SHRI S. VENKATARAMAN, International Computers Ltd., Bangalore (11 June 1969). *Lecture* : Radio receivers (D.R.T.C., Bangalore).

MR. NAT WEINBERG, Director, Special Projects and Economic Analysis Department, United Auto Workers, U.S.A. (2 April 1969). *Lecture* : Employment aspects of economic development.

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MR. FRANK WOKES, Vegetarian Nutritional Research Centre, Garston, Herts, U.K. (9-11 February 1970). *Lecture*: India's food problem.

DR. STANISLAW H. WELLS, Department of Economics, Columbia University, New York (15 September 1969). *Lecture*: Efficient resource allocation under planning.

DR. V. YASEKIN, Department of Economics, Institute of Foreign Languages, USSR; Visiting Professor, Gokhale Institute of Politics and Economics, Poona. Indo-Soviet Cultural Exchange Programme. (6 January 1970). *Lecture*: Present structure of Soviet economy.

III. The following are some of the visitors from abroad who came to the Institute for short periods during the current year on different assignments.

DR. WALTER AMELINO, Institute for Electronics and Computer Systems, Technical University of Aachen, Aachen, Federal Republic of Germany (22 March 1969).

DR. R. ANDREJICIC, Director, Institute of Productivity, Ljubljana, Poland; delegate, Symposium on Quality Control in Developing Countries (27-29 October 1969).

DR. YURI A. ATANOV, Head of the Laboratory, National Research Institute for Physical and Radiotechnical Measurements, USSR (11 June 1969).

PROFESSOR A. S. BARNETT, Department of Zoology, Glasgow University, U.K. (10 November 1969).

DR. M. BEHRA, McMaster University, Canada (6 January 1970).

DR. N. A. BERDENNIKOV, Deputy Director, Foreign Relations Department, State Committee, USSR Council of Ministers for Science and Technology (11 June 1969).

DR. RAYMOND T. BOWMAN, Project Manager/Director, Asian Statistical Institute, Tokyo, Japan (2 March 1970).

DR. R. BRADLEY-SACE, M.D., Resident Co-ordinator, Johns Hopkins University, U.S.A (17 May 1969).

LT.-COL. RICHARD T. BOVERIE, U.S. Air Force; European Office of Aerospace Research, Brussels, Belgium (25 November 1969).

ACADEMICIAN KIBEL BRATANOV, Bulgarian Academy of Sciences, Sofia (9 January 1970).

MR. EDOUARD DEBOUT, Director of Quality Control, "Sud-Aviation", Paris; delegate, Symposium on Quality Control in Developing Countries (27-29 October 1969).

DR. J. D. A. DE FREMERY, Management Consultant, W. D. Scott Co. Ltd., London; delegate, Symposium on Quality Control in Developing Countries (27-29 October 1969).

MR. J. D. N. DE FREMERY, Secretary-Treasurer, European Organisation for Quality Control; leader, delegation to Symposium on Quality Control in Developing Countries (27-29 October, 1969).

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DR. J. GARCIA DEL VALLE, Executive Director, Quality Control, "Metalurgia de Santa Ana", Linares, Spain; delegate, Symposium on Quality Control in Developing Countries; accompanied by Mrs. Garcia del Vallo (27-29 October 1969).

DR. HELMUT FAULWITZER, Head, Department of Foreign Trade, Institute of Economy of Developing Countries; Council, Faculty of National Planning, University of Economic Science, Berlin, German Democratic Republic (3 April 1969).

DR. P. C. B. FERNANDO, Department of Physics, Vidyodaya University of Ceylon, Nugegoda, Ceylon (6 October 1969).

PROFESSOR RONALD FREEDMAN, Director, Population Studies Centre, University of Michigan, U.S.A. (30 May 1969).

MR. DONALD LEASK FULLER, Scientific Attache, Embassy of the U.S.A., New Delhi (31 December 1969).

DR., ROBERT S. GORDON, Jr., Clinical Director, National Institute of Arthritis and Metabolic Diseases, Bethesda, U.S.A. (6 February 1970).

DR. DIETER J. HAUFF, Computer Centre, Technical University of Aachen, Aachen, Federal Republic of Germany (22 March 1969).

DR. PENDLETON HERRING, Director, Foreign Area Fellowship Programme, New York; Indian Council of Social Science (31 January 1970).

DR. ALAN HESTON, University of Pennsylvania, U.S.A. (11 February 1970).

MRS. GUN HOWDING, Co-operative Insurance Co., Sweden (1 November 1969).

PROFESSOR H. D. HUSKEY, Consultant on Electronic Computers, Ford Foundation (30 April 1969).

PROFESSOR KIYOSHI IKEMOTO, Faculty of Economics, Kobe University, Kobe, Japan (19 March 1969). (*Planning Unit, Delhi*).

ACADEMICIAN EVOENI KAMONOV, Bulgarian Academy of Sciences, Sofia (9 January 1970).

MR. K. KAPPELER, General Manager, "Houalwark A. G.", Vaduz, Liechtenstein; delegate, Symposium on Quality Control in Developing Countries (27-29 October 1969).

DR. H. KATANO, Research Institute for Economics and Business Administration, Kobe University, Japan (28 March-5 April 1970).

MR. HIDETOSHI KATO, Programme Officer, Japan Institute for Advertising, Tokyo. Asian Intellectual Co-operation Programme (31 January-2 February 1970).

DR. FAKHIMUDDIN KHODZHAEV, Minister for Light Industries, Uzbek Socialist Republic (11 June 1969).

ACADEMICIAN SEROKEI A. KHRESTIANVOCH, Member, Board of the State Committee, USSR Council of Ministers for Science and Technology; Deputy Director, National Research Institute for Physical and Radiotechnical Measurements (11 June 1969).

PROFESSOR B. KOJIMA, Institute of Developing Economics, Tokyo (31 January 1970-1 February 1970).

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DR. (MRS.) A. KOROTSKAYA, Visiting Professor, Indian Council for Cultural Relations, New Delhi (9-13 February 1970).

MR. ERHARD KRÄUSSER, Secretary of delegation, Peace Council, German Democratic Republic (3 April 1969).

DR. A. T. A. LEARMONTH, Department of Geography, Australian National University, Canberra, Australia (14 October 1969 and 22 December 1969), (Planning Unit, Delhi).

MR. JEAN LEBEAU, Engineer, Chief of Department of Quality Control, "Glaxner Spicer S.A.", Poissy; delegate, Symposium on Quality Control in Developing Countries (27-29 October 1969).

MR. KARL-HEINZ LEICH, Trade Commissioner and Deputy Head, Regional Trade Representative of German Democratic Republic, Calcutta (3 April 1969).

MISS BERGITTA LINDBERG, Architect, National Board of Urban Planning, Sweden (1 November 1969).

PROFESSOR VLADIMIR A. MALYUSSOV, Head of the Laboratory, Institute of General and Inorganic Chemistry; Corresponding Member, U.S.S.R. Academy of Sciences (11 June 1969).

MRS. GEETA MAROSI, Swedish Institute for Consumer Information, Sweden (1 November 1969).

PROFESSOR WESLEY C. MITCHELL, Department of Economics, Columbia University, New York (15 September 1969).

PROFESSOR JUN NAKAJIMA, Faculty of Economics, Nagasaki University, Japan (15 and 19 March 1969).

MR. DAVID NASATIR, Co-ordinator of International Research, University of California; Director, International Data Library; member, working group on Data Archives and Data Libraries, Indian Council of Social Science Research, Delhi (24 December 1969).

LT-COL. M. C. NICOLAI, United States Air Force; European Office of Aerospace Research, Brussels, Belgium (23 June 1969).

PROFESSOR KOBEI OHKATA, Secretary, Japan Committee for Studies on Economic Development in India and Japan (26 December 1969-7 January 1970).

PROFESSOR C. H. G. OLDHAM, Science Policy Research Unit, University of Sussex, U.K. (30 January 1970).

MR. CARL ORDUNING, Secretary, Regional Committee, Christian Peace Conference, German Democratic Republic (3 April 1969).

MR. JAMES OSBORN, Co-ordination and Development Advisory Group, Asia Society, New York (4 November 1969), (Planning Unit, Delhi).

MR. A. S. PARASTAY, Vice-Consul and Head, Cultural Branch, USSR Consulate, Calcutta (16 September 1969).

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PROFESSOR DWAIN W. PARRACK, Department of Pathobiology, Johns Hopkins University, Baltimore, USA (10 November 1969).

DR. SURENDRA J. PATEL, Chief, Economic Analysis Section, Commodities Division, U.N.C.T.A.D., Geneva (27-30 March 1969).

MS. G. P. PATIL, Department of Mathematics, University of Pennsylvania, U.S.A. (8 January 1970).

MAJOR RICHARD A. PETERSON, U. S. Air Force; European Office of Aerospace Research, Brussels, Belgium (25 November 1969).

PROFESSOR B. POPOV, Department of Mathematics, Faculty of Sciences, University of Scopia, Yugoslavia (27 February 1970).

PROFESSOR SOSIC RADOMIR, Technical Director, "Famos", Sarajevo, Yugoslavia; delegate, Symposium on Quality Control in Developing Countries (27-29 October 1969).

MR. FRITZ RATNIC, Member, Presidential Committee; Secretary, Peace Council, German Democratic Republic (3 April 1969).

DR. DEV KUMAR RAY, World Health Organisation, Geneva (15 May 1969).

PROFESSOR GUNNAR RIBBAWT, Economist, Ministry of Finance, Sweden (1 November 1969).

MR. MLADEN ROVENJAK, Consultant, Director General of Quality Control, "Rado Koncar", Zagreb, Yugoslavia; delegate, Symposium on Quality Control in Developing Countries (27-29 October 1969).

MRS. ELVOR SAMUELSSON, Institute of International Affairs, Sweden (1 November 1969).

DR. EVERETT L. SCHILLER, Department of Pathobiology, School of Hygiene and Public Health, Johns Hopkins University, Baltimore, U.S.A. (19 November 1969).

PROFESSOR ALEXEI SUSOHEVSKI, Faculty of Geography, Moscow State University, USSR (20-23 August 1969) (Planning Unit, Delhi).

PROFESSOR KOJI TANIUCHI, Research Department, Institute of Developing Economies, Tokyo (15-17 January 1970).

MR. STEFAN TRAMPUZ, Consul-General of Yugoslavia, Calcutta; accompanied by Mrs. Trampuz (9 February 1970).

MR. JOHN WALUSIMBI, Chief Supplies Officer, Uganda (19 January 1970).

DR. BRUCE H. WARREN, Lt.-Col. United States Air Force; European Office of Aerospace Research, Brussels, Belgium (23 June 1969).

DR. LESLAW WASILEWSKI, Director, Department of Economics, National Board for Quality Control and Measures, Warsaw, Poland; delegate, Symposium on Quality Control in Developing Countries (27-29 October 1969).

PROFESSOR MARTIN WEBB, Department of Geography, University of Western Australia, Nedlands, Australia (14 & 15 November 1969) (Planning Unit, Delhi).

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Dr. MYRON WEINER, Department of Political Science, Massachusetts Institute of Technology, Cambridge, Mass., U.S.A. (1 September 1969).

Dr. HERMANN R. WILD, Quality Control Department, "Gretag", Zurich, Switzerland; delegate, Symposium on Quality Control in Developing Countries (27-29 October 1969).

PROFESSOR KAZUMI YAMAMOTO, Statistics Division, Institute of Developing Economies, Tokyo (29-30 December 1969).

Visitors: Over 450 visiting scientists and other visitors from India and abroad (from 19 foreign countries and international organisations) came to the Institute during the year.

9. HONOURS, AWARDS AND SPECIAL ASSIGNMENTS

Dr. C. R. Rao was elected an Honorary Fellow of the Royal Statistical Society in recognition of his contribution to statistics. The diploma of Fellowship was awarded at a joint meeting of the Royal Statistical Society with Sir Roy Allen in the Chair and the International Statistical Institute (thirty-seventh session) held in London on 10 September 1969.

Dr. C. R. Rao was awarded the honorary D.Sc. degree of the Leningrad University, USSR, for his distinguished services in the development of science and human knowledge, at a Special Convocation on 30 March 1970.

Dr. C. R. Rao accepted the membership of the Indian Council of Social Research.

Dr. C. R. Rao was appointed Chairman of the Committee of Mathematics, set up recently to assist the Board of Research in Nuclear Science, Department of Atomic Energy, Government of India.

Dr. Amitabha Basu (*Anthropometry and Human Genetics*) was accepted as an active member, International Association of Human Biologists.

Shri A. K. Chatterjee (*Economic Research*) was appointed a member, Jute Enquiry Commission, set up by the Government of West Bengal.

Shri T. A. Davis (*Crop Science*) was nominated a member of the Advisory Board, Palynological Society of India.

Dr. Sujit K. Mitra (*R.T.S.*) was elected an ordinary member, International Statistical Institute.

Dr. Ramkrishna Mukherjee (*Sociology*) was co-opted a member, Standing Committee on Data Archives, International Social Science Council, Paris.

Dr. M. N. Murthy (*National Sample Survey*) was invited to serve as a member of a, Preparatory Committee set up by the International Statistical Institute (ISI) for initiating a section of the ISI in the area of sample surveys. He was also invited to serve on a Committee on Listeners' Research set up by the Director-General, All India Radio.

Dr. M. N. Pal (*Planning and Regional Survey, Delhi*) accepted the Corresponding Membership (1968-72) of the Commission on Quantitative Methods, International Geographical Union.

Dr. J. Roy (*Computer Science*) was elected Secretary, Eastern India Chapter, Computer Society of India.

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Shri R. P. Saha (*National Sample Survey*) was elected a member, International Union for the Scientific Study on Population.

Dr. Supriya Sengupta (*Geology*) was elected a member, International Association of Sedimentologists. He was appointed a member, Publication Committee, Geological, Mining and Metallurgical Society of India.

10. CONFERENCES AND SCIENTIFIC TOURS ABROAD

Professor P. C. Mahalanobis : Tours Abroad

Yugoslavia, Switzerland and England (30 June-18 July 1969) : Professor P. C. Mahalanobis left Calcutta on 30 June 1969 for Herceg Novi, Yugoslavia, to attend the Third International Conference on "Science and Society" from 28 June to 4 July 1969. He gave a lecture on the role of science in economic growth. His informal discussions with a number of scientists from different countries were particularly stimulating and instructive. After a short visit to Geneva, he participated in another conference on economic development in the Sussex University and gave a lecture on mathematical statistics at the Essex University.

U.K., Yugoslavia, France and U.S.S.R. (20 August-9 October 1969) : Professor and Mrs. Mahalanobis left Delhi on 20 August 1969 to attend the 37th Session of the International Statistical Institute from 3 to 11 September 1969, in London.

They went to Belgrade on 12 September for a visit of 12 days at the invitation of Professor D. Kostic, Director, Institute for Experimental Phonetics and Speech Pathology, Serbian Academy of Sciences. They had interviews with H.E. Mr. Popović, President of the Federal Assembly of Yugoslavia, and Dr. Uvalic, the Deputy Foreign Minister, and also met Mr. Vogalnik, President, Federal Committee for Scientific Research, Dr. Gligoric, President, Serbian Academy of Sciences and other public men and scientists. Besides discussions in Professor Kostic's Institute, Professor Mahalanobis gave lectures at the Central Board of Statistics, the Institute of Economics, and the Institute of Mathematics. Mrs. Mahalanobis gave a lecture on Rabindranath Tagore before a large audience at the Kolarac University.

From Belgrade, Professor and Mrs. Mahalanobis paid a short visit to Paris where Professor Mahalanobis had discussions as a consultant in the section for scientific affairs of the U.N.E.S.C.O.

They returned to London on 25 September. Professor Mahalanobis attended a special dinner which was arranged in the King's College, Cambridge, on 27 September, for "old boys" who were in residence up to 1922.

Professor and Mrs. Mahalanobis then paid a short visit to Edinburgh at the invitation of Professor George Barnard. Professor Mahalanobis participated in a seminar in the Faculty of Mathematical Statistics and Mrs. Mahalanobis gave a talk on Tagore in the University of Edinburgh.

From England, they went to Moscow where Professor Mahalanobis, had discussions in the Academy, and Mrs. Mahalanobis gave a lecture on Rabindranath Tagore at the Oriental Institute. They returned to Delhi on 9 October 1969.

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Japan and Thailand (17 October-13 November 1969): On 17 October 1969, Professor and Mrs. Mahalanobis left Calcutta for Tokyo to attend the International Conference on Quality Control, 1969, held in Tokyo from 21 to 24 October 1969, under the auspices of the Japanese Union of Scientists and Engineers. Professor Mahalanobis was chairman at the 10th Session of the Conference on "Application of Statistical and Engineering Techniques." He presented a paper on "Extension of Fractile Graphical Analysis," and another paper on Walter A. Shewart. He had a long sit-down interview with the "Sekai" of the monthly review on recent politico-economic developments in India.

On 27 October, Professor Mahalanobis participated in a discussion meeting with a group of businessmen on "Recent socio-political development in India with comments on future trends" which was sponsored by the Japan Committee for Studies on Economic Development in India and Japan. He gave a lecture at the Institute of Developing Economics on "Some new methods for measuring changes in disparities in levels of living" which was attended by research workers of the Institute. On 30 October, he spoke on recent trends in international relations at the International House of Japan. On 4 November, Professor Mahalanobis had discussions with the China specialists in *Asahi Shimbun* and had two long discussions with Mr. Yoshio Tanka, Deputy Director, Agency for Atomic Energy and Technology. He also had a number of other discussions.

In Japan, Professor Mahalanobis and Mrs. Mahalanobis were guests of the Japanese Union of Scientists and Engineers, organisers of the International Quality Control Conference held from 17 to 24 October, and of the International House of Japan from 25 October to 8 November 1969.

Professor Mahalanobis accompanied by Mrs. Mahalanobis left Japan for Bangkok on 9 November. At Bangkok, Professor Mahalanobis gave two lectures at the UN Asian Institute for Economic Development and Planning on 10 and 12 November. They returned to Calcutta on 13 November 1969.

Cairo, U.A.R. (14-23 December 1969): Professor Mahalanobis left Calcutta on 14 December to attend the International Conference on Computer Science from 16 to 19 December 1969 organized by the Institute of Statistical Studies and Research, Cairo University. On 18 December, he had an individual discussion with H.E. Professor A. W. El-Borolloy, Minister of Higher Education, regarding the strengthening of co-operation in research. On 19 December, Professor Mahalanobis was the chairman of the morning session on "The Computer and Applied Statistics." In the afternoon session, he presented a paper on "Basic Problems of Design of Sample Surveys." He gave a speech on "Computer priorities in under-developed countries" as the chief guest at the concluding banquet of the Conference.

Professor Mahalanobis participated with Professor Jan Tinbergen in a seminar on "Problem of Economic Growth" at the American University in Cairo. He visited the Institute of National Planning on two occasions where he gave one lecture and had a seminar morning; and had discussions with Dr. Ismail Sabry, Director of the Institute and with Dr. El Sayed Gaballah, Minister of Planning at the Institute of National Planning. Professor Mahalanobis returned to Calcutta on 24 December 1969.

Philippines and Japan (10 April-2 May 1970): Professor Mahalanobis and Mrs. Mahalanobis left Calcutta for Manila (Philippines) on 10 April 1970 to attend the "One Asia Assembly" on "New Direction for Asia" from 11 to 13 April 1970, which was organised

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by the Press Foundation of Asia and inaugurated by Mr. U. Thant, UN Secretary-General. He had individual and group discussions on friendly relations and economic and cultural collaboration between Asian countries.

Professor Mahalanobis was chairman of the Science Panel on 12 April on "Science in the Future of Asia." Next morning, Dr. Gunnar Myrdal was chairman of the panel on "Economic, Social and Political Conditions"; as a member of the panel, Professor Mahalanobis made the concluding observations. On 15 April, he gave a lecture at the Philippines Statistical Association, and at the Statistical Centre, University of Philippines. On 16 April, he gave a lecture at the Rotary Club. On 17 April, he gave a lecture at the University of Philippines.

On 19 April, Professor and Mrs. Mahalanobis left Manila and visited Tokyo as guests of the International House of Japan.

Professor and Mrs. Mahalanobis returned to Calcutta from Tokyo on 2 May 1970.

Dr. C. R. Rao : Tours Abroad

U.S.A., U.K., U.S.S.R. (11 August-September 1969): Dr. C. R. Rao left India on 11 August 1969 and returned on 29 September 1969. He attended the International Symposium on Statistical Ecology at New Haven, U.S.A., from 21 to 28 August 1969. He was Chairman for the session on Statistical Distribution held on 21 August 1969. He presented a paper entitled, "Some comments on the logarithmic series distribution in the analysis of insect trap data", at the session on statistical distribution on 22 August 1969. He also took part in the discussion on the organisation of teaching and research in statistical ecology.

While in the U.S.A., he delivered two other lectures on: (i) A multi-disciplinary approach to the teaching of statistics; Pennsylvania State University, University Park, 14 August 1969. (ii) The estimation of heteroscedastic variances in the Gauss-Markoff model; University of Michigan, Ann Arbor, 30 August 1969.

London: Dr. Rao arrived in London on 3 September 1969 to attend the thirty-seventh session of the International Statistical Institute. He was Chairman for the session on "Uses and limitations of regression techniques" held on 4 September 1969. He attended the meetings of the Education Committee, International Statistical Institute, and discussed with the members about the expansion of the educational programmes at the International Statistical Education Centre, Calcutta.

Dr. Rao arrived in Moscow on 14 September 1969 and left for Leningrad the same night. He spent about ten days in Leningrad and worked with Academician Linnik and Professor Kagan, as a co-author on the final draft of the book, "On Characterization Problems of Mathematical Statistics" which is now under publication by the U.S.S.R. Academy of Sciences. He also gave a lecture on "Estimation under non-standard conditions in the Gauss-Markoff model."

U.S.S.R., Canada, U.S.A. (22 March-23 May 1970): Dr. C. R. Rao left for the U.S.S.R. on 22 March 1970 to receive the Honorary D.Sc. degree of the Leningrad University. Later, he went to participate in a Symposium on the Foundations of Statistical Inference at the University of Waterloo, Canada, held from 31 March to 9 April 1970. He read a paper

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on "Some Aspects of Statistical Inference in Problems of Sampling from Finite Populations." He returned to Calcutta on 23 May 1970, after spending some time at the Pennsylvania State University, U.S.A., where he delivered some lectures on the present position of Statistical Inference and also collaborated with the staff of the Statistics Department on some research problems.

Dr. D. Basu (*R.T.S.*) rejoined on 1 February 1970, after spending 19 months in several foreign universities. For a major part of this period, he worked at the University of New Mexico, Albuquerque, New Mexico, USA, as Professor of Mathematics.

From 31 March to 9 April 1970, Professor Basu visited the University of Waterloo, Canada, to participate in a symposium on the Foundation of Statistical Inference, and presented a paper. Professor Basu also visited the American University of Beirut, University of Montreal, Universities of Manitoba, Saskatoon and Alberta and the University of Osaka. He returned to Calcutta on 19 April 1970.

Shri P. K. Bardhan (*Planning and Regional Survey, Delhi*) attended the annual meeting of the Econometric Society in New York on 29 December 1969, and presented a paper.

Dr. L. S. Bhat (*Planning and Regional Survey, Delhi*) went on an assignment to the ECAFE, Bangkok, for two months from March 1970 for the preparation of a Manual on Regional Planning.

Shri R. L. Brahmachary (*Embryology*) visited East Africa from the first week of November 1969 to the middle of February 1970 to work on molecular embryology and wild-life ecology. He gave two lectures at the Zoology and Biochemistry Department, Makerere University, Uganda.

Dr. Rhea S. Das (*Appraisal*) who left Calcutta on 24 July 1969 for the U.K., U.S.A., Sweden and Yugoslavia, returned on 12 October 1969. In the U.K., she participated in the XIX International Congress of Psychology, 27 July-2 August 1969, presenting one paper and chairing one symposium. She had discussions on research at the Department of Phonetics, University College, London. In the U.S.A., she collected data and had research discussions in connection with the research project, "Estimates of probabilities of hospitalization according to age, sex, and diagnosis, and their use in planning hospital services", at the following centres: Commission on Professional and Hospital Activities, Ann Arbor; Cooperative Information Center for Hospital Management Studies, University of Michigan, Ann Arbor; Biostatistics Branch, Federal Health Programs Service, Health Services and Mental Health Administration, U.S. Public Health Service, Silver Spring, Maryland; National Center for Health Statistics, and the U.S. Public Health Service, Washington, D.C. In Sweden, she had meetings and research discussions at the following centres: Department of Social Medicine, Uppsala University, Uppsala; Swedish Committee on International Health Relations, National Board of Health and Welfare, Stockholm; Statistical Division, National Board of Health and Welfare, Stockholm; Institute for the Planning and Rationalisation of Health and Social Welfare Services, Stockholm; and the Speech Transmission Laboratory, Department of Speech Communication, Royal Institute of Technology, Stockholm. In Yugoslavia, she carried out research and studies as part of the

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collaborative programme of fundamental linguistic research with the Institute for Experimental Phonetics and Speech Pathology, Belgrade.

Professor T. A. Davis (*Crop Science*) proceeded on 12 August 1969 to participate in the XI International Botanical Congress at Seattle, U.S.A. After visiting some biological research centres in the U.S.A. and Europe, he returned to Calcutta at the end of October 1969.

Dr. A. Mitra (*International Statistical Education Centre*) left Calcutta, on a Cultural Exchange Programme, for Czechoslovakia and Poland on 13 October 1969. He was in the Institute of Information Theory and Automation, Czechoslovak Academy of Sciences, for four weeks and delivered lectures on Dynamic Programming. He left Prague for Warsaw on 11 November 1969 and spent about six weeks there. He visited the Mathematical Institute of the University of Warsaw, University of Wrocław and the Polish Academy of Sciences, where he gave lectures on Dynamic Programming, Stochastic Games and Set Theory. He left Warsaw for India on 24 December 1969.

Dr. V. V. Monon (*R.T.S.*), who had left on 30 July 1969 on a visit to Bulgaria and Hungary under a Cultural Exchange Programme, returned on 27 September 1969. He was in Bulgaria from 1 to 23 August 1969 and in Hungary from 23 August to 25 September 1969. He visited various scientific institutions and universities. He attended the Colloquium on Combinatorial Mathematics held at Balatonfüred from 25 to 29 August 1969 and presented a paper entitled, "Some partitions of, and the number of Borel fields on large finite sets."

Dr. S. K. Mitra (*R.T.S.*) left for London on 1 September 1969 to attend the Thirty-seventh session, International Statistical Institute, held from 3 to 11 September 1969. He was an invited discussant in the session on "Multidimensional Contingency Tables" organised by Professor H. O. Lancaster of Sydney, Australia, on 5 September. He read a paper at the Conference on 9 September. He returned to Calcutta on 15 September 1969.

Professor M. Mukherjee (*National Income*) left for Geneva on 21 March 1970 to attend the meeting of the UN Expert Group on Statistics of the Distribution of Income, Expenditure and Wealth. He reached Geneva on 22 March and attended the meeting during 23-27 March. He returned to Calcutta on 29 March 1970.

Shri V. Narayana (*Statistical Quality Control*) went to the U.S.A. on a United Nations Fellowship programme for training in Operations Research at the Johns Hopkins University. He left India on 17 September 1968 and returned on 9 November 1969, after completing the course and visiting several plants in the U.S.A. and Europe.

Shri S. M. Sundara Raju (*Statistical Quality Control*) visited Japan from 19 October 1969 to 10 November 1969 as a delegate to the International Conference on Quality Control, Tokyo, 21-24 October 1969. He participated in a specially organised India-Japan Symposium on Statistical Methods and delivered talks at the Japanese Union of Scientists and Engineers, Japanese Standards Association and Kiso University. He visited 11 plants to study the methods, systems and organisation for quality control and also went to three scientific and research institutions in Japan.

Shri M. V. Raman (*Demography*) left for London on 1 September 1969 to attend the Conference of the International Union for the Scientific Study of Population. He returned on 15 September 1969.

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Dr. Tapan Roy Chowdhury (*Geology*) left for Britain on 21 November 1968 to accept an appointment in the University College, London, to assist Dr. Pamela Robinson in her research project on Mesozoic vertebrate faunas. On the way he stayed in the U.S.S.R. for ten days (21 November to 30 November). During this period, he visited the Palaeontological Institute of the Academy of Sciences, U.S.S.R., in Moscow. He also visited the Zoological and Geological Institutes of the Academy in Leningrad.

In Britain, while working on Indian material collected by the Geological Studies Unit of the Institute, Roy Chowdhury visited the Museum of Comparative Zoology, Cambridge, British Museum of Natural History and the Royal College of Surgeons, London, in connection with some comparative studies. He also read a paper at the seventeenth Symposium of Vertebrate Palaeontology and Comparative Anatomy, held at Newcastle-upon-Tyne, on 23-24 September 1969.

Dr. Tapan Roy Chowdhury visited the Museum National D' Histoire Naturelle, Paris, the University Museum at Zurich, and the Zaklan Palaeozoologii, Polish Academy of Sciences at Warsaw. He returned to Calcutta on 21 November 1969.

Sarvasri G. Divakar Rao and V. Rajagopala Sarma (*National Sample Survey*) left for Hungary on 30 June 1969 to attend the Seminar on Administrative Data Processing sponsored by the International Federation for Information Processing. They also visited the United Nations Computer Research Centre, Bratislava, Czechoslovakia. They rejoined on 27 January 1970.

Dr. (Miss) A. Sengupta (*Family Planning*) attended the Conference on the International Union for the Scientific Study of Population, 3-11 September 1969, and read a paper. On an invitation from the International Planned Parenthood Federation, she visited some family clinics in London, for studying oral contraceptive programmes from 12 to 19 September 1969. She left Calcutta on 1 September and returned on 26 September 1969.

Dr. T. N. Srinivasan (*Planning and Regional Survey, Delhi*) attended the following:

1. Conference on "Economic Development in South Asia" organised by the International Economic Association, Kandy, Ceylon, 1-12 June 1970. He read a paper.
2. Far Eastern Meeting of the Econometric Society, Tokyo, Japan, 26-28 June 1969. He read a paper at the meeting.

He presented a paper at a joint seminar of Economic Research Groups at the Osaka and Kyoto Universities on 30 June 1969. He also gave two lectures at the Asian Institute of Economic Development, Bangkok, Thailand, 23-24 June 1969.

11. CONFERENCES AND SCIENTIFIC ASSIGNMENTS IN INDIA

As in previous years, the workers of the Institute participated in various conferences, served on committees, and gave lectures at many places in India. Mention may be made here of some of the more important of these activities.

Professor Mahalanobis accompanied by Mrs. Mahalanobis visited Patna, Madras and Bangalore in April and May. Professor Mahalanobis gave a seminar lecture on "Science,

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social change and growth" at the A. N. Institute of Social Studies, Patna 2-3 April 1969. He held a open discussion based on about 25 questions asked by the audience on Indian planning and statistical subjects at the University of Patna on 3 April 1969.

Professor P. C. Mahalanobis gave the inaugural address at the Silver Jubilee Celebrations of the Department of Statistics, Tamil Nadu, held in Madras on 30 April 1969. He gave a talk at the symposium on "Economic Progress and Social Justice" organised by the Tamil Nadu Congress Committee on 30 April 1969. He addressed the concluding session of the symposium on 2 May 1969. He gave a lecture on "Science, social change and economic growth" at the Triplicane Cultural Academy, Madras, on 1 May 1969. He addressed a meeting of officers at the Directorate of Statistics, Madras, on 3 May 1969. He also met the staff of the Directorate on 12 May 1969.

Professor Mahalanobis gave the following two lectures at the Documentation Research and Training Centre, Bangalore: (i) Science, social change and social progress, and (ii) Statistics, a key technology, on 4 and 7 May 1969. He addressed a seminar at the Bangalore University on 6 May 1969, and spoke at a meeting of officers of the Bureau of Economics and Statistics, at Bangalore on 7 May 1969.

Professor Mahalanobis spoke at the birthday celebrations of Tagore in Madras on 11 May 1969 at the Bengal Association, Tamil Nadu.

Dr. C. R. Rao was in Delhi from 6 to 9 April 1969 to attend a meeting of the Committee on Science and Technology in Delhi. He also attended a meeting of the Committee on Delhi on 2 March 1970.

Dr. C. R. Rao went to Waltair on 1 June 1969 to teach in the Ninth Summer School on Statistical Methods in Biological Science. On 11 June, he delivered a lecture on "Statistics and Statisticians" at the Rotary Club, Visakhapatnam, and on 21 June he addressed the Research Forum, Andhra University, on "Statistics in daily life and research." He was in Delhi from 5 to 9 July 1969 to attend meetings of the National Income Committee and the COST.

Dr. Rao attended meetings of the CSIR Enquiry Committee at Delhi in August 1969 and at Bangalore in October 1969.

Dr. Rao attended the first meeting of the Advisory Committee on Mathematics to the Board of Research in Nuclear Science, Department of Atomic Energy, held in Bombay on 15 November 1969. He also attended a meeting of the Advisory Committee on 28 February 1970.

Dr. L. S. Bhat (*Planning and Regional Survey, Delhi*) participated in a seminar on "Asian City" organised by the Calcutta Metropolitan Planning Organisation in July 1969.

Dr. N. Bhattacharya, Pradip Maity and Nirmal Sengupta (*Economic Research*) attended the Ninth Indian Econometric Conference at Patna, in December 1969. S. Naqvi attended the ninth session, All-India Sociological Conference at Delhi in November 1969. He also participated in an All-India Radio Forum on the Gandhian Heritage at Delhi.

G. S. Chatterjee (*National Income*) attended the Seminar on National Income, Capital Formation and Savings, Udaipur, 9-12 April 1969, at the invitation of the Indian Association for Research in National Income and Wealth.

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B. Dey (*National Income*) attended the Fifty-second Annual Conference, All-India Economic Association, Patna, 26-29 December 1969. He also attended the Seventh Annual Conference, Indian Association for Research in National Income and Wealth, Hyderabad, 16-19 January 1970, and presented a paper. He was elected a member of the IARNIW, during the year.

Deb Kumar Dutta-Mazumdar (*N.S.S.*) attended the following conferences: (i) Ninth Indian Econometric Conference, Patna, 23-24 December 1969. He presented a paper. (ii) Fifty-second Indian Economic Conference, Patna, 26-29 December 1969.

A. Ganguly (*N.S.S.*) attended the meeting of the Building Materials and Components Sampling Sectional Committee, Indian Standards Institution, New Delhi.

Professor D. B. Lahiri and Sudhir Bhattacharyya (*N.S.S.*) attended the meetings of the Expert Committee on Unemployment Estimates held in Bombay on 13 February 1970 and in New Delhi during 27 to 28 March 1970.

Dr. B. S. Minhas (*Planning and Regional Survey, Delhi*) attended the All-India Symposium on Soil and Water Management, organised by the Indian Council of Agricultural Research, Hissar, 11-13 March 1969. He presented a paper.

Dr. S. K. Mitra (*R.T.S.*) attended the MASTECH conference on "Matrix analysis and its applications to science and technology" held in Bangalore, from 25 September to 3 October 1969, under the auspices of the Council of Scientific and Industrial Research, New Delhi. He gave two lectures at the conference and was also invited to be a member of the Committee set up to select the best paper presented at the conference for the MASTECH award.

Professor M. Mukherjee (*National Income*) attended the following seminars and meetings, etc.:

1. Seminar on National Income, Capital Formation and Savings organized by the Indian Association for Research in National Income and Wealth (IARNIW), Udaipur, 9 to 13 April 1969.
 2. Executive Committee meeting of the IARNIW at the Central Statistical Organisation (CSO) on 31 October 1969.
 3. A meeting of the Indian Advisory Working Group on the United Nations project on International Comparison of National Accounts Aggregate called by the CSO in Delhi on 8 July 1969.
 4. A meeting of the CSO Working Group on State Income in Delhi on 18-20 December 1969. He attended a second meeting of the Indian Advisory Working Group held in the CSO in Delhi on 23 February 1970.
 5. The Ninth Indian Econometric Conference, Patna, 23-24 December 1969. Professor Mukherjee presided over the inaugural and business sessions and presented a paper.
 6. The Seventh Annual Conference of the Indian Association for Research in National Income and Wealth at Hyderabad. He presented a paper.
- Dr. M. N. Murthy (*N.S.S.*) attended the Seminar on Statistics, organised at Madras, by the Department of Statistics, Government of Tamil Nadu.

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M. V. Raman (*Demography*) attended the National Conference on Population Policy and Programmes, New Delhi, 19 to 23 December 1969.

A. S. Roy (*N.S.S.*) attended a meeting on Random Sampling of Ores organised by the Indian Standards Institution, at Visakhapatnam.

Sm. Bina Roy (*National Income*) attended the Seventh Annual Conference, Indian Association for Research in National Income and Wealth, and presented a paper. She was elected a member of the IARNIW during the year.

Dr. J. Roy (*Computer Science*) was in Puri from 30 April to 6 May 1969 to attend the Seminar on "Computer Manager and the Third Generation Computers."

J. Saha, Chief Librarian, presided over the twentyfourth conference of the Bengal Library Association held at Baranullia from 27 to 29 March 1970.

Suranjan Sengupta (*N.S.S.*) participated in the Seminar on Employment, Unemployment, and Income Distribution, sponsored by the USAID, and held in New Delhi from 29 to 30 March 1970. He presented a paper.

Dr. Supriya Sengupta (*Geology*) participated in the International Gondwana Symposium organised by the Aligarh Muslim University, 19 to 24 January 1970.

C. V. Subba Rao (*Library*) attended, as an official delegate, IASLIC's Eighth Conference held in Bombay from 27 to 30 October 1969.

12. FAMILY PLANNING RESEARCH UNIT

The programme of work undertaken by the Family Planning Research Unit during the year included survey, action programme development, field trial of oral contraceptives and special studies.

A. Survey

The following programme was undertaken :

(i) A report on the fourth annual fertility re-survey of the Calcutta City Project population was mimeographed. The population was divided into two centres and the fertility rates as noticed during the period 1963-64 to 1967-68 were worked out. The data collected indicated that the crude birth rate had declined from 26 per 1,000 population to 18 within four years in the first centre and from 26 to 17 in the second centre. After the application of the age standardization test, the crude birth rate stood at 21.5 in the first and 21.4 in the second centre.

(ii) Another project was also undertaken in Calcutta City to examine the fertility performance of women in the panel who had not changed their residence during the total reference period. The objective was to study their fertility in relation to that of the women who had been in the panel originally but had changed their residence subsequently. This study will help to evaluate the reasons for the decline of the birth rate in the project area. A report is being prepared.

(iii) A report has been prepared on attitude-knowledge survey after interviewing 18 female and 160 male single workers of the ISI.

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(iv) A fertility survey was conducted in the Shyambazar area, adjacent to Centre I of the Calcutta City Project. The area was selected for an intensive drive on an oral pill programme.

B. Action Programme Development

The programme included discussions, household contacts, group meetings, and visits to clinics. The field trial of oral contraceptives and follow-up visits formed the major part of the programme.

13. PUBLICATIONS

The following were published during the year 1969-70 :

Sankhya : The Indian Journal of Statistics, the official journal of the Institute : Volume 31, Series A, Part 2, 3, 4; Volume 31, Series B, Parts 1 & 2.

The following books were published by the Statistical Publishing Society, under the series mentioned :

Series in Economics and Social Sciences

1. Structure of Indian Economy by A. R. Chakravarti; pp. 336.
2. National Income of India : Trends and Structure by M. Mukherji; pp. 521.

Series in Probability and Statistics

3. Computers and Future of Human Society by Dr. C. R. Rao, F.R.S.; pp. 63.

The Research and Training School issued 48 technical reports in mathematics and statistics, 5 in physics and 92 in the natural sciences, during the year.

Samvadham : The House Journal of the Indian Statistical Institute, Vol. 8, Nos. 1-4.

14. LAND AND CONSTRUCTION

There was no major construction in the year under review. But there were important developments in respect of the Institute's securing land at Delhi and Bangalore.

Delhi : In March 1962, an amount of Rs. 4.00 lakhs had been deposited with the Delhi Administration for a plot of land allotted to the Institute by the Delhi Administration in Delhi. In 1969, the Delhi Development Authority (DDA) asked for additional fund for expenses of the peripheral development of land. The Cabinet Secretariat, Department of Statistics, was approached to provide the necessary fund. Discussions were also held in different Council meetings. The Council in its meeting of 30 October 1969 approved of the action taken by the Administration for requesting the DDA to allot 11 acres of land out of 15 acres initially allotted and the Government sanction for Rs. 11.00 lakhs, in addition to the sum of Rs. 4.00 lakhs sanctioned in 1961-62, was received in October 1969. The necessary amount of Rs. 11,43,071.00 being the second and the final instalment in respect of cost and development charge of 11 acres of land allotted to the Institute in the Hauz Khas area, was deposited with the DDA in December 1969. The possession of the said land was taken over by the Institute on 27 February 1970. The Government was moved to allot the remaining 4 acres of land to the Institute.

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Bangalore : In 1962, the Government of India had sanctioned a grant of Rs. 1.53 lakhs for purchasing a plot of land in Bangalore and this grant was paid to the Government of Mysore, which subsequently offered a much bigger piece of land in a suburb measuring 30 acres at a cost of about Rs. 42,000. The Institute which accepted the offer was able to take possession of this land by a Grant Certificate dated 30 March 1967.

As the earlier proposal of the Mysore Government had fallen through, the said Government refunded an amount of Rs. 1,23,693.12, leaving a balance of Rs. 29,387.90 with them. It may be stated that the cost of the alternative land allotted and transferred to the Institute is Rs. 41,925 (Rs. 22,500 representing the price of land and Rs. 19,425, the mulki value for Chandan trees etc.). The Institute paid an amount of Rs. 22,500 out of the refunded amount of Rs. 1,23,593.12 in anticipation of approval from the Government of India, which was also requested to permit the Institute to pay the mulki value out of the refunded amount. This was not acceptable to the Government of India and the Institute was intimated that the entire amount of Rs. 1.53 lakhs is to be paid back to the Government, as the grant was not utilised for the purpose for which it was given. The Institute was further informed that the Government would be prepared to consider on merits the request of the Institute for funds for the purchase of alternative piece of land at Bangalore.

In this situation, the Council in its meeting of 26 June 1969 accepted a donation of Rs. 42,000 from the Statistical Publishing Society for the purchase of land at Bangalore, and, as desired by the Donor Society, the donation was treated as an earmarked endowment.

15. SOCIETY-TYPE ACTIVITIES : BRANCHES

15.1. *Mysore State Branch*

Annual General Meeting : At the Sixteenth Annual General Body meeting of the Branch held on 29 July 1969 at 4 Richmond Road, Bangalore, the office bearers and members of the Executive Committee were elected for 1969-70.

Membership : There were 44 members at the end of the year (Life members : 8, Institutional members : 3, Ordinary members : 33).

Examinations and Admission Tests : The professional examinations in Statistics viz., Statistician's Diploma, Computer's Certificate, Punch Card Data Processing Diploma and Punch Card Machine Operator's Certificate were held in Bangalore during 20-31 May 1969.

The selection tests for admission to the M.Stat., B.Stat. degree courses and SQC Diploma course etc., were held in Bangalore on 22 June 1969.

The admission test for the Indian Institute of Management, Calcutta, designed by the Psychometric Unit (RTS) of the Indian Statistical Institute was held in Bangalore on 15 February 1970.

Evening Course in Statistics : The one-year evening course in statistics of the Institute started in Bangalore at the suggestion of the Branch has proved popular. Twenty-five candidates were selected and admitted to the third course which commenced in September 1969.

Seminars and Surveys : The Branch took up a survey on "Living and working conditions of students of Bangalore University" for which approval from the Centre granting a sum of Rs. 3,000 had been received. The sample survey will cover about 45,000 students at the graduate and post-graduate level.

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15.2. *Bombay Branch*

Meetings : A meeting of the Council of the Bombay Branch was held on 28 August 1969. The Annual General Body meeting was held on 21 November 1969. Both meetings were held at the office of the Branch. Office bearers were elected for the year 1969-70.

Membership : Eight persons joined as ordinary members of the Institute during the year.

Symposium and Seminar : A symposium on "Social and Economic Conditions in India" was held in March 1969. Record notes of the symposium was cyclostyled and circulated.

The Council of the Branch, in its meeting on 28 August 1969, decided to hold a two-day seminar on the "Draft Fourth Five Year Plan" and the details are being worked out.

Evening Course : Six students appeared for the final examination of the One-year Evening Course on Statistical Methods and Applications. All the students passed, one with distinction. Sixteen students were admitted for the year 1969-70. The classes started from October 1969. Ten students appeared for the Part I examination held in February 1970.

Professional Examinations : The Statistician's Diploma Examination was held in May and November 1969. Eight candidates appeared for both the sessions.

Admission Tests : The admission tests for the degree and post-graduate courses of the Indian Statistical Institute were held on 7 July 1969. An admission test was also held for the course of the Indian Institute of Management, Calcutta.

National Sample Survey : During the period, the work of the twenty-third round (NSS) was completed and the twenty-fourth round was started in August 1969. The training conference for the field staff of the Bombay NSS-Unit was held in July 1969.

Shri N. T. Mathew, Chief Director, National Sample Survey, visited on 20 August 1969, for discussions with the field staff and inspection of the field work.

15.3. *Kerala Branch*

The Kerala Branch carried on its activities during 1969-70 with Professor A. Aiyappan, Vice-Chancellor, Kerala University, as the Chairman and Dr. (Miss) A. George, Professor and Head, Department of Statistics as the Secretary-cum-Treasurer.

The number of members on the roll during the year was 24. There were five members on the Management Committee.

Evening Course in Statistics : As in previous years, the main activity of the Branch continued to be the conducting of the One-year Evening Course in Statistics. Of the five candidates who appeared for the final Part II examination of the course, three passed and the results of two candidates were withheld, as they had not appeared for the Part I examination.

For the 1969-70 session, out of the twenty-eight candidates called for interview, twenty presented themselves and fourteen were finally selected for admission.

Four part-time teachers from the Kerala University attended to the work connected with the One-year Evening Course in Statistics, 1969-70.

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16. GIFT OF PRINTING MACHINERY BY THE U.S.S.R. ACADEMY OF SCIENCES

A generous gift of printing machinery has been made to the Institute by the U.S.S.R. Academy of Sciences. An agreement was signed by Academician Dr. Ya. V. Peivo, representing the Soviet Academy of Sciences and Professor P. C. Mahalanobis, representing the Institute and the Statistical Publishing Society, in October 1967, containing the proposal for gift of printing machinery by the U.S.S.R. Academy of Sciences to the Institute to be used by the Statistical Publishing Society. In accordance with this agreement, two batches of machines which were received have been installed in the premises of the Institute and the Publishing Society.

The printing machinery will be used for 'publishing in India in the form of books or articles in journals, English translations of scientific publications in Russian language' and also 'other books and articles for the promotion of science and learning generally'. The gift, 'outside any inter-government credit or agreement', is considered by the Institute as a symbol of appreciation by the U.S.S.R. Academy of Sciences of the humble efforts which the Institute has been making for the advancement of science in India and of scientific collaboration with international organisations.

Further details are available in a printed pamphlet, "Printing and Publishing Project by collaboration between the Academy of Sciences, U.S.S.R., and the Indian Statistical Institute."

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PART II : ANNEXURES

Annexure 1 : List of President, Vice-Presidents, Office-Bearers, Members of Council, Governing Body and Members of the Committees of the Council and Governing Body.

President : Professor S. N. Bose, F.R.S., D.Sc., F.N.I., National Professor.

Honorary Vice-President : Dr. C. D. Deshmukh, B.A. (Cantab.), D.Sc. (Hony. Calcutta and I.S.I.), Bar-at-Law, (former President).

Vice-Presidents : 1. Professor D. R. Gadgil, M.A., M.Litt. (Poona), Deputy Chairman, Planning Commission, Government of India; 2. Shri Pitambar Pant, M.Sc., Member, Planning Commission, Government of India; 3. Dr. S. R. Ranganathan, M.A., D.Litt. (Hony.), F.I.A., National Professor; 4. Shri Vishnu Sahay, ex-Governor of Assam & NEFA; 5. Shri S. Dutt, I.C.S. (Retired), Central Vigilance Commissioner.

THE COUNCIL : 1969-70

Chairman : Shri K. P. S. Menon, I.C.S. (Retired).

Vice-Chairmen : 1. Shri S. C. Roy, M.A., B.L., J.P., Director, NICCO of India Ltd.; 2. Shri B. B. Ghosh, M.Sc.; 3. Professor T. R. Seshadri, F.R.S., Emeritus Professor, Department of Chemistry, University of Delhi; 4. Justice A. K. Mukherjee, Calcutta High Court.

Additional Vice-Chairmen : 1. Chairman, Bombay Branch : Shri S. K. Wankhede (1969-70); 2. Chairman, Kerala Branch : Professor A. Aiyappan (1969-70); 3. Chairman, Mysore State Branch : Professor R. R. Umarji (1969-70).

Treasurer : Dr. S. C. Law, M.A., B.L., Ph.D., F.Z.S., M.B.O.U., F.N.I.

Secretary : Professor P. C. Mahalanobis, F.R.S., D.Sc., F.N.I.

Joint Secretary : Shri P. Ray.

Members of Council : 1. Shri S. K. Acharyya, Bar-at-Law; 2. Dr. B. P. Adhikari, M.Sc. (Cal.), Dr. ex.Sc. (Paris); 3. Dr. Bani Prasad Banerjee, B.E., M.S., Ph.D.; 4. Shri G. Basu, B.A., F.S.A.A., F.C.I.S., F.C.A., F.C.I.W.A., J.P.; 5. Dr. U. P. Basu*, D.Sc., F.N.I.; 6. Dr. N. Das, Ph.D. (London), I.C.S. (Retired); 7. Shri Arun Kumar Dutt; 8. Professor H. C. Ghosh, M.A., P.R.S.; 9. Shri Shyamal Krishna Ghose; 10. Shri D. B. Lahiri, M.Sc., F.N.I.; 11. Shrimati Nirmal Kumari Mahalanobis; 12. Dr. B. S. Minhas, M.A., Ph.D.; 13. Dr. Ashok Mitra, M.A., D.(Econ)Sc.; 14. Dr. R. Mukherjee, M.Sc. (Cal), Ph.D. (Cantab); 15. Dr. C. R. Rao, M.A., M.Sc., Ph.D., Sc.D. (Cantab), F.N.I., F.R.S.; 16. Dr. L. D. Sanghvi, M.Sc., Ph.D. (Columbia); 17. Dr. Amartya Sen, M.A., Ph.D. (Cantab); 18. Shri Satis Chandra Sen, M.A., LL.B.; 19. Dr. B. R. Senachar, D.Sc., F.N.I.; 20. Shri B. G. Verghese**, M.A. (Cantab).

Government nominees on the Council (Rule 6.1 b) (I) : 1. Cabinet Secretary (Shri B. Sivaraman), or his representative; 2. Joint Secretary, Ministry of Finance, Department of Expenditure, Government of India, (Shri B. N. Maheswari); 3. Director, Central Statistical Organisation and ex-officio Joint Secretary, Department of Statistics (Dr. Uttam Chand).

* Died on 1 December 1966.

** Resigned.

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Coopted members (Rule 8.1(c): Nil.

Ex-officio Members (Rule 6.1(d): Secretary of each local branch: 1. Bombay Branch: Professor P. N. Phulane (1969-70); 2. Kerala Branch: Dr. (Miss) A. George (1969-70); 3. Mysore State Branch: Professor Sriangbhusana (1969-70).*

GOVERNING BODY OF THE RESEARCH AND TRAINING SCHOOL: 1969-70

1. Shri K. P. S. Menon, Chairman (*ex-officio*); 2. Professor P. C. Mahalanobis, Honorary Secretary (*ex-officio*); 3. Dr. C. R. Rao, Director, RTS (*ex-officio*); 4. Dr. B. B. Ghosh, Acting Editor, *Capital (Associated Chambers of Commerce of India)*; 5. Dr. S. N. Sen, M.A., Ph.D., Vice-Chancellor, Calcutta University (*Indian Economics Association*); 6. Shri G. K. Bhagat, Messrs. Bengal Potteries Ltd., (*Federation of Indian Chambers of Commerce & Industry*); 7. Director (Dr. Uttar Chand), Central Statistical Organisation (*Government of India*); 8. Joint Secretary (Shri B. N. Maheshwari), Ministry of Finance (Financial Advisor to the Department of Statistics), (*Government of India*); 9. Professor S. S. Srikhande, F.N.I., Head of the Department of Mathematics, University of Bombay (*National Institute of Sciences of India*); 10. Shri V. V. Divatia, Adviser, Department of Statistics, Reserve Bank of India (*Reserve Bank of India*); 11. Professor S. K. Bose, Director, Indian Institute of Technology, Kharagpur (*Inter-University Board of India & Ceylon*); and 12. Dr. Bhabatosh Dutta, M.A., Ph.D.; 13. Dr. B. R. Seshachar, D.Sc., F.N.I., Dean, Faculty of Sciences, University of Delhi; 14. Shri Jagjit Singh, M.A., F.R.S.S., Chairman and Managing Director, India Drugs & Pharmaceuticals Ltd.; 15. Dr. B. P. Adhikari, M.Sc. (Cal.), D.Sc. Sc. (Paris); 16. Shri Partha Ray, I.A.S.; 17. Shri S. Basu, M.Sc., F.N.I.; 18. Shri Pitambar Pant, M.Sc., Member, Planning Commission, Government of India (*Council of the Indian Statistical Institute*).

LIST OF MEMBERS OF DIFFERENT COMMITTEES: 1969-70

Finance Committee of the Council

1. Chairman of the Instituto (*ex-officio*) or his nominee; 2. Secretary of the Instituto (*ex-officio*) or his nominee; 3. Director of the Research and Training School (*ex-officio*) or his nominee; 4. Dr. B. P. Adhikari; 5. Dr. B. P. Banerjee; 6. Dr. Bhabatosh Dutta; 7. Dr. Amartya Sen; 8. Dr. B. S. Minhas; 9. Shri S. C. Roy; 10. Shri P. Ray (*Member-Secretary*) or in his absence, a person nominated by the Secretary or the Chairman; 11 & 12. Two representatives nominated by the Government of India—Cabinet Secretary (Shri B. Sivaraman) or his representative and Joint Secretary, Ministry of Finance (Shri B. N. Maheshwari).

Finance Committee of the Governing Body

1. Chairman of the Instituto (*ex-officio*) or a Vice-Chairman, authorised by him; 2. Secretary of the Instituto (*ex-officio*) or in his absence, a Joint Secretary; 3. Director, RTS (*ex-officio*) or a Joint Director, if any in charge of RTS; 4. & 5. Two representatives of the Government of India (Dr. Uttam Chand and Shri B. N. Maheshwari); 6. Representative of the Reserve Bank of India on the Governing Body (Shri V. V. Divatia); 7. & 8. Two representatives to be elected by Governing Body from amongst themselves—Dr. C. R. Seshachar and Dr. B. P. Adhikari.

* Branch Chairman's name shown under additional Vice-Chairmen.

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Annexure 2 : List of Scientific Papers published

A. MATHEMATICS

- P1 BHIMASANKARAM, P. (with Mitra, Sujit Kumar) (1969) : On a theorem of Rao on g -inverses of matrices, *Sankhyā*, A, 31, 3, 365-368.
- P2 IYER, MUTHULAKSHMI R. (1969) : Some results on fibonacci quaternions. *Fibonacci Quarterly Journal*, 7, 201-210.
- P3 ——— (1969) : A note on fibonacci quaternions, *Fibonacci Quarterly Journal*, 7, 225-229.
- (P1) MITRA, SUJIT KUMAR (with Bhimasankaram, P.) (1969) : On a theorem of Rao on g -inverses of matrices, *Sankhyā*, A, 31, 3, 365-368.
- P4 RAO, A. RAMACHANDRA (with Rao, S. B.) (1969) : A characterization of the line graph of a BIBD with $\lambda = 1$, *Sankhyā*, A, 31, 3, 369-370.
- P5 RAO, C. R. (1969) : *Computers and Future of Human Society*, jointly with Andhra University and Statistical Publishing Society, Calcutta.
- P6 ——— (1969) : Cyclical generation of linear subspaces in finite geometries. *Proc. Symp. Combinat. Maths.*, Chapel Hill, 515-535.
- (P4) RAO, S. B. (with Rao, A. Ramachandra) (1969) : A characterization of the line graph of a BIBD with $\lambda = 1$, *Sankhyā*, A, 31, 3, 369-370.

B. STATISTICS

- P7 BASU, D. (1969) : Role of sufficiency and likelihood principles in sample survey theory, *Sankhyā*, A, 31, 4, 441-454.
- P8 ——— (1969) : On sufficiency and invariance. *Essays in Probability and Statistics*, S. N. Roy Memorial Volume (R. C. Bose et al. eds.), 81-84, published jointly by North Carolina University, Chapel Hill and Statistical Publishing Society, Calcutta.
- P9 DHARMADHARANI, S. W. (1969) : A note on some inadmissible estimators, *Sankhyā*, A, 31, 3, 361-364.
- P10 ——— (1969) : Exchangeable processes with states of finite rank, *Ann. Math. Stat.*, 40.
- P11 DHARMADHARANI, S. W. (with Jogdeo, K.) (1969) : Bounds on the moments of sums of certain random variables, *Ann. Math. Stat.*, 40, 1506-1509.
- P12 DUTTA MAZUMDAR, DEBKUMAR (1969) : Variables in Engel curve analysis, (*Proc. Indian Science Congress Association*, IV, 7).

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- P13 DUTTA MAKUMDAR, DEBKUMAR (1969) : Estimation of Engel's elasticity from specific concentration curves and regression method (*Symposium on statistical methods in economics—Proc. Indian Science Congress, IV, 67-68*).
- P14 JACOB, PAUL (1969) : On a technique of forming sampling units *Sankhyā*, A, 31, 1 & 2, 113-116.
- P15 KRATSI, C. G. (with Mitra, Sujit Kumar) (1969) : Some identities and approximations concerning positive and negative multinomial distributions, *Multivariate Analysis-II* (Krishnaiah, P. R., ed.), Academic Press, New York, 241-260.
- P16 MAHALANOBIS, P. C. (1969) : Extensions of fractile graphical analysis to higher dimensional data, *Essays in Probability and Statistics*, S. N. Roy Memorial Volume (R. C. Bose et al., eds.), 397-406, published jointly by North Carolina University, Chapel Hill, and Statistical Publishing Society, Calcutta.
- P17 MITRA, SUJIT KUMAR (1969) : On gammaization of the variance ratio, *Essays in Probability and Statistics*, S. N. Roy Memorial Volume (R. C. Bose et al. eds.), 479-488, published jointly by North Carolina University, Chapel Hill, and Statistical Publishing Society, Calcutta.
- P18 ——— (with Rao, C. R.) (1969) : Conditions for optimality and validity of simple least squares theory, *Ann. Math. Stat.*, 40, 1617-1624.
- (P15) ——— (with Khatri, C. G.) (1969) : Some identities and approximations concerning positive and negative multinomial distributions, *Multivariate Analysis-II* (Krishnaiah, P. R. Ed.), Academic Press, New York, 241-260.
- P19 ——— (1969) : Goodness of fit of a compound multinomial distribution, *Proc. 37th Session, International Statistical Institute*, London, 107-172.
- P20 MITRA, SUJIT K. (with Mahajan, B. M.) (1970) : Gammaization of the variance ratio, Chap. 24, *Essays in Probability and Statistics*, S. N. Roy Memorial Volume (R. C. Bose et al. eds.), published jointly by University of North Carolina Press, Chapel Hill and Statistical Publishing Society, Calcutta, 479-488.
- P21 MURTHY, M. N. (1969) : Population census as the source of sampling frame in India, *Sankhyā*, A, 31, 1-12.
- P22 ——— (with Singh, M. P.) (1969) : On the concepts of best and admissible estimators in sampling theory, *Sankhyā*, A, 31, 3, 343-354.
- P23 RAO, C. R. (1969) : Some characterizations of the multivariate normal distribution, *Multivariate Analysis*, 2, 322-328, Academic Press Inc., New York.
- P24 ——— (1969) : A decomposition theorem for vector variables with a linear structure, *Ann. Math. Stat.*, 40, 1845-1849.
- P25 ——— (1969) : Inference on discriminant function coefficients, Chap. 30, *Essays in Probability and Statistics*, S. N. Roy Memorial Volume (R. C. Bose et al. eds.), published jointly by University of North Carolina Press, Chapel Hill and Statistical Publishing Society, Calcutta, 587-602.
- P26 ——— (1969) : Recent advances in discriminatory analysis, *Jour. Ind. Stat. Agri. Stat.*, XXI, 3-15.
- P27 ——— (1969) : A multidisciplinary approach for teaching statistics and probability, *Sankhyā*, B, 31, 3 & 4, 321-340.

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- (P18) RAO, C. R. (with Mitra, Sujit Kumar) (1969): Conditions for optimality and validity of simple least squares theory, *Ann. Math. Stat.*, 40, 1817-1824.
- P28 SANKARANARAYANAN, K. (1969): An IPPS sampling scheme using Lahiri's method of selection, *Jour. Ind. Soc. Agri. Stat.*, XXI, 58-60.
- P29 SETHURAMAN, J. (1970): Probabilities of deviations, *Essays in Probability and Statistics*, S. N. Roy Memorial Volume (R. C. Bose et al. eds.), 655-672, published jointly by North Carolina University, Chapel Hill, and Statistical Publishing Society, Calcutta.
- (P22) SINHA, M. P. (with Murthy, M. N.) (1969): On the concepts of best and admissible estimators in sampling theory, *Sankhyā A*, 31, 3, 343-354.

C. THEORETICAL PHYSICS AND ELECTRONICS

- P30 BANDYOPADHYAY, P. (with Raychaudhuri, P. and Saha, S. K.) (1969): Weak interaction of photons and the proton-neutrino elastic scattering, *Lettere al Nuovo Cimento* (Italy), 2, 696-698.
- P31 ——— (with Raychaudhuri, P.) (1969): Weak interaction of photons and the neutrino-electron scattering. *Il Nuovo Cimento* (Italy), 64A, 658-668.
- P32 ——— (with Raychaudhuri, P. and Saha, S. K.) (1970): Propagation of electromagnetic waves in a degenerate neutrino sea. *Physical Review* (USA), 377-378.
- P33 ——— (with Raychaudhuri, P.) (1970): Neutrino energy density of the universe. *Il Nuovo Cimento* (Italy), 66A, 238-242.
- P34 ——— (with Raychaudhuri, P.) (1970): Supermassive stars and neutrino emission. *Lettere al Nuovo Cimento* (Italy), 3, 269-271.
- P35 DAS, J. (with Dutta Majumdar, D. and Dutta, A. K.) (1969): Design and construction of an experimental magnetic memory core tester, *Jour. Inst. Telecom. Engrs.*, 15, 184-198.
- P36 ——— (with Dutta Majumdar, D.) (1970): Reliability improvement in digital systems through redundancy, *Jour. Inst. Telecom. Engrs.*, 16, 5, 330-341.
- P37 DUTTA, A. K. (with Dutta Majumdar, D.) (1969): An analyser-coder for machine recognition of human speech, *Jour. Inst. Telecom. Engrs.*, 15, 233-243.
- (P36) DUTTA MAJUMDAR, D. (with Das, J.) (1970): Reliability improvement in digital systems through redundancy, *Jour. Inst. Telecom. Engrs.*, 16, 5, 330-341.
- (P37) ——— (with Dutta, A. K.) (1969): An analyser-coder for machine recognition of human speech, *Jour. Inst. Telecom. Engrs.*, 15, 233-243.
- P38 RAMACHANDRAN, G. (1969): Recoil-deuteron vector polarization in elastic electron scattering, *Physical Review Letters*, 22, 794-796.
- P39 ——— (1969): Summary of the work in progress in the theoretical nuclear physics group at Indian Statistical Institute, *Proc. Nuclear Phys. Symp.*, Saha Institute of Nuclear Physics, 45-40, July.
- P40 ——— (1969): Deuteron polarization in elastic nucleon-deuteron scattering, *Lettere al Nuovo Cimento*, 1 (Italy), 39-41.

INDIAN STATISTICAL INSTITUTE

- (P30) RAYCHAUDHURI, P. (with Bandyopadhyay, P. and Saha, S. K.) (1969): Weak interaction of photons and the proton-neutrino elastic scattering, *Lettere al Nuovo Cimento (Italy)*, 2, 696-698.
- (P31) ——— (with Bandyopadhyay, P.) (1969): Weak interaction of photons and the neutrino-electron scattering, *Il Nuovo Cimento (Italy)*, 64A, 658-668.
- (P32) ——— (with Bandyopadhyay, P. and Saha, S. K.) (1970): Propagation of electro-magnetic waves in a degenerate neutrino sea, *Physical Review (USA)*, 377-378.
- (P33) ——— (with Bandyopadhyay, P.) (1970): Neutrino energy density of the universe, *Il Nuovo Cimento (Italy)*, 68A, 238-42.
- (P34) ——— (with Bandyopadhyay, P.) (1970): Supermassive stars and neutrino emission, *Lettere al Nuovo Cimento (Italy)*, 3, 269-271.
- P41 ——— (1969): Weak interaction of photons and the photo-coulomb neutrinos, *Prog. Theo. Phys. (Japan)*, 42, 116-120.
- P42 ——— (1969): Weak interaction of photons and the process $\gamma + \gamma - \gamma + V + J$, *Il Nuovo Cimento (Italy)*, 64A, 528-532.
- P43 ——— (1969): Weak interaction of photons and photocoulomb neutrinos, *Prog. Theo. Phys., (Japan)*, 42, 116-120.
- P44 REJ, A. K. (1969): ω and B exchanger n^0 photoproduction on nuclei, *Lettere al Nuovo Cimento, (Italy)*, II, 2, 67-61.

D. ANTHROPOMETRY AND HUMAN GENETICS

- P45 BASU, ANITABHA (1969): The Pahira: A population genetic study, *Amer. Jour. Phys. Anthro.*, 31 (3), 399-416.
- P46 BHATTACHARYYA, A. K. (1969): A revision of Risley's anthropometric data relating to the Darjeeling hill tribes, *Sankhyā, A*, 31, 1 & 2, 117-126.
- P47 CHAKRAVARTY, R. (1969): Estimation of linkage in presence of incomplete penetrance for both the factors, *Bull. Cal. Stat. Assn.*, 18, 181-185.
- P48 CHAUDHURI, S. (with Mukherjee, B., Ghosh, J. and Roychowdhury, A. K.) (1969): Study of blood groups and ABH secretors and haemoglobin variants in three upper castes of West Bengal, India, *Amer. Jour. Phys. Anthro.*, 30, 129-132.
- P49 PAKHASI, K. (with Sasmal, B.) (1969): Village size and activity constellations in West Bengal, B. Banerjee's (Ed.), *Essays in Agricultural Geography*, Chap. 6, 60-90.
- P50 ——— and Mukherjee, B. N. (1969): Marriage and fertility among the Santals, *Bull. Cal. Res. Soc. Cal.*, 8, 28-31.
- P51 RAO, D. C. (1970): Tongue pigmentation in man, *Human Heredity*, 20, 8-12.
- P52 ——— (1970): Tongue pigmentation in man—a new genetic character, *Current Science*, 39, 161-162.

THIRTY-EIGHTH ANNUAL REPORT: 1966-70

- P63 VERMA, B. K. (1969) : Anthropometry applied to architecture and town planning, *Jour. Soc. Res.*, XII, 78-92.

E. COMPUTER SCIENCE

- P64 ADHIKARI, A. K. (1970) : Some results on the distribution of the most significant digit, *Sankhyā*, B, 31, 413-420.
- P65 SINDAR, KRIPASINDHU (1969) : A comparative study of algorithms for multiple-precision radix-conversions, *Sankhyā*, B, 30, 316-344.

F. CROP SCIENCE

- P66 DAVIS, T. A. (1969) : Difficulties in the genetic improvement of the coconut : A promising alternative method. *Ind. Jour. Gen. & Plant Breeding*, 28A, 154-164.
- P67 ——— (1969) : Aestivation of coconut flowers. *Ceylon Coconut Quarterly*, 20, 123-130.
- P68 ——— (1969) : Morphology and physiology of coconut pneumatophores. *F.A.O. Tech. Comm. on Coconut*, Jogjakarta : paper 24.
- P69 ——— (1969) : Bilateral symmetry in the leaves of *Cocos nucifera*, *F.A.O. Tech. Comm. on Coconut*, Jogjakarta : paper 25.
- P60 ——— (1969) : Vegetative apomixis in coconut and other palms. *F.A.O. Tech. Com. on Coconut*, Jagjakarta : paper 26.
- P61 ——— (1970) : Fibonacci numbers for palm foliar spirals. *Acta. Botanica Neerlandica*, 19, 236-243.
- P62 ——— (1970) : Epiphytes that strangulate palms. *Jour. Palm Soc.*, 14, 10-25.
- P63 ——— (1969) : Bilateral symmetry in the structure of flowering plants. *XI Int. Botanical Cong. Seattle, Abst.*, 42.
- P64 ——— (with S. K. Basu) (1969) : Two cases of bulbil-bearing *Borassus flabellifer* Linn. *Jour. Indian Botanical Society*, 48, 198-202.

G. DEMOGRAPHY

- P65 MAJUMDAR, MURARI (with Dasgupta, Ajit) (1969) : Marriage trends and their demographic implications, *Sankhyā*, B, 31, 3 & 4, 491-500.
- P66 ——— (1969) : Some findings from the family planning data of the National Sample Survey, *Proc. International Population Union Conference*, Sydney, August 1969, 390-405.
- P67 PAKRASI, K. (1969) : Some momentous thoughts on population problems. *Bull. Socio-Econ. Res. Inst.*, Calcutta, 3, 16-22.
- P68 RAMAKRISHNA, G. (with RAMAN, M. V.) : A method to group the census industrial categories of workers, *Jour. Inst. Econ. Res.*, IV, 80-84.
- (P68) RAMAN, M. V. (with Ramakrishna, G.) : A method to group the census industrial categories of workers, *Jour. Inst. Econ. Res.*, IV, 80-84.

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H. DOCUMENTATION AND LIBRARY SCIENCE

- P69 BHATTACHARYA, G. (1969) : Cataloguing research in India. *Lib. Sc.*, 6, Paper R.
- P70 ——— (1969) : Complexity of demand on libraries and "SPEEDS", *Seminar on Education for Librarianship and Librarianship for Education*, British Council, Madras, November 49-62.
- P71 ——— (1969) : Education in documentation, *Seminar on Information*, DESIDOC, New Delhi, Paper TS(2)-13.
- P72 ——— (with Neelameghan, A.) (1969) : Postulate-based subject heading for dictionary catalogue system, *Seventh DRTC Annual Seminar*, Paper CA.
- P73 GOPDNATH, M. A. (1969) : Subject interests of a specialist, *Seminar on Documentation*, DESIDOC, New Delhi, December, Paper TS(4)-6.
- P74 ——— (1969) : Changing role of the library and education of librarians; Need for inclusion of some new subjects, *Seminar on Education for Librarianship and Librarianship for Education*, British Council, Madras, November, 85-92.
- P75 ——— (with Jayarajan, P.) (1969) : Analysis of subjects; A case study, *Seventh DRTC Annual Seminar*, Paper EA.
- P76 JAYARAJAN, P. (1969) : Procurement of patents, *Seminar on Information*, DESIDOC, New Delhi, December.
- P77 ——— (1969) : Change of basic subjects in DC Edition 17, *Lib. Sc.*, 7, Paper B.
- P78 NEELAMEGHAN, A. (1969) : Education, research, and library science, *Seminar on Education and Libraries*, American Cultural Centre, Hyderabad, April.
- P79 ——— (1969) : Design of scheme for classification, *Herald of Lib. Sc.* V8, N2; Paper P.
- P80 ——— (1969) : Choice of methodology for design of a scheme for classification, *Herald of Lib. Sc.* V8, N2; Paper Q.
- P81 ——— (1969) : Selection of isolate ideas, *Herald of Lib. Sc.* V8, N2; Paper R.
- P82 ——— (1969) : Preparation of list of isolates and qualifiers, *Herald of Lib. Sc.* V8, N2; Paper ZF.
- P83 ——— (1969) : Grouping of isolates, *Herald of Lib. Sc.* V8, N2; Paper ZG.
- P84 ——— (1969) : Article on "Documentation Research and Training Centre," *Liber Amicorum*, Amsterdam.
- P85 ——— (1969) : Information service of productivity and profit in industry and business, Open House Discussion on "Sub-Contracting in Industries," Small Industries Service Institute and Institute of Management, Bangalore, November.
- P86 ——— (1969) : Technical information service for small industries, Open House Discussion on "Sub-Contracting in Industries," Small Industries Service Institute and Institute of Management, Bangalore, November.
- P87 ——— (1969) : Analysis of readers' question: A case study, *Lib. Sc.* 6; Paper N.

THIRTY-EIGHTH ANNUAL REPORT : 1969-70

- P88 NEELAMBOLAN, A. (1969) : Integrated approach of India to the design and development of document retrieval system. Mikhailov and others, *Ed. International Forum on Information*, V2; 114-48.
- P89 ——— (1969) : DRTC and education for medical library service, *International Congress on Medical Librarianship*, Amsterdam.
- P90 ——— (1969) : Energy isolate and property isolate: Problems in differentiation, *DRTC Annual Seminar* (7); Paper BC.
- P91 NEELAMBOLAN, A. (with Bhattacharyya, G.) (1969) : Mechanisation of document finding: Readers' psychology, universe of subjects, and classification, *Seminar on Information*, DESIDOC, New Delhi, Paper TS(4)-5.
- P92 ——— (with Gopinath, M. A.) (1969) : Subjects presenting relation between two subjects, with particular reference to phase relation: case study, *DRTC Annual Seminar* (7) Paper BB.
- P93 ——— (1969) : A problem in facet sequence in CC, *DRTC Annual Seminar* (7) Paper BD.
- P94 NEELAMBOLAN, A. (with Ranganathan, T.) (1970) : Air vehicle wing production: depth classification version of CC, *Lib. Sc.*, 7: Paper C.
- P95 ——— (with Venkataraman, S.) (1969) : Formulation of kernel terms for a subject and isolate terms for a classification schedule for use in the synthesis of class number by computer, *Lib. Sc.* 6; Paper D.
- P96 ——— (1969) : Preparation of schedule-on-type for synthesis of class number by computer, *Lib. Sc.* 6; Paper J.
- P97 ——— (1969) : Formation of isolate number by computer using the devices of colon classification, *Lib. Sc.*, 6; Paper K.
- P98 ——— (with Buche, V. V. and Gupta, B. S. S.) : Universe of subjects and duplication of discovery: A case study using statistical methods, *DRTC Annual Seminar* (7) Paper JC.
- P99 RANGANATHAN, S. R. (1969) : Library-science-based library service, *Lib. Sc.*, 6; Paper G.
- P100 ——— (1969) : Colon classification, Ed. 7: (1971): A preview, *Lib. Sc.*, 6; Paper M.
- P101 RANGANATHAN, S. R. (1969) : Recall value and entry word in heading, *Lib. Sc.*, 6; Paper Q.
- P102 ——— (1970) : Compound isolate and compound basic subject: Evolution of the concept through forty years, *Lib. Sc.*, 7; Paper A.
- P103 ——— (1970) : Specialist library vs generalised library: Reference service, *Lib. Sc.*, 7; Paper D.
- P104 ——— (1969) : Subject heading and document finding system, *DRTC Annual Seminar* (7), Paper CB.

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- P105 RANGANATHAN, S. R. (1969): Librametry and its scope, *DRTC Annual Seminar* (7), Paper DA.
- P106 ——— (1969): Triangle in translation service, *DRTC Annual Seminar* (7), Paper KA.
- P107 ——— (1969): Impact of growth in the universe of subjects on classification, (FID/CR.).
- P108 ——— (1969): Documentation under a triangle of forces, *Seminar on Information*, DESIDOC, New Delhi, December, Paper TS(2)-12.
- P109 ——— (1969): Unified view of education and library work, *Herald of Lib. Sc.*, V8, N3; Paper ZE.
- P110 ——— (1969): Re-thinking library education. *Education for Librarianship and Librarianship for Education Seminar*, British Council, Madras, 63-72.
- P111 ——— (1970): Social pressure, human resources and library, *Smaranika*, Amarvati Nagar Wachsanalaya Centenary Celebration, 1-4.
- P112 ——— (1969): Organisation of local, international and national documentation, Mikhailov and others, *Ed. International Forum on Information*, vi; 273-83.
- P113 ——— (1969): Choice of document retrieval system, Mikhailov and others, *Ed. International Forum on Information*, vi; 685-92.
- P114 RANGANATHAN, S. R. (1970): The System, *Seminar*, February, N 126; 32-34.
- P115 ——— (with Rahman, Abdul) (1969): House documentalists' work: Its necessity and value, *FID/II meeting*, Rome, October.
- P116 ——— (with Bhattacharyya, G.) (1969): Conflict of authorship: Person vs person, *Lib. Sc.*, 6; Paper B.
- P117 ——— (with Bhattacharyya, G.) (1969): Conflict of authorship: Person vs Corporate Body, *Lib. Sc.*, 6; Paper H.
- P118 ——— (with Neelameghan, A.) (1969): Basis for study of compatibility and compatibility of the colon classification with the universal decimal classification, *FID/CR meeting*, Rome, October.
- P119 ——— (1969): Guiding principles and standards for the presentation of the test of a document. *Seminar on Information*, DESIDOC, New Delhi, Paper TS (5)-1.
- P120 SARA, J. (1969): Special Libraries and Information Services in India and in the USA, pp. 216 (published by Scarecrow Press, Inc., USA).
- P121 ——— (1969): Social science documentation, *Seminar*, 126, February, 28-31.
- P122 SUBBARAO, C. V. (1969): Theorem in library science that is begging proof, *IASLIC Special Publication*, 12, 1-2, October, 69-81.
- I. EMBRYOLOGY
- P123 BRAHMACHARY, R. L. (with Tapaswi, P. K.) (1969): Reversible inhibition of embryonic mitosis by phytohemagglutinin from phaseolus vulgaris, *Experientia*, 23, 586-587.

THIRTY-EIGHTH ANNUAL REPORT: 1969-70

- P124 BRAHMACHARY, R. L. (1969): Electrophoretic separation of RNA from snail embryos, *Current Sciences*, 38, 406-407.
- (P123) TAPASWI, P. K. (with Brahmachary, R. L.) (1969): Reversible inhibition of embryonic mitosis by phytohaemagglutinin from *Phaseolus vulgaris*, *Experientia*, 23, 586-587.

J. FAMILY PLANNING

- P125 SENGUPTA, A. (1969): Oral contraception: An application in family planning programme in Calcutta City, *Jour. Ind. Med. Assocn.*

K. GEOLOGY

- P126 BAKSHI, S.K. (1969): Fossil plants from Raghavapuram Mudstone, West Godavari District, A.P., India. *The Palaeobotanist*, 16, 206-215.
- P127 CHATTERJEE, S. (1969): Rhycolosaurs in time and space, *Proc. Geol. Soc. Lond.*, 203-209.
- P128 ——— (with Jain, S. L., Kutty, T. S. and Roy Chowdhury, T. K.) (1969): On the discovery of Triassic Cynodont reptiles from India, *Sci. and Cult.* 35(8), 111-113.
- P129 CHAUDHURI, A. (1969): Note on the occurrence of Stromatolite in the Pakhal Group of the Pranhita-Godavari Valley, *Sci. & Cult.*, 35(11), 640-642.
- P130 ——— (1970): Precambrian Stromatolites in the Pranhita-Godavari Valley (South India), *Palaeogeography, Palaeoclimatology, Palaeoecology*, 1, 309-340.
- (P128) JAIN, S. L. (with Chatterjee, S., Kutty, T. S. and Roy Chowdhury, T. K.) (1969): On the discovery of Triassic Cynodont reptiles from India, *Sci. and Cult.* 35(8), 111-113.
- P131 KUTTY, T. S. (1969): Some contributions to the stratigraphy of the Upper Gondwana formation of the Pranhita-Godavari Valley, *Jour. Geol. Soc. Ind.*, 10(1), 33-43.
- (P128) ——— (with Jain, S. L., Chatterjee, S. and Roy Chowdhury, T. K.) (1969): On the discovery of Triassic Cynodont reptiles from India, *Sci. and Cult.* 35(8), 111-113.
- (P128) ROY CHOWDHURY, T. K. (with Chatterjee, S., Jain, S. L., and Kutty, T. S.) (1969): On the discovery of Triassic Cynodont reptiles from India, *Sci. and Cult.* 35(8), 111-113.
- P132 SENGUPTA, SUPRIYA (1970): Gondwana sedimentation around Bheemaran (Bhimaram), Pranhita-Godavari Valley, *Jour. Sedimentary Petrology*, 40(1), 140-170.
- P133 ——— (with Kuenen, Ph. H.) (1970): Experimental marine suspension currents, competency and capacity, *Geol. en Mijnbouw*, 40(2), 89-118.
- P134 ——— (1969): Geology of southwestern Bengal in West Bengal (Firma K. P. Mukhopadhyay, publishers), 1-6.

INDIAN STATISTICAL INSTITUTE

L. PHONETICS

- P135 DAS, RHEA S. (with Kostic, D.) (1969) : An analytical description of inter-relationships among Serbo-Croatian vowels, *Phonetica* 20 : 193-204.
- (P135) KOSTIC, D. (with Das, Rhea S.) (1969) : An analytical description of inter-relationships among Serbo-Croatian vowels, *Phonetica* 20 : 193-204.
- P136 ——— (with Mitter, Aloksnanda, Ilic, C., Keramitciovski, S., Nikilic, M. and Kalic, D. D.) (1969) : Phonetic audiometry. Report for the Education Directorate, Government of Tripura.

M. PLANNING, ECONOMIC STATISTICS AND ECONOMETRICS

- P137 BARDHAN, P. K. (1969) : Equilibrium growth and economic obsolescence of machines, *Quart. Jour. Econ.*
- P138 ——— (with Bardhan, Kalpana) (1969) : The problem of marketed surplus of cereals, *Economic & Political Weekly*, Review of Agriculture, June 28.
- P139 ——— (with Srinivasan, T. N.) (1969) : Resource prospects for the rural sector : A comment, *Economic & Political Weekly*, Review of Agriculture.
- P140 BHATTACHARYA, N. (with Chatterjee, G. S.) (1969) : Rural-urban differentials in consumer prices in India, *Economic & Political Weekly*, IV, 850-853.
- P141 BHATTACHARYA, DURGOABASAD (1969) : Socio-economic trends in India, *Trans. Ind. Inst. Adv. Stud.*, 7, Trends of socio-economic change in India, 1871-1961, 16-31.
- P142 ——— (with Bhattacharya, Anima and Bhattacharya, Bibhavati) : An introduction to a select bibliography, *Trans. Ind. Inst. Adv. Stud.*, 7, Trends of socio-economic change in India, 33-41.
- P143 ——— : Concentration of economic power in manufacturing sector, *Trans. Ind. Inst. Adv. Stud.*, 7, Trends of socio-economic change in India, 665-676.
- P144 BOSE, D. K. (1969) : Urbanisation, industrialisation and planning for regional development, *Economic & Political Weekly*, IV, Special Number, 1169-1172.
- (P140) CHATTERJEE, G. S. (with Bhattacharya, N.) (1969) : Rural-urban differentials in consumer prices in India, *Economic & Political Weekly*, IV, 850-853.
- P145 DEY, B. (1969) : On some aspects of knowledge industry, *Economic Affairs*, XIV, 161-171.
- P146 ——— (1969) : Scientific and technical personnel : Inter-state flow and distribution, *Economic & Political Weekly*, IV, 1373-1381.
- P147 ——— (1969) : Balanced economic growth of the eastern region, *Indian Economic Journal*, Conference Volume, December.
- P148 DUTTA MAJUMDAR, DEBKUMAR (1969) : Productivity of labour and capital, 1951-1961, *Trans. Ind. Inst. Adv. Stud.*, 7, 719-733.
- P149 ——— (1969) : Fourth Plan : Objectives and Policy Frame, *Commerce Pamphlet* 20-21, published on behalf of *Commerce* by Vora and Co., Bombay.

THIRTY-EIGHTH ANNUAL REPORT : 1968-70

- P150 MUKHERJEE, M. (1969) : Resources and needs in the context of stable planned growth of India, *Proc. 56th Sess. Indian Science Congress*, IV, 11-18.
- P151 ——— (1969) : Long-term changes in the national income of India since 1871, trends in socio-economic change in India, 1871-1961. *Trans. Ind. Inst. Adv. Stud.*, August, 742-762.
- P152 ——— (1970) : Statistical methods in economics, *Economic Affairs*, Annual Number, XV, 1-2, 67-68.
- P153 ——— (1969) : Size and area distributions of the level of living in India, *Sankhyā*, B, 31, 3-4, 459-478.
- P154 ——— (1969) : *National Income of India : Trends and Structure*, Statistical Publishing Society, XXIX+521.
- P155 PHILLIP, PETER (1969) : Import policy in the Fourth Plan, two articles, *Hindustan Times*.
- P156 ROY, BINA (1969) : Depreciation—a problem of national accounting, *Economic & Political Weekly*, IV, 1305-1309.
- P157 ——— (1969) : National income estimates—differences between revised and conventional series, *Economic & Political Weekly*, IV, 965-968.
- P158 SANYAL, S. K. (with Sarma, V. R.) (1969) : Landholdings surveys and crop estimation—a proposal for integration, *Economic & Political Weekly*, IV, 27, July 5.
- P159 ——— (1969) : Size of holding and some factors related to production, *Economic & Political Weekly*, IV, 33, August 16.
- P160 ——— (1969) : The missing link—scientific farming and inflated estimate of tractor demand, *The Statesman*, July 31 and July 22.
- P161 SENGUPTA, SURANJAN (with Ghosh, M., Dutta, A. K. and Dasgupta, A.) (1969) : Estimates of 19th century population of India, *Bull. Socio-Econ. Res. Inst.*, Calcutta, 3, 1, 23-32.
- P162 SRINIVASAN, T. N. (with Lovhari, David) (1969) : Optimum savings under uncertainty, *Rev. Econ. Stud.*, April.
- (P139) ——— (with Bardhan, P. K.) (1969) : Resource prospects for the rural sector : A comment, *Economic & Political Weekly*, Review of Agriculture, June 28.

N. PSYCHOMETRY

- P163 BASUMALLIK, T. (with Banerjee, D. and Banerjee, S.) (1970) : Personality characteristics of a group of unemployed women, *Ind. Jour. Occupational Health*, 13, 25-27.
- P164 ——— (with Bhattacharyya, K. P.) (1970) : Relative contributions of language and reasoning to test performance, *Jour. Educ. Psychol.*, 27, 345-352.
- P165 BHATTACHARYYA, K. P. (1970) : A comparative study of scoring errors in counting number of omissions and right answers and one and two-sided answer sheets, *Psychol. Stud.*, 15, 23-27.

INDIAN STATISTICAL INSTITUTE

- (P164) BHATTACHARYA, K. P. (with Basumallik, T.) (1970) : Relative contributions of language and reasoning to test performance, *Jour. Educn. Psychol.*, 27, 345-352.
- P166 ——— (with Chatterji, S. and Mukherjee, M.) (1969) : Discriminating ability of objective tests with reference to different subjects taught in a management course, *Productivity*, 10, 3, 4th Quarter, 462-466.
- P167 BOSE, UTPALA (with Chatterjee, S., Mukherjee, M. and Sinha, S.) (1970) : An investigation into the interest patterns of the students in science, humanities and commerce streams at the Higher Secondary level, *Jour. Psychol. Res.*, 14, 1, 14-21.
- (P166) CHATTERJI, S. (with Bhattacharyya, K. P. and Mukherjee, M.) (1969) : Discriminating ability of objective tests with reference to different subjects taught in management course, *Productivity*, 10, 3, 4th Quarter, 462-466.
- (P167) ——— (with Bose, Utpala, Mukherjee, M. and Sinha, S.) (1970) : An investigation into the interest patterns of the students in science, humanities, and commerce streams at the Higher Secondary level, *Jour. Psychol. Res.*, 14, 1, 14-21.
- P168 ——— (with Mukherjee, M.) (1969) : Proficiency in English and its relation with academic success at the school level, *Psychol. Studies.*, 14, 75-83.
- P169 ——— (with Mukherjee, M.) (1969) : Aptitudes and development of aptitude tests, *Bull. Socio-Econ. Res. Inst.*, 3, 2, Sept. 31-36.
- P170 ——— (with Mukherjee, M.) (1969) : Utilization of aptitude test scores in connection with school examination marks in improving allocation process at the end of Class VIII—A validity study, *Jour. Psychol. Res.*, Sept., 13, 3, 123-136.
- P171 ——— (with Mukherjee, M.) (1970) : A comparative study of several objective methods for interpreting individual's set of scores in vocational guidance, *Jour. Educ. Psychol.*, 27, 4, 353-364.
- P172 ——— (with Mukherjee, M.) (1970) : An application of the technique of analysis of variance in an experiment in the field of educational measurements, *Ind. Jour. App. Psychol.*, 7, 1, 11-15.
- P173 ——— (with Mukherjee, M.) (1970) : Validity study of a selection test battery used for selecting students at the Indian Institute of Management, Calcutta, *Productivity*, 10, 4, 672-683.
- P174 DAS, RHEA S. (1969) : Semantic differential measurement of the Bengali meaning system, *Jour. Psychol. Res.*, 13, 131-148.
- (P166) MUKHERJEE, M. (with Chatterji, S. and Bhattacharyya, K. P.) (1969) : Discriminating ability of objective tests with reference to different subjects taught in management course, *Productivity*, 10, 3, 4th Quarter, 462-466.
- (P167) ——— (with Bose Utpala and Chatterji, S.) (1970) : An investigation into the interest patterns of the students in science, humanities, and commerce streams at the Higher Secondary level, *Jour. Psychol. Res.*, 14, 1, 14-21.

THIRTY-EIGHTH ANNUAL REPORT : 1969-70

- (P168) MUKHERJEE, M. (with Chatterji, S.) (1969) : Proficiency in English and its relation with academic success at the school level, *Psychol. Studies*, 14, 75-83.
- (P169) ——— (with Chatterji, S.) (1969) : Aptitudes and development of aptitude tests. *Bull. Socio-Econ. Res. Inst.*, 3, Sept., 2, 31-36.
- (P170) ——— (with Chatterji, S.) (1969) : Utilization of aptitude test scores in connection with school examination marks in improving allocation process at the end of Class VIII—A validity study, *Jour. Psychol. Res.* Sept. 13, 3, 123-136.
- (P171) ——— (with Chatterji, S.) (1970) : A comparative study of several objective methods for interpreting individual's set of scores in vocational guidance, *Jour. Education. Psychol.*, 27, 4, 353-364.
- (P172) ——— (with Chatterji, S.) (1970) : An application of the technique of analysis of variance in an experiment in the field of educational measurements, *Ind. Jour. App. Psychol.*, 7, 1, 11-15.
- (P173) ——— (with Chatterji, S.) (1970) : Validity study of a selection test battery used for selecting students at the Indian Institute of Management, Calcutta, *Productivity*, 10, 4, 672-683.

O. SOCIOLOGY

- P175 MUKHERJEE, R. (1969) : Empirical social research on contemporary India, *Social Science Information*, ISSEC, Paris, 8(6), 69-83.

P. STATISTICAL QUALITY CONTROL

- P176 CHAKRAVARTY, T. K. (1969) : Investment decision problems, *Inform.*, Coimbatore, CIMI 30-31, June-July, 1-7.
- P177 DESIKAN, G. V. S. (with Srinivasan, N.) (1969) : A report on the studies to improve the utilisation of a fleet of vehicles, *Motor India*, Madras, 14, 3 : 49-55, 4 : 18-23, 5 : 29-35.
- P178 ——— (1969) : Who is responsible for quality ? *Inform.*, Coimbatore, CIMI 28-29, April-May, 1-4.
- P179 HARIHARAN, G. (1970) : Decision rules in inventory, *Industrial Engineering and Management*, 5, 1, 25-33.
- P180 PILLAI, K. S. (1969) : Cost estimation and its potentialities in a medium size engineering concern, *Inform.*, CIMI 34-36, October-November, 1-9.
- (P177) SRINIVASAN, N. (with Desikan, G. V. S.) (1969) : A report on the studies to improve the utilisation of a fleet of vehicles, *Motor India*, Madras, 14, 3 : 49-55, 4 : 18-23, 5 : 29-35.

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Annexure 3 : List of National Sample Survey Reports

3.1 DRAFT REPORTS REVISED AND FINALISED FOR PRINTING

(The date of submission is given in brackets)

sr. no.	draft report no.	title of the report
(1)	(2)	(3)
1.	138	Tables with notes on Indian villages : some important results, 18th round : February 1963-January 1964 (September 1969).
2.	176	Tables with notes on some features of land holdings in rural India, 17th round : September 1961-July 1962 (April 1969).
3.	179	Tables with notes on Annual Survey of Industries, 1962 : sample sector : detailed results (May 1969).
4.	181	Tables with notes on urban labour force, 19th round : July 1964-June 1965 (April 1969).
5.	182	Land-utilisation survey and crop-cutting experiments, 21st round : July 1964-June 1965 (April 1969).
6.	183	Tables with notes on some aspects of land holdings in urban areas, 17th round : September 1961-July 1962 (May 1969).
7.	184	Tables with notes on the fertility and mortality rates in urban areas of India, 16th round : July 1960-August 1961 (November 1969).
8.	185	Tables with notes on housing condition, 18th round : February 1963-January 1964 (August 1969).
9.	185/195	Tables with notes on internal migration, (rural and urban) 18th round : February 1963-January 1964 (December 1969).
10.	187	Tables with notes on differential fertility and mortality rates in India, February 1963-July 1964 (December 1969).
11.	188	Tables with notes on the Annual Survey of Industries, ASI-1963, sample sector, detailed results (July 1969).
12.	189	Tables with notes on urban labour force, 20th round : July 1966-June 1966 (July 1969).
13.	192	Tables with notes on housing condition of scheduled tribe households, 18th round : June 1963-May 1964 (August 1969).
14.	193	Tables with notes on post census survey of livestock numbers-1966 : rural sector (December 1969).
15.	194	Tables with notes on villages and towns in India, some results, 19th round : July 1964-June 1965 (July 1969).
16.	196	Tables with notes on differential fertility and mortality rates in rural and urban areas of India, 19th round : July 1964-June 1965 (February 1970).
17.	198	Tables with notes on the Annual Survey of Industries, 1966 : sample sector : summary results (October 1969).

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seri. no.	draft report no.	title of the report
(1)	(2)	(3)
18.	199	Some results of the land-utilisation survey and crop-cutting experiments, 22nd round : July 1967-June 1968 (October 1969).
19.	200	Tables with notes on consumer expenditure, 17th round : September 1961-July 1962 (December 1969).
20.	201	Tables with notes on employment and unemployment in rural and urban areas in India, 17th round : July 1964-June 1965 (October 1969).
21.	202	Tables with notes on number of pucca houses, 22nd round : July 1967-June 1968 (September 1969).
22.	203	Age pattern of marriages and fertility of couples, 19th round : July 1964-June 1965 (January 1970).
23.	204	Vital rates in India, 19th round : July 1964-June 1965 (November 1969).
24.	206	Tables with notes on Annual Survey of Industries, 1965 : Sample sector, detailed results (November 1969).
25.	208	Tables with notes on consumer expenditure, preliminary, 19th round : July 1964-June 1965 (November 1969).
26.	209	Tables with notes on urban labour force, 21st round : July 1966-June 1967 (December 1969).
3.2. DRAFT REPORTS SUBMITTED TO THE GOVERNMENT OF INDIA		
<i>(The date of submission is given in brackets)</i>		
1.	205	Tables with notes on Annual Survey of Industries 1965 : sample sector : detailed results (April 1969).
2.	206	A note on some findings of the questionnaire schedule on population, births and deaths, 22nd round : March-April 1968 (April 1969).
3.	207	Tables with notes on household expenditure and enterprise for rural and urban areas of India, 19th round : July 1964-June 1965 (April 1969).
4.	208	Tables with notes on consumer expenditure (preliminary) 19th round : July 1964-June 1965 (April 1969).
5.	209	Tables with notes on urban labour force, 21st round : July 1966-June 1967 (April 1969).
6.	210	Preliminary estimates of rural retail prices, 22nd round : July 1967-June 1968 (April 1969).
7.	211	Pilot enquiry on building construction : some results, 22nd round : July 1967-June 1968 (October 1969).
8.	212	Tables with notes on the special survey of industries, 1964 : sample sector, detailed results (October 1969).
9.	213	Tables with notes on consumer expenditure, 19th round : July 1964-June 1965 (March 1970).

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3.3. LIST OF NSS DRAFT REPORTS PREPARED BY STATE GOVERNMENTS ON WHICH
COMMENTS WERE FORWARDED TO THE GOVERNMENT OF INDIA

(The date of submission of the Institute's comments is indicated in brackets)

sl. no.	title of the report	prepared by state (name)
(1)	(2)	(3)
1.	Report on household indebtedness, 16th round, NSS (May 1969)	Maharashtra
2.	Report on consumer expenditure, 17th round, NSS (May 1969)	Maharashtra
3.	Report on L.U.S. & C.C., 19th, 20th round (May 1969)	Mysore
4.	Report on quick tabulation schedule, 22nd round (June 1969)	U.P.
5.	Report on income of rural labour households, 1963-64 (July 1969)	U.P.
6.	Report on small scale manufacture and handicrafts, 14th round, NSS (September 1969)	Gujarat
7.	Report on scheduled tribe indebtedness, 18th round, NSS (March 1970)	Tripura
8.	Report on demography characteristics and activity particulars, 1964-65 (November 1969)	U.P.
9.	Report on amenities and facilities in villages and towns, 1964-65 (January 1970)	U.P.
10.	Report on the results of land utilisation survey and crop-cutting experiments, 18th round, NSS (December 1969)	Maharashtra
11.	Report on housing condition in rural areas, 19th round (January 1970)	Uttar Pradesh
12.	Report on disposal of cereals by producers households in rural areas, 16th round, NSS (November 1969)	Maharashtra
13.	Report on land utilisation survey conducted during the agricultural year 1966-67 : 21st round (February 1970)	Tripura
14.	Report on integrated household survey, 19th round, NSS (November 1969)	Andhra Pradesh
15.	Report on employment and unemployment, 16th round, NSS (January 1970)	Maharashtra
16.	Report on land holdings, 16th round, NSS (February 1970)	Andhra Pradesh
17.	Report on study of pattern of migration, 18th round, NSS (March 1970)	Gujarat
18.	Report on income of agricultural labour households, 18th round, (March 1970)	Gujarat
19.	Report on population, births and deaths, 16th round, NSS (February 1970)	Madhya Pradesh

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PART III

Statement of Accounts, Auditors' Report and Audited Statement of
Accounts—1969-70.

AUDITORS' REPORT

We report that we have audited the Balance Sheets as on 31st March 1970, signed by us under reference to this report, of

- (a) The Indian Statistical Institute, and
- (b) The "Other Funds" (items 10.1 to 10.6 of the Property and Assets side of the Balance Sheet of the Institute),

and relative Income and Expenditure Accounts for the year ended that date with the books and records maintained by the Institute and produced to us and the information and explanations given and, subject to and read with the notes thereon and also subject to the below-mentioned remarks, have found them to be in accordance therewith.

The remarks referred to above are :

(1) Values of fixed assets acquired on dates prior to 31st March 1962 were taken from those appearing in the Inventories prepared as on that date.

(2) In absence of the respective title deeds, it has not been possible for us to verify the following landed properties.

(a) Land at Giridih—Book value Rs. 14,861.16 vide Supervision Fee Fund Account Balance Sheet, Rs. 1,07,502.72 vide item 1.3 of the Fixed Assets Schedule to the Development Fund II Balance Sheet, Rs. 23,514.51 vide item 2.1 and 2.6 of Schedule I to the Institute Accounts.

(b) Land at Baroda—Book value Rs. 27,611.32 vide item 4 of Schedule I to the Institute Accounts.

(c) Land at Bangalore—Book value Rs. 22,500.00 vide item 5 of Schedule I to the Institute Accounts.

(d) Land at Delhi—Book value Rs. 15,43,971.00 vide item 3 of Schedule I to the Institute Accounts.

(e) Land at Madras—Book value Rs. 21,612.50 vide item 6 of Schedule I to the Institute Accounts.

(f) Land at 102 Barrackpore Trunk Road, Calcutta—Book value Rs. 3,30,564.00 vide item 1.6 of Schedule I to the Institute Accounts.

It has been explained to us that the title deeds/lease deeds in respect of items (d) to (f) have not yet been executed.

(3) Pursuant to an agreement dated 30th October 1967 between (a) Academy of the U.S.S.R. (b) Statistical Publishing Society, and (c) the Institute, the ownership of certain printing machinery supplied free of cost by the Academy of the U.S.S.R. have vested in the Institute. We understand that the details of such machinery have not yet been prepared by the Institute.

In terms of the above agreement the Institute and the Statistical Publishing Society should have shared the import duties and other charges for the machinery. However we have seen a confirmation from the Statistical Publishing Society stating that they have agreed to bear such expenses entirely and accordingly no payments/provisions in this respect have been included in these accounts.

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(4) In the absence of any details, we are unable to form an opinion as to the adequacy or otherwise of the value of Rs. 2,00,000.00 placed on the books received as gift from a donor which has been capitalised by crediting to the General Fund during the year ended 31st March 1969.

A part of values of certain other books and journals amounting to Rs. 2,95,826.72 (vide Schedule I (column 7.1) annexed to the Institute's Balance Sheet), although charged to the Institute's Income and Expenditure Account for the year, have been capitalised by crediting General Fund Account.

(5) As in previous years, the Institute did not obtain any prior permission from the Government of India for sale of 26 fans (written down value Rs. 1,333.58) which, we understand, were not acquired out of Government grants received by the Institute. A sum of Rs. 217.72 being profit on sale of the above items of assets has been credited to General Fund Account (item 3 of Schedule VIII to the Institute's Balance Sheet).

(6) Out of stock of building materials Rs. 4,42,848.46 (Rs. 3,46,612.74 shown in the Balance Sheet of the Institute and Rs. 96,233.72 shown in Development Fund II Account Balance Sheet), items amounting to Rs. 1,91,286.47 have physically been verified by the Institute's officials soon after 31st March 1970 and adjustments arising out of short/excess have been incorporated in the 1969-70 accounts. It appears to us that the extent of diminution in value due to deterioration in the condition, if any, of such items has not been ascertained and accordingly no adjustment in this regard has been incorporated in the accounts. Further in the absence of any physical verification by the Institute's officials of the other items (i.e., Iron and Steel materials, cement and other building materials, etc.) as on that date or soon thereafter, the physical conditions and stock differences, if any, relating to these items are not known. Adjustments necessary in this regard have, therefore, not been ascertained and incorporated in these accounts.

(7) Rs. 44,79,863.20 (item 5 of the Property and Assets side of the Institute's Balance Sheet) and Rs. 2,55,938.24 (vide Schedule V attached to the Institute's Balance Sheet) being amounts already claimed/to be claimed from the Government of India and other bodies are considered good and recoverable by the Institute's Officials at this stage. It has not, however, been possible for us to form any opinion in this regard from the information and explanations made available to us.

(8) Adjustments in respect of certain amounts which were included under the heads "Advance to Suppliers and Contractors" and "Suspense and other Advances" as at 31st March 1969, have been incorporated in these accounts as follows :

	Ra.	P.	Ra.	P.
i) Amounts charged to various expenditure account	2,06,	186.	06	
ii) Debited to the respective fixed assets account	26,735.	78		
iii) Debited to building materials and labour charges	24,922.	80	2,57,853.	62
iv) Other adjustments			21,937.	65
			2,79,791.	27

It has not been possible for us to judge the extent to which, this amount of Rs. 2,79,791.27 reflects adjustments relating to the previous years.

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There are certain other "on account" advances made to the suppliers/employees/ others included in "Loans and Advances" Rs. 5,32,518.36 (items 9.1 to 9.7 of the property and assets side of the Institute's Balance Sheet), which have not been accounted for by them promptly and in certain cases even after lapse of considerable time. Accordingly, necessary adjustments in respect of expenses etc. against such advances have not been incorporated in these accounts and/or in the accounts for appropriate years. A part of the above amount of Rs. 5,32,518.36 may not be recovered eventually.

(9) In the absence of confirmations from Banks concerned, it has not been possible for us to verify Rs. 5,885.00 included in Marginal deposit with banks for letter of credit Rs. 1,07,235.00 (items 9.10 of the Property and Assets side of the Balance Sheet).

(10) As appears from Schedules VI and VII annexed to the accounts, the amounts shown as Cash Balances (both in hand and at Banks) in the Balance Sheets dealt with by this report, represent the balancing figures.

(11) In the absence of any balance confirmation, we have not been able to verify the balance amounting to Rs. 8,108.17 with International House of Japan Translation Unit (vide Schedule VI to the Balance Sheet).

(12) Hospitality and Housing Committee Rs. 1,03,647.77 (item 7.1 of the Funds and Liabilities side of the Balance Sheet) represents net amount due to the Committee in respect of services rendered to the Guests and Officials of the Institute. Balance confirmation from the Committee has, however, not been produced to us.

Following the previous years' practice, other transactions (including revenue deficit and/or surplus, if any) relating to the above Committee have not been included in the Institute's Accounts.

(13) Furthermore, in accordance with the consistent practice, transactions in respect of the ISI Small Scale Industries Experimental Unit have not been included in the Institute's Accounts. In the Balance Sheet as at 31st March 1970 of the Supervision Fee Fund, a sum of Rs. 11,975.83 being net amount payable by the Fund to the Unit upto that date, however, has been shown as "Amount due to ISI Small Scale Industries Experimental Unit."

(14) An amount of Rs. 5,000/- being interest has been credited by the Institute during the year to the Gratuity Fund for utilising the monies of the Fund. It has been explained to us that this adjustment is only a token one and accordingly we are unable to form an opinion as to the adequacy of the amount credited.

(15) For the purpose of the Income and Expenditure Account, we have accepted the allocation between "plan" and "non-plan" made by the officials of the Institute.

Further, for the purpose of this report, we have accepted the allocation of expenses to different sectors, as shown in Schedule XI to the Institute's Accounts. Our separate reports on sectorwise Income and Expenditure Accounts have not yet been issued by us.

(16) It has been explained to us that the activities of the local branches at Bombay, Mysore State and Kerala are independent of those of the Institute and accordingly the transactions relating to these branches do not form part of the Institute's Accounts.

Calcutta,
28th December 1970.

PRICE WATERHOUSE FRAT & CO.
Chartered Accountants

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AS AT 31st MARCH 1970

1968-69 Rs. P.	Property and Assets	Rs. P.	Rs. P.
1,38,18,709.14	1. FIXED ASSETS: As per Schedule I enclosed		1,54,00,330.13
58,991.34	2. RENTAL OF TELEPHONE UNDER GYT SCHEME (INCLUDING INSTALLATION CHARGES): Capital Grant Account: As per last account Less: written off during the year @ 5%	58,991.34 2,949.87	
58,991.34	Add: payments during the year	58,041.77 13,300.00	68,341.77
7,82,329.87	3. ADVANCE ON ACCOUNT OF ISJU EXPENDITURE ON JOINT PROJECT FOR THE CONSTRUCTION OF ELECTRONIC COMPUTERS IN PROGRESS (EXCLUDING VALUE OF FURNITURE, EQUIPMENT ETC. LOANED TO ISJU WHICH ARE INCLUDED IN SCHEDULE I): As per last account		7,65,329.27
15,135.68	4. RECOVERABLE CAPITAL OUTLAY: As per last account Less: recovery during the year	16,135.68 9,938.15	5,199.43
24,13,740.07	5. AMOUNT CLAIMED/TO BE CLAIMED FROM GOVERNMENT OF INDIA: 1. Amount already claimed but pending acceptance as per Schedule II enclosed 2. Amount to be claimed as per Schedule III enclosed 3. Amount claimed and rejected (but under correspondence) as per Schedule IV enclosed 4. Excess of expenditure over receipts on account of NSB work during 1969-90 to 1963-64 already claimed	20,81,192.54 9,47,030.76 3,58,547.83 11,18,892.37	44,79,663.20
2,13,462.87	6. EXCESS OF EXPENDITURE OVER RECEIPTS IN RESPECT OF MISCELLANEOUS PROJECTS AND ACTIVITIES ON BEHALF OF THE GOVERNMENT OF INDIA AND OTHER BODIES PENDING ADJUSTMENTS ON SETTLEMENT OF CLAIMS MADE/TO BE MADE: As per Schedule V enclosed		2,55,938.34
29,325.80	7. AMOUNT RECOVERABLE FROM GOVERNMENT OF MYSORE IN RESPECT OF BANGALORE LAND REQUISITIONED BACK BY GOVERNMENT OF MYSORE		29,325.80
3,46,345.44	8. STORES (BUILDING MATERIALS ETC.) AT COST ..		3,46,812.74
6,58,007.01	9. LOANS AND ADVANCES: 1. Departmental imprest 2. Festival advance to workers 3. Advance to suppliers and contractors 4. Suspense and other advances 5. Educational, relief and other loans 6. Security deposit 7. Sundry debtors (partly irrecoverable) 8. Advances for purchase of land 9. Charges prepaid 10. Marginal deposit for letter of credit	2,392.47 2,412.02 94,867.94 3,29,833.90 14,792.08 29,842.07 68,676.80 5,32,818.38 61,232.41 10,230.25 1,07,235.00	7,01,316.02
1,53,16,136.58	Carried over		1,50,53,966.59

INDIAN STATISTICAL INSTITUTE

		BALANCE SHEET	
1968-69	Fund and Liabilities	Rs. P.	Rs. P.
2,35,47,872.71	Brought forward		1,63,34,161.64
	8. EXCESS OF INCOME OVER EXPENDITURE IN RESPECT OF MISCELLANEOUS PROJECTS AND ACTIVITIES :		
1,38,864.35	As per Schedule X enclosed		2,79,145.88
	9. EXCESS OF RECEIPTS OVER EXPENDITURE IN RESPECT OF CAPITAL EXPENDITURE GRANT RECEIVED FROM GOVERNMENT OF INDIA DURING 1968-69		1,81,864.78
	10. AMOUNT DUE TO ELECTRONIC DATA PROCESSING AND COMPUTATION UNIT ON LOAN ACCOUNT :		
11,55,000.00	As per separate Balance Sheet of the Unit enclosed ..		11,75,000.00
	11. EARMARKED DONATION BY STATISTICAL PUBLISHING SOCIETY IN RESPECT OF LAND AT BANGALORE		42,000.00
<u>2,50,11,231.75</u>			<u>2,79,51,972.41</u>

- NOTES : (a) In accordance with the terms and conditions of the Grants for Capital Expenditure received from the Government of India, the Institute shall not sell or otherwise dispose of or mortgage any property acquired by it with such grants without prior approval of the Government. Most of the assets have been acquired out of the Government grants, total written down value of which, however, are not readily ascertainable.
- (b) Cash balances in hand include balance with International House of Japan, Translation Unit in TOKYO amounting to Rs. 8,108.17 being Japanese Yens 6,68,604 converted at pre-devaluation rate of exchange (Rs. 100 = Yen 7500 approximately).
- (c) Transactions in respect of Electronic Data Processing and Computation Unit of the Institute have not been incorporated in these accounts. These are set out in the separate Balance Sheet as at 31st March 1970 and the Income and Expenditure Account of the Unit annexed herewith.
- (d) These accounts do not include loan received from Government of India on account of Honeywell H-400 Computer and the utilisation thereof, the details of which have been set out in a separate Balance Sheet as at 31st March 1970.
- (e) The Institute has guaranteed that in the event of the recognition of the Indian Statistical Institute General Provident Fund by the Commissioner of Income Tax, West Bengal, is not given, the Institute will be responsible for any additional income tax which may be payable in this regard.
- (f) These accounts do not include the grant of \$ 85,000.00 made by the Ford Foundation to the Institute and disbursements thereout [except c.i.f. value of certain equipment amounting to Rs. 51,291.50 as indicated in note (i) in the First Annex Schedule], particulars of which are not readily available.
- (g) The Institute may be liable to pay additional rent with interest in respect of Gopu Nivas accommodation, the amount of which is not readily ascertainable. A case is pending with the Calcutta High Court in this respect.
- (h) Comparative figures, have, wherever necessary, been rearranged.

Calcutta,
28th December 1970.

S. P. Mukherjee
Chief Accounts Officer

D. Bose
Joint Secretary

THIRTY-EIGHTH ANNUAL REPORT : 1969-70

AS AT 31st MARCH 1970—Contd.

1968-69 Rs. P.	Property and Assets	Rs. P.	Rs. P.
1,83,16,196.68	Brought forward		2,30,63,966.89
	10. NET ASSETS OF OTHER FUNDS : (EXCLUDING DIRECTOR'S CONTRIBUTION FUND AND INDIAN STATISTICAL INSTITUTE GENERAL PROVIDENT FUND FOR WHICH SEPARATE ACCOUNTS ARE PREPARED):		
	As per separate Balance Sheet enclosed :		
	As per contra :		
	.1 Visiting Professors and Fellows Fund	118.13	
	.2 Gratuities Fund	94,34,187.54	
	.3 Development Fund I	1,16,421.94	
	.4 Development Fund II	10,86,026.43	
	.5 Supervision Fee Fund	2,16,304.87	
44,34,239.87	.6 Less : Leave Salary Fund	48,70,153.81	46,06,117.68
		85,036.23	
	11. CASH BALANCES :		
	.1 In hand		
	As per Schedule VI enclosed	60,861.94	
	.2 At Banks : On Current Accounts :		
	i) With American Express International Banking Corporation, Calcutta, for Rockefeller Foundation Grant—		
	As per contra	1,323.29	
22,50,866.26	ii) With other Banks as per Schedule VII enclosed	10,60,723.91	11,22,898.14
<u>2,50,11,531.76</u>		<u>10,62,046.20</u>	<u>2,79,81,972.41</u>

This is the Balance Sheet referred to in our report of even date

PAUL WATERHOSE PAUL & Co.
Chartered Accountants

INDIAN STATISTICAL INSTITUTE

INCOME AND EXPENDITURE ACCOUNT

1988-89		Expenditure	plan		non-plan	
plan	non-plan		plan	non-plan		
Rs.	P.	Rs.	P.	Rs.	P.	
4,33,174.88	69,88,636.41	1. Salary and remuneration to teachers etc. [See Note (f) below]	3,71,181.77	72,78,060.35	19,72,978.49	
—	—	.1 Dearness pay	11,771.00	19,72,978.49	—	
18,821.83	27,02,174.54	.2 Dearness allowance	12,908.55	8,47,167.35	—	
9,001.38	8,45,807.67	.3 House rent allowance	10,117.86	10,58,234.54	—	
4,356.57	4,72,414.18	.4 City compensatory allowance	5,787.65	5,93,421.38	—	
—	5,35,499.88	.5 Employer's contribution to Workers' Provident Fund	—	7,89,651.69	—	
—	4,18,276.89	.6 Reimbursement of medical expenses	—	4,86,125.57	—	
—	35,133.75	.7 Children's education allowance	—	62,396.58	—	
—	16,531.21	.8 Leave travel concession	—	30,688.25	—	
31,212.71	4,97,925.92	2. Travelling expenses	69,964.21	6,13,843.91	—	
83.06	3,10,724.84	3. Overtime allowance	—	4,09,391.69	—	
—	68,002.00	4. Payment for leave vacancies	—	68,926.00	—	
33,785.71	93,388.95	5. Visiting Professors, Foreign Scientists, Fellows and Experts	29,888.88	1,10,460.56	—	
32,859.57	3,73,656.57	6. Scholarships, stipends and other assistance to trainees	26,111.51	4,09,399.34	—	
—	314.00	7. Prizes to workers for initiative	—	—	—	
—	3,91,299.80	8. Provision for contribution to Gratuity Fund	—	4,73,731.01	—	
—	—	9. Machine tabulation expenses :	—	—	—	
1,96,139.00	17,54,616.18	.1 Hire and maintenance of tabulating equipment, punches and verifying machines etc., including service charges and freight, customs and other charges for new machinery [See Note (a) below]	3,90,294.70	17,38,281.51	—	
—	2,21,430.53	.2 Cost of cards and cassettes, stores and stationeries etc.	—	2,23,817.06	—	
4,432.79	1,08,159.31	10. Printing and publication	4,394.94	87,838.92	—	
16,429.01	24,472.36	11.1 Society type activities (entertainment and conference expenses etc.)	6,434.74	44,900.74	—	
48.75	32,106.24	.2 Examination expenses	477.50	43,537.49	—	
2,706.31	2,03,915.39	12.1 Books and journals (including cost of binding etc.)	1,833.95	3,09,700.94	—	
308.50	10,276.34	.2 Microfilm, photo and audiography expenses	617.39	11,304.65	—	
—	191.00	13. Expense on Translation Unit in Japan	—	—	—	
407.05	73,897.59	14. Repairs, replacement and maintenance of office equipment, furniture and accessories (net after crediting Rs. 11,116.87 in respect of previous year)	1,101.19	1,11,693.02	—	
9,564.23	2,53,329.41	15.1 Stationeries and consumable stores	17,143.12	2,74,626.89	—	
5,854.49	1,87,858.31	.2 Other miscellaneous expenses viz., advertisement, insurance premia, law charges, cooking, cartage, conveyance and other petty expenses like net weather contingencies etc.	10,619.19	1,80,613.53	—	
7,88,011.08	1,85,23,864.87	Carried over :	8,60,618.14	1,82,31,367.22	—	

THIRTY-EIGHTH ANNUAL REPORT: 1969-70

FOR THE YEAR ENDED 31st MARCH 1970

1968-69		Income	plan		non-plan	
Ra.	P.		Ra.	P.	Ra.	P.
		1. Grants-in-aid received from Government of India for non-project sectors:				
		.1 Research and Training School (including Planning Division and Statistical Quality Control) Sector	5,45,000.00		53,44,000.00	
5,45,000.00	66,72,000.00	.2 International Statistical Education Centre		30,000.00	1,83,000.00	
30,000.00	2,00,000.00	2.1 Grants-in-aid received from Government of India for NSS Project Sector	2,25,000.00		22,89,000.00	
2,25,000.00	1,00,58,000.00	.2 Grants-in-aid received from Government of India for Quik Tabulation Schedules of NSS			6,000.00	
—	1,10,000.00	3. Grants-in-aid received from Government of India for Common Services Sector			38,74,000.00	
—	—	4. Receipts from non-Governmental sources:				
		.1 In respect of SQC:				
		Membership fees, training fees, service charges etc.		5,73,496.28	7,47,782.85	
—	5,73,496.28	.2 In respect of RTS:				
		a) Membership subscription		7,401.64	11,748.25	
—	7,401.64	b) Fees for training course and sale proceeds of syllabus etc.		81,403.18	48,739.17	
—	81,403.18	c) Examination fees and other receipts		14,802.50	17,820.50	
—	14,802.50	d) Receipts from produce at Giridih experimental farm etc.		9,348.51	8,118.64	
—	9,348.51	e) Service charges for work done by Psychometric Unit etc.		—	23,622.00	
—	—	5. Grants received for Miscellaneous Projects:				
		.1 From Director of Health Services, Government of India for Family Planning Survey		80,000.00	66,650.00	
—	80,000.00	.2 From Director of Health Services, Government of India for Demographic Research Centre		81,500.00	38,700.00	
—	81,500.00					
5,00,000.00	1,78,66,760.11	Carried over:	8,00,000.00		1,86,56,861.41	

INDIAN STATISTICAL INSTITUTE

BUDGET AND EXPENDITURE ACCOUNTS

1968-69		Expenditure	1968-69		
plan	non-plan		plan	non-plan	
Rs.	P.	Rs.	P.	Rs.	P.
7,88,011.03	1,66,23,354.87	Brought forward		8,60,518.14	1,82,31,387.28
		16. Other non-salary contingencies :			
1,302.83	4,86,135.48	.1 Postal and M.O. charges, air and railway freight, electricity and telephone charges ..		1,604.31	4,13,728.90
		.2 Audit fees and expenses 25,000.00			
—	23,875.10	Less : written back (previous year's provision) .. 824.30		—	24,176.70
—	68,403.00	.3 Bank charges and interest (including Rs. 5,000.00 in respect of Gratuity Fund) ..		—	62,630.30
792.50	3,34,418.34	17.1 Rent rates and taxes (including those of field, camps and outstation offices) ..		1,522.23	3,44,875.96
633.46	3,31,190.47	.2 Repairs and/or maintenance of buildings, land etc. and petty construction ..		138.71	3,24,214.81
9,294.23	99,041.21	18. Transport		16,543.88	1,04,294.60
172.29	64,115.08	19. Workers' welfare and amenities (excluding reimbursement of medical expenses) ..		286.97	44,841.97
—	—	20. Director's discretionary expenses (contribution to Mysore Branch)		—	3,000.00
137.88	61,148.81	21.1 Laboratory stores, tools and minor accessories etc.		4,075.42	71,070.30
—	22,087.19	.2 Material and other charges for experimental farming and rice research scheme ..		—	20,941.86
8,00,174.81	1,76,72,667.65	Carried over :		8,84,687.66	1,96,35,089.50

THIRTY-EIGHTH ANNUAL REPORT : 1969-70

FOR THE YEAR ENDED 31st MARCH 1970—Contd.

1969-69		Income		plan		non-plan		
Rs.	P.	Rs.	P.	Rs.	P.	Rs.	P.	
8,00,000.00		1,78,55,760.11		Brought forward:	..	..	8,00,000.00	1,86,88,851.41
6. Miscellaneous receipts :								
—		1,838.43		1. Library	—		—	697.37
—		9,754.35		2. Rental charges for machines, tools and other equipment used by the Garden Reach Workshop Ltd.	—		—	1,870.00
7. Projects (Miscellaneous) :								
—		1,44,510.00		1. Grant received from the U.S. Department of Health, Education and Welfare, Public Health Service, National Institute of Health, American Embassy, New Delhi in respect of Project mentioned in Item 22.1 of Expenditure side (As per Appendix "A")	—		—	78,569.00
—		1,50,000.00		2. Fees received from the participants in respect of Project mentioned in Item 22.2 of Expenditure side	—		—	—
—		—		3. Grant received from the Consulate General of the United States of America, Calcutta for the project "An investigation of age and related changes in the electrophoretic and immunoelectrophoretic components of serum proteins"	—		—	1,21,600.00
—		—		4. Grant-in-aid from Government of Tripura for Teachers' Training Course on the education and speech rehabilitation of deaf and hard of hearing children (As per Appendix "B")	—		—	12,840.00
174.21		—		Excess of expenditure over income allocated to Sectors as per Schedule XI enclosed	84,687.68		8,24,819.09	
<hr/>		<hr/>		<hr/>		<hr/>		
8,00,174.21		1,81,61,669.88		Carried over :	..	..	8,84,687.68	1,96,96,939.77

INDIAN STATISTICAL INSTITUTE

INCOME AND EXPENDITURE ACCOUNT

1968-69		Expenditure		1968-69	
plan	non-plan			plan	non-plan
Rs. P.	Rs. P.			Rs. P.	Rs. P.
8,00,174.21	1,76,73,867.66	Brought forward:	.. ..	8,84,687.66	1,96,15,089.66
22. Projects (Miscellaneous):					
		.1 Estimates of Probabilities of Hospitalisation according to age, sex and diagnosis and their use in planning Hospital Services. (As per Appendix "A")	.. ..	—	59,307.27
—	23,842.30				
		.2 International Course on Management of Quality Control conducted in collaboration with Dr. J. M. Juran	.. ..	—	—
—	1,33,673.45				
		.3 Teachers' Training Course on the Education and Speech Rehabilitation of deaf and hard of hearing children (As per Appendix "B")	.. ..	—	12,640.00
—	—				
		Excess of income over expenditure as per Schedule XI enclosed	.. ..	—	—
—	31,469.48				
8,00,174.21	1,81,61,682.88			8,84,687.66	1,96,96,636.77

NOTES: (a) As stated in the Balance Sheet, this account excludes transactions in respect of Electronic Data Processing and Computation Unit and certain transactions in respect of Honeywell H-400 Computer Unit of the Institute, separate sets of accounts in respect of which are annexed (See notes (c) and (d) on Balance Sheet).

Included under the head "Hire and Maintenance of Tabulating Equipment, Punches and Verifying machines, etc." is an amount of Rs. 7,64,024.55 charged by the Electronic Data Processing and Computation Unit of the Institute at its usual rates of work done by it.

- (b) This account does not include the transactions in respect of International Statistical Education Centre Colombo Plan Fellowship, net effect of which has been given in the Balance Sheet (vide Schedule V enclosed).
- (c) An amount of Rs. 6,82,362.78 being depreciation on fixed assets and OYT telephone has been adjusted in General Fund.
- (d) In accordance with the consistent practice, the costs of cards, cabinets, stationeries and stores etc., have been written off in this account and any stocks in hand as on 31st March 1970 have not been treated as assets in the Balance Sheet.
- (e) In accordance with the previous practice, certain transactions have been included in these accounts on a cash basis.
- (f) Salary and remuneration to teachers etc. under the head "Plan" expenditure includes additional payments to certain employees for extra work done.
- (g) This account excludes (i) Rs. 217.72 being profit on sale of assets credited to General Fund vide Schedule VIII to the Balance Sheet (ii) Rs. 56,770.00 and Rs. 82,640.00 being grants sanctioned by the Government within 31st March 1970 on account of Family Planning Survey and Demographic Research respectively, which have been received by the Institute after that date.

Calcutta,
28th December 1970.

S. P. Mukherjee
Chief Accounts Officer

D. Bose
Joint Secretary

THIRTY-EIGHTH ANNUAL REPORT: 1969-70

FOR THE YEAR ENDING 31st MARCH 1970—Contd.

1968-69		non-plan		Income	plan		non-plan	
Rs.	P.	Rs.	P.		Rs.	P.	Rs.	P.
8,00,174.31		1,81,81,882.88		Brought forward	..	..	8,84,687.68	1,96,96,938.77
<hr/>		<hr/>					<hr/>	
8,00,174.31		1,81,81,882.88				8,84,687.68	1,96,96,938.77	
<hr/>		<hr/>				<hr/>		

PRINCE WATERHOUSES PRAT & CO.
Chartered Accountants

INDIAN STATISTICAL INSTITUTE

APPENDIX A

STATEMENT OF INCOME AND EXPENDITURE DURING THE YEAR ENDED 31st MARCH 1970 IN CONNECTION WITH ESTIMATES OF PROBABILITY OF HOSPITALIZATION ACCORDING TO AGE, SEX AND DIAGNOSIS AND THEIR USE IN PLANNING HOSPITAL SERVICES

Expenditure	Rs. P.	Income	Rs. P.
1. Salary and other remuneration ..	20,780.23	Grant received from the U S Department of Health, Education and Welfare, Public Health Service, National Institute of Health, American Embassy, New Delhi as per Income and Expenditure Account	79,559.00
2. Travelling allowance	25,107.00		
3. Machine Tabulation expenses ..	7,468.82		
4. Miscellaneous contingencies ..	5,883.22		
Total expenditure during the year as per Income and Expenditure Account			
	59,307.27		
Excess of income over expenditure as per Schedule XI to the Institute's Balance Sheet			
	20,251.73		

79,559.00

79,559.00

S. P. Mukherjee
Chief Accounts Officer

D. Bose
Joint Secretary

THIRTY-EIGHTH ANNUAL REPORT : 1969-70

APPENDIX B

STATEMENT OF INCOME AND EXPENDITURE DURING THE YEAR ENDED 31st MARCH 1970 IN CONNECTION WITH
TEACHERS' TRAINING COURSES ON THE EDUCATION AND SPEECH REHABILITATION OF DEAF AND HARD OF HEARING
CHILDREN

Expenditure	Rs. P.	Income	Rs. P.
1. Salary and other remuneration ..	7,717.16	Grant-in-aid from Government of Tri- pura for Teachers' Training Course on the Education and Speech Rehabilitation of Deaf and Hard of Hearing Children	12,840.00
2. Hostel rent	2,453.00		
3. Laboratory and other charges ..	<u>2,369.84</u>		
Total expenditure during the year as per Income and Expenditure Account	12,540.00		
Excess of income over expenditure as per Schedule XI to the Institute's Balance Sheet	300.00		

12,840.00

12,840.00

S. P. Mukherjee
Chief Accounts Officer

D. Bose
Joint Secretary

INDIAN STATISTICAL INSTITUTE

SCHEDULE 1

PARTICULARS OF FIXED ASSETS

particulars	written down value as on 31st March 1969		deletions/adjustments made during the year		value after deletions/adjustments (col. 5-3)	
	Rs.	P.	Rs.	P.	Rs.	P.
(1)	(2)		(3)		(4)	
A. Land and land development:						
1. Calcutta:						
.1 At 153 Gopal Lal Tagore Road (adjoining 203 Barrackpore Trunk Road)	85,645.	90	—	—	85,645.	90
.2 Development of above land	40,534.	78	—	—	40,534.	78
.3 At 205 Barrackpore Trunk Road (including cost of development)	4,37,495.	13	—	—	4,37,495.	13
.4 At 168, 160, 165, 168/1, Gopal Lal Tagore Road	96,863.	71	—	—	96,863.	71
.5 Development of above land	5,618.	51	—	—	5,618.	51
.6 At 102 Barrackpore Trunk Road (title not yet vested in the Institute)	3,30,564.	00	—	—	3,30,564.	00
.7 At 206 Barrackpore Trunk Road [Note (a) below]	13,29,944.	41	—	—	13,29,944.	41
.8 At 202 Barrackpore Trunk Road	5,79,104.	75	—	—	5,79,104.	75
2. Giridih:						
.1 Farm land [Note (b) below]	9,614.	51	—	—	9,614.	51
.2 Development and fencing etc.	29,689.	55	—	—	29,689.	55
.3 Farming development	10,882.	00	—	—	10,882.	00
.4 Irrigation and water supply	25,810.	00	—	—	25,810.	00
.5 In village "Makatpur" Giridih [Note (c) below]	1,30,087.	90	—	—	1,30,087.	90
.6 Purchased from Smt. Prakriti Devi Gangopadhaya	14,000.	00	—	—	14,000.	00
3. Delhi (seamhold)						
	4,00,000.	00	—	—	4,00,000.	00
4. Baroda						
	27,811.	32	—	—	27,811.	32
5. Bangalore [Note (d) below]						
	32,500.	00	—	—	32,500.	00
6. Madras						
	21,612.	50	—	—	21,612.	50
7. Hyderabad						
	1,14,386.	00	—	—	1,14,386.	00
Sub-total : (A1-7)	36,92,153.	95	—	—	36,92,153.	95

THIRTY-EIGHTH ANNUAL REPORT: 1969-70

as on 31st March 1970

depreciation for the year		net value (col. 4-5.1)		additions during the year				written down value as on 31st March 1970 (col. 6+7.3)	
rate %	amount	Rs.	P.	out of capital expenditure grant	out of current expenditure grant	out of other sources	total (col. 7.0 to 7.3)	Rs.	P.
(5.0)	(5.1)	(6)		(7.0)	(7.1)	(7.2)	(7.3)	(8)	
—	—	55,545.90		—	—	—	—	55,545.90	
—	—	40,524.78		—	—	—	—	40,524.78	
—	—	4,37,495.18		—	—	—	—	4,37,495.18	
—	—	96,863.71		—	—	—	—	96,863.71	
—	—	6,818.51		—	—	—	—	6,818.51	
—	—	3,36,584.00		—	—	—	—	3,36,584.00	
—	—	13,29,944.41		—	—	—	—	13,29,944.41	
—	—	5,79,104.75		—	—	—	—	5,79,104.75	
—	—	9,514.51		—	—	—	—	9,514.51	
—	—	29,689.55		—	—	—	—	29,689.55	
—	—	10,682.00		—	—	—	—	10,682.00	
—	—	25,510.00		—	—	—	—	25,510.00	
—	—	1,30,087.90		—	—	—	—	1,30,087.90	
—	—	14,000.00		—	—	—	—	14,000.00	
—	—	4,00,000.00		11,43,971.00	—	—	11,43,971.00	16,43,971.00	
—	—	27,511.22		—	—	—	—	27,511.22	
—	—	22,500.00		—	—	—	—	22,500.00	
—	—	21,512.50		—	—	—	—	21,512.50	
—	—	1,14,385.00		—	—	—	—	1,14,385.00	
—	—	26,92,153.95		11,43,971.00	—	—	11,43,971.00	48,36,124.95	

(Contd.)

INDIAN STATISTICAL INSTITUTE

SCHEDULE I—Contd.

PARTICULARS OF FIXED ASSETS

particulars	written down value as on 31st March 1969		deletions/ adjustments made during the year		value after deletions/ adjustments (col. 2-3)	
	Rs.	P.	Rs.	P.	Rs.	P.
(1)	(2)		(3)		(4)	
B. Buildings :						
1. Calcutta :						
.1 Partly at 203 Barrackpore Trunk Road and partly at 163 Gopal Lal Tagore Road (Main Building) (Note (e) below) ..	8,46,314.44		—		8,46,314.44	
.2 At 163 Gopal Lal Tagore Road	11,10,170.72		—		11,10,170.72	
.3 At 205 Barrackpore Trunk Road	17,89,978.05		—		17,89,978.05	
.4 At 206 Barrackpore Trunk Road	1,16,352.92		—		1,16,352.92	
.5 At 202 Barrackpore Trunk Road	42,860.56		—		42,860.56	
Sub-total : (B1.1-1.5)	39,04,664.69		—		39,04,664.69	
C. Sheds and Structures :						
1. Calcutta :						
.1 At 203 Barrackpore Trunk Road and 163 Gopal Lal Tagore Road (Note (e) and (h) below)	84,814.02		—		84,814.02	
.2 At 205 Barrackpore Trunk Road	78,892.13		—		78,892.13	
.3 At 156, 160, 165 & 166/1 Gopal Lal Tagore Road	50,793.91		—		50,793.91	
.4 At 206 Barrackpore Trunk Road	9,540.96		—		9,540.96	
.5 At 202 Barrackpore Trunk Road	2,93,063.96		—		2,93,063.96	
.6 At 6 Rabindra Nath Tagore Road (for UNTAA Workshop situated on rental premises)	2,97,984.40		—		2,97,984.40	
2. Delhi :						
.1 Partitions, Structures etc. at Delhi	1,633.65		—		1,633.65	
.2 Erection of a Nissen hut	1,280.99		—		1,280.99	
Sub-total : (C1.1-2.2)	8,18,034.02		—		8,18,034.02	
D. Machinery & equipment :						
1. Calculating, punching and other tabulating equipment	7,63,249.05		—		7,63,249.05	
2. Office machinery and equipment	2,34,290.23		1,013.61		2,33,276.78	
3. Workshop equipment	48,910.51		—		48,910.51	
4. Photo and optical equipment	19,507.88		—		19,507.88	
5. Laboratory equipment	5,17,442.85		—		5,17,442.85	
6. Printing press, Monotype accessories etc.	4,833.12		—		4,833.12	
7. Construction equipment	19,983.50		—		19,983.50	
8. UNTAA Workshop machinery and equipment	51,093.54		—		51,093.54	
9. Electronic Computer (HECM) and other tabulating equipment	62,626.08		—		62,626.08	
Sub-total : (D1-9)	17,22,037.06		1,013.61		17,21,023.65	

THIRTY EIGHTH ANNUAL REPORT : 1969-70

SCHEDULE I—Contd.

as on 31st March 1970

depreciation for the year		net value (col. 4-5.1)		additions during the year			written down value as on 31st March 1970 (col. 6+7.3)		
rate %	amount	Rs.	P.	Rs.	P.	Rs.	P.	Rs.	P.
(6.0)	(5.1)	(6)		(7.0)	(7.1)	(7.2)		(8)	
2.5%	21,167.86	8,26,166.68		9,073.83	—	—	—	9,073.83	8,43,230.41
2.5%	27,764.27	10,82,418.45		20,968.11	—	—	—	20,968.11	11,03,384.56
2.5%	44,749.40	17,45,228.66		69,686.48	—	—	—	69,686.48	18,04,913.13
2.5%	2,883.82	1,12,469.10		4,227.60	—	—	—	4,227.60	1,16,696.80
2.5%	1,071.26	41,779.30		—	—	—	—	—	41,779.30
	97,816.61	38,07,048.08		93,866.92	—	—	—	93,866.92	30,00,904.00
7.5%	6,361.05	78,452.97		10,420.99	—	—	—	10,420.99	88,873.96
7.5%	5,916.91	72,975.22		4,708.72	—	—	—	4,708.72	77,684.94
7.5%	3,809.84	46,984.37		—	—	—	—	—	46,984.37
7.5%	715.67	8,825.39		—	—	—	—	—	8,825.39
7.5%	21,982.05	2,71,111.91		23,430.97	—	—	—	23,430.97	2,94,542.88
7.5%	22,348.83	2,76,635.67		—	—	—	—	—	2,76,635.67
7.5%	122.62	1,611.13		—	—	—	—	—	1,611.13
7.5%	96.07	1,184.92		—	—	—	—	—	1,184.92
	61,322.54	7,68,681.48		38,667.68	—	—	—	38,667.68	7,96,239.18
15%	1,14,487.26	6,48,761.69		73,714.64	—	—	—	73,714.64	7,22,476.33
15%	34,091.61	1,98,285.21		65,827.43	—	5,436.00	—	61,283.43	2,59,548.84
15%	7,336.88	41,673.93		—	—	[Note (f) below]	—	—	41,673.93
15%	2,926.18	16,681.70		17,073.69	—	—	—	17,073.69	33,655.29
15%	77,616.43	4,38,820.42		1,15,923.20	—	—	—	1,24,996.02	5,64,821.44
15%	739.97	4,193.15		—	—	9,071.82	—	—	4,193.15
15%	2,997.67	16,986.23		—	—	[Note (g) below]	—	—	16,986.23
15%	7,664.03	43,429.61		—	—	—	—	—	43,429.61
15%	9,393.91	63,232.17		—	—	—	—	—	63,232.17
	2,58,183.64	14,62,870.01		2,62,638.86	—	14,607.82	—	2,77,046.68	17,39,918.89

(Contd.)

INDIAN STATISTICAL INSTITUTE

SCHEME I—Contd.

PARTICULARS OF FIXED ASSETS

particulars	written down value as on 31st March 1969		deletions/adjustments made during the year		value after deletions/adjustments (col. 5-7)	
	Rs.	P.	Rs.	P.	Rs.	P.
(1)	(2)		(3)		(4)	
E. Passenger Lift	10,996.83		—		10,996.83	
F. Electrical equipment and installations:						
1. High tension electricity	81,553.45		—		81,553.45	
2. Electrical equipment and fittings	4,19,296.93		1,233.28		4,17,963.65	
3. High tension electricity for UNTAA Workshop	68,142.03		—		68,142.03	
Sub-total: (F1-3)	5,68,991.41		1,333.28		5,67,658.13	
G. Furniture and fittings	7,09,896.80		—		7,09,896.80	
H. Books and journals	21,99,137.27		—		21,99,137.27	
I. Motor Cars and Vehicles	1,04,529.44		—		1,04,529.44	
J. Library equipment (including equipment procured through Ford Foundation Grant and Rockefeller Foundation Grant)	89,544.84		—		89,544.84	
K. Construction of Overbridge	8,725.03		—		8,725.03	
Grand Total:	1,38,18,709.14		2,346.79		1,38,16,362.35	

- NOTES: (a) Students Hostel etc. is situated on a part of premises 208 Barrackpore Trunk Road, the cost of which has been shown in the accounts of Development Fund II (Item 3.1 and note (b) in Development Fund II Fixed Assets Schedule).
- (b) Excluding Rs. 14,861.16 paid out of Supervision Fee Fund and included in the accounts of that Fund (Note (b) in Supervision Fee Fund Balance Sheet).
- (c) Including Rs. 68,994.19 being additional amount paid under protest. An appeal lodged with the Patna High Court by the Institute in this respect is pending.
- (d) Excluding Rs. 19,425.00 being value of trees grown on the land, payable to Government of Mysore not provided for in these accounts.
- (e) Situated partly on premises 203 Barrackpore Trunk Road, the value of which amounting to Rs. 97,656.95 has been included in Supervision Fee Fund (Note (a) in Supervision Fee Fund Balance Sheet).
- (f) Represents value of Microfiche Camera, Xerox equipment and IBM typewriters procured out of Ford Foundation Grant of \$ 85000.00. As the amount of grant has not been incorporated in these accounts, the CIF value of these items of equipment Rs. 81,391.50 has been credited to the General Fund Account (see Note (f) in Institute's Balance Sheet).
- (g) Represents estimated value of one Manipalpur and press received as gift from Royal Society, UK.
- (h) Includes value of certain Sheds and Structures demolished, the extent of which is not ascertainable.
- (i) Represents expenditure for overhauling/re-modelling a motor bus.
- (j) Excludes depreciation charge on Rs. 70,088.65 being customs duties and clearing charges for equipment received during 1969-70.

S. P. Mukhojee
Chief Accounts Officer

THIRTY-EIGHTH ANNUAL REPORT : 1969-70

as on 31st March 1970

depreciation for the year		not value (col. 4-5.1)		additions during the year				written down value as on 31st March 1970 (col. 8+7.3)					
rate %	amount			out of capital expenditure grant		out of current expenditure grant		out of other sources		total (col. 7.0 to 7.3)			
		Rs.	P.	Rs.	P.	Rs.	P.	Rs.	P.	Rs.	P.		
(5.0)	(6.1)	(6)		(7.0)		(7.1)		(7.2)		(7.3)		(8)	
10%	1,099.58	9,898.25		45,948.87		—	—	—	—	46,948.87		55,844.92	
10%	8,156.35	73,398.10		11,552.00		—	—	—	—	11,552.00		84,960.10	
10%	41,706.28	3,74,168.39		1,04,861.32		—	—	—	—	1,04,861.32		4,80,827.71	
10%	5,814.20	52,327.83		—		—	—	—	—	—		62,327.83	
	55,745.61	5,01,892.32		1,16,213.32		—	—	—	—	1,16,213.32		6,18,106.64	
10%	70,949.68	6,38,908.32		96,482.88		—	—	—	—	96,482.88		7,35,391.10	
5%	1,09,966.86	90,89,180.41		89,422.09		2,95,825.72	—	—	—	2,95,825.72		94,44,428.32	
20%	20,905.89	83,823.55		15,200.00		—	—	—	—	15,200.00		98,923.55	
				[Note (i) below]									
15%	2,818.40 [Note (j) below]	86,826.24		8,801.50		—	—	75,965.50 [Note (f) below]		84,767.00		1,71,383.24	
7.5%	864.38	8,070.66		—		—	—	—	—	—		8,070.66	
	6,79,413.19	1,31,36,949.16		18,82,091.92		2,95,825.72	90,463.32	22,68,380.96		1,54,05,330.12			

D. Bose
Joint Secretary

INDIAN STATISTICAL INSTITUTE

SCHEDULE II

AMOUNT ALREADY CLAIMED FROM GOVERNMENT OF INDIA BUT PENDING ACCEPTANCE AS ON 31st MARCH 1970

particulars	Rs. P.	Rs. P.	Rs. P.
1. On account of Capital Expenditure :			
Excess of expenditure over receipt of grant :			
1. 1966-67			
As per last account	2,06,841.83		
2. In respect of 302 Barrackpore Trunk Road, for repair, renovation, etc.			
As per last account	2,17,703.07	4,34,554.89	
3. 1967-68			
As per last account		21,441.50	4,45,996.48
2. On account of non-Project Sectors :			
Excess of expenditure over income :			
1. Upto 1969-80			
As per last account		2,35,727.00	
2. 1980-81			
As per last account		1,84,817.00	
3. 1962-83 (including UNTAA Sector)			
As per last account		3,48,075.00	7,68,219.00
3. On account of NBS Project Sector :			
1. Upto 1968-69			
Excess of expenditure over income			
As per last account			5,44,011.00
4. On account of Revenue (current) Expenditure (excluding Miscellaneous projects) :			
1. Excess of expenditure over income in UNTAA Sector less Savings in non-Project Sectors and NBS Project Sector in 1965-67 :			
As per last account		1,82,147.92	
2. Excess of expenditure over income for 1967-68 :			
As per last account		50,683.48	
3. Excess of expenditure over income for 1968-69 :			
As per last account		54,089.33	2,86,900.71
Carried over			30,13,227.19

THIRTY-EIGHTH ANNUAL REPORT: 1969-70

SCHEDULE II—Contd.

AMOUNT ALREADY CLAIMED FROM GOVERNMENT OF INDIA BUT PENDING ACCEPTANCE AS ON 31ST MARCH 1970

particulars				Rs.	P.	Rs.	P.	Rs.	P.
Brought forward								20,13,327.20	
5. On account of Plan Revenue Expenditure :									
.1 Excess of expenditure over income in 1966-67 :									
As per last account								630.16	
.2 Excess of expenditure over income for 1967-68 :									
As per last account								117.57	
.3 Excess of expenditure over income for 1968-69 :									
As per last account								174.21	921.84
6. On account of 25th Anniversary of the Institute :									
Excess of expenditure over receipt :									
As per last account									4,860.00
7. On account of loss on sale of stocks of building materials :									
As per last account									42,393.40

20,61,192.54

S. P. Mukherjee
Chief Accounts Officer

D. Bose
Joint Secretary

INDIAN STATISTICAL INSTITUTE

SCHEDULE III

AMOUNT TO BE CLAIMED FROM GOVERNMENT OF INDIA AS ON 31st MARCH 1970

particulars	Rs.	P.	Rs.	P.
1. On account of Revenue (Current) Expenditure (excluding Miscellaneous Projects) :				
Excess of expenditure over income for 1969-70 (Schedule XI attached)	8,19,545.	10		
2. On account of Plan Revenue Expenditure as per Income and Expenditure Account			84,887.	88
3. On account of Capital Expenditure :				
Excess of expenditure over income for 1969-70 as per Capital Expenditure Account	42,789.	00	9,47,030.	76

S. P. Mukherjee
Chief Accounts Officer

D. Bose
Joint Secretary

SCHEDULE IV

AMOUNT CLAIMED FROM GOVERNMENT OF INDIA AND REJECTED (BUT UNDER CORRESPONDENCE) AS ON 31st MARCH 1970

particulars	Rs.	P.	Rs.	P.
1. On account of Non-project Sectors :				
Excess of expenditure over income :				
.1 1983-84				
As per last account	86,273.	76		
.2 1984-85				
As per last account	2,67,273.	77	3,53,547.	53

S. P. Mukherjee
Chief Accounts Officer

D. Bose
Joint Secretary

THIRTY-EIGHTH ANNUAL REPORT : 1969-70

SCHEDULE V

EXCESS OF EXPENDITURE OVER RECEIPTS IN RESPECT OF MISCELLANEOUS PROJECTS AND ACTIVITIES ON BEHALF OF THE GOVERNMENT OF INDIA AND OTHER BODIES AS ON 31st MARCH 1970

projects and activities	net excess of expenditure (+)/ receipts (-)					
	upto 31st March 1969		for the year		upto 31st March 1970	
	Rs.	P.	Rs.	P.	Rs.	P.
1. On behalf of Government of India :						
1 Research and Planning Committee of the Planning Commission for Sociological Studies ..			+23,756.14	—		23,756.14
2 IBEC Colombo Plan Fellowship :						
As per last account	1,22,617.63					
Less : amount received during the year ..	1,22,617.63					
Expenditure during the year	1,16,384.72					
Less : amount received during the year ..	13,517.69			+1,02,677.13		
Sub-total : (1.2)					+1,02,677.13	1,02,677.13
3 Director of Health Services for Family Planning Survey :						
As per last account	59,399.14					
Less : amount received during the year ..	68,900.00		-18,400.86			
Expenditure during the year	1,16,089.85					
Less : amount received during the year ..	56,620.00				+60,669.85	
Sub-total : (1.3)			-18,400.86		+60,669.85 [Note (b)]	41,168.99
4 Director of Health Services for Demographic Studies :						
As per last account	11,664.17					
Less : amount received during the year ..	10,320.00		+1,344.17			
Expenditure during the year	1,23,356.87					
Less : amount received during the year ..	36,700.00				+86,656.87	
Sub-total : (1.4)			+1,344.17		+86,656.87 [Note (b)]	88,000.04
Sub-total : (1.1 to 1.4)			+5,698.46		+2,49,902.85 [Note (a)]	2,56,601.30
2. On behalf of other bodies :						
1 International Social Science Council for International Conference on Comparative Research in Social Change and Regional Disparities						
As per last account	16,981.94					
Less : amount received during the year ..	16,646.00		+336.94			336.94
Sub-total : (2.1)			+336.94			336.94
Total :			+6,035.39		+2,49,902.85	2,56,938.24

NOTES : (a) To be claimed from Government of India.
(b) The items are vide Schedule XI attached.

S. P. Mukherjee
Chief Accounts Officer

D. Bose
Joint Secretary

INDIAN STATISTICAL INSTITUTE

SCHEDULE VI

DETAILS OF CASH IN HAND AS ON 31st MARCH 1970

At the Central Office and other offices of the Institute :

	Rs.	P.
At Calcutta :		
Central Office	73,395.85	
City Office	930.66	
Field Branch	1,655.46	75,983.07
At Delhi		
		9,951.99
At Guwahati		
		2,110.67
At Bangalore :		
SQC	1,419.68	
DRTC	264.77	
RTS	66.88	1,731.33
At Ernakulam (Kerala)		
		3,948.46
At Madras		
		2,332.91
At Bombay :		
SQC	1,737.77	
NSS	6,049.85	7,787.62
At Baroda		
		194.55
At Coimbatore		
		38.72
At Tokyo, Japan		
		8,108.17
		1,12,187.59

The above amount of Rs. 1,12,187.59 has been shown in the following Balance Sheets of the Institute and its various funds :

The Institute		60,851.94
Other funds :		
Gratuity Fund	2,532.90	
Director's Contribution Fund	3,348.48	
Supervision Fee Fund	3,082.69	
Development Fund I	521.84	
Leave Salary Fund	1,963.77	
Visiting Professors & Fellows Fund	113.13	
Electronic Data Processing and Computation Unit	407.13	
Development Fund II	10,391.70	
ISI General Provident Fund	28,980.01	61,335.65
		1,12,187.59

S. P. Mukherjee
Chief Accounts Officer

D. Bose
Joint Secretary

THIRTY-EIGHTH ANNUAL REPORT : 1969-70

SCHEDULE VII

DETAILS OF BANK BALANCE (EXCEPT AMERICAN EXPRESS INTERNATIONAL BANKING CORPORATION, CALCUTTA AS ON 31ST MARCH 1970)

	Rs.	P.
State Bank of India, Shambazar 'B'	16,14,333.43
State Bank of India, Delhi 'A'	1,672.88
State Bank of India, Delhi 'B'	698.86
United Bank of India, Dunlop Bridge	2,29,894.71
National and Grindlays Bank Ltd., Shambazar	6,209.36
United Bank of India, Delhi	4,366.16
Canara Bank Ltd., Delhi	81,380.82
United Bank of India, Girdih	73,779.08
United Commercial Bank, Girdih	1,110.07
State Bank of India, Bangalore	45,904.53
State Bank of Trivancore, Ernakulam	10,788.20
State Bank of India, Madras	24,635.77
Bank of Baroda, Bangalore	7,307.09
Nath Bank Ltd. in liquidation—doubtful	4,143.27
Insani Bank Ltd., Coimbatore	11,718.68
State Bank of India, Bombay	717.16
Bank of Baroda, Baroda	6,486.13
		<u>21,33,846.18*</u>

The above amount of Rs. 21,33,846.18 has been shown in the following Balance Sheets of the Institute and its various funds as follows:

The Institute	.. ..	10,60,723.91
ISI General Provident Fund	.. ..	1,00,000.00
Honeywell H-400 Computer Unit	.. ..	5,73,121.27
Electronic Data Processing and Computation Unit	.. ..	4,00,000.00
		<u>21,33,846.18</u>

* Includes Rs. 68,000/- being total of amounts in transit.

B. P. Mukherjee
Chief Accounts Officer

D. Bose
Joint Secretary

THIRTY-EIGHTH ANNUAL REPORT : 1969-70

SCHEDULE IX

LOANS FROM OTHER FUNDS AS OF 31st MARCH 1970

Funds	Rs.	P.
As per Balance Sheets of :		
1. Gratuity Fund	24,40,000	00
2. Development Fund I	1,19,000	00
3. Development Fund II	3,55,000	00
4. Supervision Fee Fund	1,13,000	00
	30,27,000	00
Less : Loan to Leave Salary Fund	57,000	00
Total :	29,80,000	00

S. P. Mukherjee
Chief Accounts Officer

D. Bose
Joint Secretary

SCHEDULE X

EXCESS OF INCOME OVER EXPENDITURE IN RESPECT OF MISCELLANEOUS PROJECTS AND ACTIVITIES
AS OF 31st MARCH 1970

projects and activities	net excess of receipts (+) / expenditure (-)		upto 31st March 1970			
	upto 31st March 1969	for the year (vide Schedule XI attached)				
	Rs.	P.	Rs.	P.		
1. Estimates of Probabilities of Hospitalisation according to age, sex and diagnosis etc.	+1,20,667	70	+20,261	73	1,40,919	43
2. International Course on Management of Quality Control in collaboration with Dr. J. M. Juran	+18,326	56	—	—	18,326	56
3. An investigation of age and related changes in the electrophoretic and immunoelectrophoretic components of serum proteins	—	—	+1,21,600	00	1,21,600	00
4. Teachers' training course on the Education and Speech Rehabilitation of deaf and hard of hearing children	—	—	+300	00	300	00
Total :	1,38,994	26	1,42,161	73	2,79,146	99

S. P. Mukherjee
Chief Accounts Officer

D. Bose
Joint Secretary

INDIAN STATISTICAL INSTITUTE

SCHEDULE XI

SECTOR-WISE BREAK UP OF INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31st MARCH 1970

sectors	Grant from Government of India and others received		miscellaneous income		total income		total expenditure		excess of income over expenditure (+) or excess of expenditure over income (-)		
	Rs.	P.	Rs.	P.	Rs.	P.	Rs.	P.	Rs.	P.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	
Non-Plan											
1. Non-Project Sectors:											
1. RTS (including Planning Division and Statistical Quality Control)	53,44,000.00	—	8,80,098.68	—	62,04,098.68	—	62,51,165.38	—	—	-47,066.70	
2. IBEC	1,03,000.00	—	—	—	1,03,000.00	—	1,80,099.70	—	—	+12,900.30	
Sub-total (Item 1)	55,37,000.00	—	8,80,098.68	—	63,97,098.68	—	64,31,265.08	—	—	-34,166.40	
2. Project Sector—NSS	82,89,000.00	—	0,000.00	—	82,89,000.00	—	83,82,026.31	—	—	-87,026.31	
			[Note (d)]								
3. Common Services (excluding amounts relating to Miscellaneous items i.e., 4 below)	38,74,000.00	—	—	—	38,74,000.00	—	45,72,352.49	—	—	-6,98,352.49	
Total: Project and non-project Sectors and Common Services	1,77,00,000.00	—	8,80,098.68	—	1,85,80,098.68	—	1,93,85,643.78	—	—	-8,19,545.10	
											[Note (a)]
4. Miscellaneous											
1. Family Planning Survey	55,520.00	—	—	—	55,520.00	—	1,18,089.85	—	—	-60,569.85	
											[Note (b)]
2. Demographic Research	36,700.00	—	—	—	36,700.00	—	1,23,356.87	—	—	-86,656.87	
											[Note (b)]
3. Estimates of Probabilities of Hospitalisation according to age, sex and diagnosis	79,559.00	—	—	—	79,559.00	—	59,307.27	—	—	+20,251.73	
											[Note (c)]
4. An investigation of age and related changes in the electrophoretic and immunoelectrophoretic components of Serum Proteins	1,21,600.00	—	—	—	1,21,600.00	—	—	—	—	+1,21,600.00	
											[Note (c)]
5. Teachers' Training Course on the Education and Speech rehabilitation of deaf and hard of hearing children	12,840.00	—	—	—	12,840.00	—	12,540.00	—	—	+300.00	
											[Note (c)]
Sub-total (Item 4.1-4.5)	3,06,219.00	—	—	—	3,06,219.00	—	3,11,292.99	—	—	-5,073.99	
Total: (1-4)	1,80,06,219.00	—	8,80,098.68	—	1,88,72,217.68	—	1,96,96,936.77	—	—	-8,24,719.09	
PLAN											
1. Non-Project Sectors:											
1. RTS (including Planning Division and Statistical Quality Control)	5,46,000.00	—	—	—	5,45,000.00	—	6,38,294.02	—	—	-93,294.02	
2. IBEC	30,000.00	—	—	—	30,000.00	—	30,000.00	—	—	—	
Sub-total (Item 1)	5,76,000.00	—	—	—	5,75,000.00	—	6,68,294.02	—	—	-93,294.02	
2. Project Sector—NSS	2,26,000.00	—	—	—	2,26,000.00	—	2,16,303.84	—	—	+8,696.16	
Total: Project and Non-Project Sectors: (1-2):	8,00,000.00	—	—	—	8,00,000.00	—	8,84,687.86	—	—	-84,687.86	
											[Note (a)]

NOTES:—(a) The items are vide Schedule III attached. (b) The items are vide Schedule V attached. (c) The items are vide Schedule X attached. (d) Receipts from Government of India for Quick Tabulation work. (e) Includes Rs. 26,567.00 for Calcutta Fertility Survey work.

S. P. Mukherjee
Chief Accounts Officer

D. Bose
Joint Secretary

THIRTY-EIGHTH ANNUAL REPORT : 1969-70

STATEMENT OF ACCOUNT OF GRANT RECEIVED FROM THE GOVERNMENT OF INDIA IN RESPECT OF CAPITAL PROJECTS AND EXPENDITURE ETC. FOR THE YEAR ENDED 31st MARCH 1970

1969-69	Expenditure	1968-69	Income	
Rs. P.		Rs. P.		Rs. P.
	Additions to Assets during the year :		1. Grant received from the Government of India for current year's Capital Expenditure (including Rs. 1,52,918.92 being adjustment in respect of grant during 1967-68 for purchase of land in Bangalore requisitioned back by Government of Mysore)	
1,32,738.76	1. As per Schedule I (Column 7.0) to the Balance Sheet of Indian Statistical Institute	18,82,091.92		
30,670.00	2. OYT telephone payments during the year	12,200.00	9,75,000.00	18,49,918.92
50,098.46	3. Advance on account of expenditure on Joint Project for the construction of Electronic Computers (in progress)	—	—	1,575.00
1,81,664.79	4. Excess of receipt over expenditure	—	—	42,798.00
<u>9,75,000.00</u>		<u>18,94,291.92</u>	<u>9,75,000.00</u>	<u>18,94,291.92</u>

S. P. Mukherjee
Chief Accounts Officer

D. Bose
Joint Secretary

We have examined the above statement with the books and records maintained by the Institute and produced to us and the information and explanations given and have found it to be in accordance therewith.

Calcutta,
28th December 1970

PRICE WATERHOUSE & PEAT CO.
Chartered Accountants

INDIAN STATISTICAL INSTITUTE

INDIAN STATISTICAL INSTITUTE

VISITING PROFESSORS AND FELLOWS FUND

BALANCE SHEET AS AT 31st MARCH 1970

1968-69 Rs. P.	Fund and Liabilities	Rs. P.	1968-69 Rs. P.	Property and Assets	Rs. P.
	Fund :			Cash in hand :	
113.13	As per last account	113.13	113.13	As per Schedule VI to the Institute's Balance Sheet ..	113.13
<u>113.13</u>		<u>113.13</u>	<u>113.13</u>		<u>113.13</u>

Note : Transactions during the year in respect of Visiting Professors and Fellows have not been incorporated in these accounts but have been included in the Income and Expenditure Account of the Institute.

S. P. Mukherjee
Chief Accounts Officer

D. Bose
Joint Secretary

This is the Balance Sheet referred to in our report of even date.

Calcutta,
28th December 1970.

PRICE WATERHOUSE FRAY & Co
Chartered Accountants

LEAVE SALARY FUND

BALANCE SHEET AS AT 31st MARCH 1970

1968-69 Rs. P.	Fund and Liabilities	Rs. P.	1968-69 Rs. P.	Property and Assets	Rs. P.	Rs. P.
55,000.00	Amount due to the Institute on Loan Account as per Schedule IX to the Institute's Balance Sheet	67,000.00		1. Deficit :		
			52,361.23	As per last account ..	52,361.23	
				Add : leave salary paid during the year	12,675.00	65,036.23
				2. Current Assets :		
				Cash in hand :		
			2,638.77	As per Schedule VI to the Institute's Balance Sheet		1,963.77
<u>55,000.00</u>		<u>67,000.00</u>	<u>55,000.00</u>			<u>67,000.00</u>

Note : A sum of Rs. 1,61,000/- (excluding interest accrued for two years ended 31st March 1970, which has not been ascertained) being liability in respect of leave salary as at 31st March 1970 estimated by the Institute, has not been provided for in these accounts.

S. P. Mukherjee
Chief Accounts Officer

D. Bose
Joint Secretary

This is the Balance Sheet referred to in our report of even date.

Calcutta,
28th December 1970.

PRICE WATERHOUSE FRAY & Co
Chartered Accountants

THIRTY-EIGHTH ANNUAL REPORT : 1966-70

GRATUITY FUND

BALANCE SHEET AS AT 31st MARCH 1970

1966-69		BALANCE SHEET AS AT 31st MARCH 1970			1966-69		Property and Assets	
Ra. P.	Fund and Liabilities	Ra. P.	Ra. P.	Ra. P.	Ra. P.		Ra. P.	
	Fund :					Investment in Govern-		
	As per last account	30,51,835.72				ment Securities at		
	Add :					cost :		
	i) Employer's con-					Ra. 5,14,900/- 6½%		
	tribution for the					loan of 1969 (market		
	year from the					value Ra. 5,18,709.15)	5,18,229.05	
	Institute (includ-					Current Assets :		
	ing Ra. 436.63					i) Amount due from		
	in respect of em-					the Institute on		
	ployees of					loan account		
	EDPCT) (Note	4,74,187.04				As per Schedule IX		
	(1) below]				25,32,000.00	to the Institute's		
						Balance Sheet ..	24,40,000.00	
	ii) Amount credited					ii) Employer's con-		
	by the Institute					tribution for 1965-70		
	on account of					receivable from the		
	interest for utili-					Institute ..	4,72,731.01	
	sing money of	5,000.00	4,79,187.04			iii) Interest recoverable	868.68	
	the Fund ..					Balance with Banks		
						(forming part of In-		
			35,31,022.76			stitute's Bank Account		
						as shown in Schedule		
	Less : paid during					VII to the Institute's		
	the year ..	94,815.22	34,38,187.54	5,18,000.00		Balance Sheet) ..		
30,51,835.72	Liabilities ..		191.10			Cash in hand :		
						As per Schedule VI to		
						the Institute's Balance		
					1,835.72	Sheet ..	2,652.90	
30,51,835.72			34,38,378.64	30,51,835.72			34,38,378.64	

Notes : (1) Employer's contribution for each year is estimated on the basis of the pay drawn by the entitled employees in respect of that year, whereas those employees are entitled to receive gratuity calculated with reference to the total number of years of service on the basis of last pay drawn by them. The estimated liability as at 31st March 1970 on the assumption that all the entitled employees would have retired and would be entitled to gratuity on that date is Ra. 87.50 lakhs.

(2) Investments of the Fund are held in the name of the Indian Statistical Institute.

S. P. Mukherjee
Chief Accounts Officer

D. Bose
Joint Secretary

This is the Balance Sheet referred to in our report of even date.

INDIAN STATISTICAL INSTITUTE

DEVELOPMENT FUND I

BALANCE SHEET AS AT 31st MARCH 1970

1968-69		Fund and Liabilities		1968-69		Property and Assets		Ra. P.	
Ra.	P.	Ra.	P.	Ra.	P.	Ra.	P.	Ra.	P.
		Fund :				Current Assets :			
1,19,521.94		As per last account ..	1,19,521.94			Amount due from the Institute on Loan Account :			
						As per Schedule IX to the Institute's Balance Sheet ..	1,19,000.00		1,19,000.00
						Cash in hand :			
						As per Schedule VI to the Institute's Balance Sheet ..	521.94		521.94
<u>1,19,521.94</u>		<u>1,19,521.94</u>		<u>1,19,521.94</u>					<u>1,19,521.94</u>

S. P. Mukherjee
Chief Accounts Officer

D. Bose
Joint Secretary

This is the Balance Sheet referred to in our report of even date.

Calcutta,
28th December 1970.

PRICE WATERHOUSE FRAY & Co.
Chartered Accountants

DEVELOPMENT FUND II

BALANCE SHEET AS AT 31st MARCH 1970

1968-69		Fund & Liabilities		1968-69		Property and Assets		Ra. P.	
Ra.	P.	Ra.	P.	Ra.	P.	Ra.	P.	Ra.	P.
		Fund :				1. Fixed Assets :			
		As per last account ..	10,98,825.54		5,92,789.70	As per schedule annexed ..	5,84,243.21		
						2. O.T.T. telephons :			
					8,887.31	As per last account ..	8,887.31		
						Less: depreciation @5%	343.37		8,543.94
						3. Investment in Government Securities at cost Ra. 50,000/- 3% First Development Loan 1970-75 (market value Ra. 48,750/-) :			
					45,533.75	As per last account ..	45,533.75		
						4. Current Assets :			
10,98,825.54		Account ..	799.11	10,99,026.43	96,232.72	1. Stock of building materials—at cost ..	96,232.72		
						2. Amount due from the Institute on Loan Account :			
						As per Schedule IX to the Institute's Balance Sheet ..	3,55,000.00		3,55,000.00
						3. Cash in hand :			
						As per Schedule VI to the Institute's Balance Sheet ..	2,401.08		10,281.78
<u>10,98,825.54</u>		<u>10,99,026.43</u>		<u>10,98,825.54</u>					<u>10,98,026.43</u>

S. P. Mukherjee
Chief Accounts Officer

D. Bose
Joint Secretary

This is the Balance Sheet referred to in our report of even date.

Calcutta,
28th December 1970

PRICE WATERHOUSE FRAY & Co.
Chartered Accountants

THIRTY-EIGHTH ANNUAL REPORT : 1969-70

DEVELOPMENT FUND II

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31st MARCH 1970

1968-69	Expenditure		1968-69	Income	
Rs. P.		Rs. P.	Rs. P.		Rs. P.
	Depreciation :		12,128.77	Rent	14,326.82
17,612.16	On Fixed Assets ..	16,660.58		Interest on investment (Less : Bank charges—Rs. 4.00)	1,496.00
	Amount written off :			Excess of expenditure over in- come transferred to Fund Account	799.11
361.44	OYT telephone advance ..	343.37	25,345.85		
20,697.02	Loss on sale of old and damag- ed stocks of Iron and Steel ..	—			
<hr/>		<hr/>	<hr/>		<hr/>
38,970.62		16,923.93	38,970.62		16,923.93

S. P. Mukherjee
Chief Accounts Officer

D. Bose
Joint Secretary

Calcutta,
28th December 1970.

PRICE WATERHOUSE PEAT & Co.
Chartered Accountants

INDIAN STATISTICAL INSTITUTE

DEVELOPMENT FUND II

SCHEDULE OF FIXED ASSETS AS ON 31st MARCH 1970

particulars	written down value as on 31st March 1969	depreciation for the year			net value (col. 2-3.1)	addition during the year	written down value as on 31st March 1970 (col. 4+5)
		rate %		amount			
		Rs. P.	Rs. P.	Rs. P.			
(1)	(2)	(3.0)	(3.1)	(4)	(5)	(6)	
1. LAND :							
.1 Bidyayatan Sarani, Baranagar ..	50,000.00	—	—	50,000.00	—	50,000.00	
.2 169 Gopal Lal Tagore Road, Baranagar	1,03,865.00	—	—	1,03,865.00	—	1,03,865.00	
.3 Rose Villa, Giridih	1,07,602.72	—	—	1,07,602.72	—	1,07,602.72	
.4 Biraja Kutir, Giridih	7,445.19	—	—	7,445.19	—	7,445.19	
.5 Takdah Planters' Club, Darjeeling ..	25,996.50	—	—	25,996.50	—	25,996.50	
Sub-total : (1)	2,94,799.41	—	—	2,94,799.41	—	2,94,799.41	
2. BUILDINGS :							
.1 169 Gopal Lal Tagore Road, Baranagar	22,335.78	2.6%	568.39	21,777.39	—	21,777.39	
.2 Rose Villa, Giridih	93,925.21	..	2,348.13	91,577.08	1,686.22	93,263.30	
.3 Health Home, Giridih (a)	12,435.38	..	310.88	12,124.50	—	12,124.50	
Sub-total : (2)	1,28,696.37	..	3,217.40	1,25,478.97	1,686.22	1,27,165.19	
3. SHEDS AND STRUCTURES :							
.1 Students' Hostel etc., at 204 Barrack- pore Trunk Road, Baranagar (b) ..	1,05,390.70	7.5%	7,904.30	97,486.40	5,447.98	1,03,934.38	
.2 169 Gopal Lal Tagore Road, Baranagar	47,655.81	..	3,574.17	44,081.64	—	44,081.64	
.3 Post Office at 204 Barrackpore Trunk Road	501.12	..	37.58	463.54	—	463.54	
.4 Bidyayatan Sarani, Baranagar	1,302.90	..	97.73	1,205.18	—	1,205.18	
.5 Petty construction at Giridih	6,039.16	..	462.94	5,586.22	—	5,586.22	
Sub-total : (3)	1,60,889.69	..	12,066.71	1,48,822.78	6,447.98	1,55,270.74	
4. INTERNAL TELEPHONE SYSTEM							
.. ..	3,844.45	10%	384.45	3,460.00	—	3,460.00	
5. MOTOR CARS							
.. ..	4,559.98	20%	913.00	3,647.98	—	3,647.98	
Total : (1-5)	5,92,789.70	..	16,580.56	5,76,209.14	8,134.18	5,84,343.32	

NOTES : (a) Situated on land, acquired as gift, the value of which has been ignored for the purpose of these accounts.

(b) Situated on land, acquired by the Institute out of its General Fund. [Note (a) of the Fixed Assets Schedule attached to the Institute's Balance Sheet].

S. P. Mukherjee
Chief Accounts Officer

D. Bose
Joint Secretary

INDIAN STATISTICAL INSTITUTE

ELECTRONIC DATA PROCESSING AND COMPUTATION UNIT

BALANCE SHEET AS AT 31st MARCH 1970

1968-69 Fund & Liabilities		1968-69		Property & Assets	
Ra. P.	Ra. P.	Ra. P.	Ra. P.	Ra. P.	Ra. P.
1. Fund :			1. Fixed Assets :		
	As per last account ..	12,81,430.18		1. Magnetic tape : Written down value as per last account	8,046.00
	Add. Excess of income over expenditure for the year as per Income and Expenditure Account ..	2,06,631.66	14,97,961.74	Less : depreciation written off during the year ..	8,046.00
12,81,430.18				2. Furniture and fittings : Written down value as per last account	1,320.39
	2. Liabilities :			Less : depreciation written off during the year ..	122.04
3,764.00	Sundry creditors	1,25,435.10			1,188.35
				Additions during the year ..	7,018.80
				3. Electrical equipment : Written down value as per last account	4,110.60
				Less : depreciation written off during the year ..	411.06
				4. Office machinery and equipment ..	1,731.28
				5. Punching equipment	2,128.00
					15,783.88
				2. Current Assets :	
				1. Charges prepaid	458.33
				2. Sundry debtors ..	31,767.60
				3. Amount due from Institute on Loan Account ..	11,75,000.00
				4. Balance with Banks forming part of the Institute's Bank Account as shown in Schedule VII to the Institute's Balance Sheet ..	4,00,000.00*
				5. Cash in hand : As per Schedule VI to the Institute's Balance Sheet ..	407.13
					18,07,632.96
12,85,184.24		16,23,396.84	21,86,184.24		18,23,396.84

* Amount has been invested in Fixed Deposits with United Bank of India, Dunlop Bridge Branch on 24-9-70 in the name of the Indian Statistical Institute.

S. P. Mukherjee
Chief Accounts Officer

D. Bose
Joint Secretary

We have examined the above Balance Sheet of the Indian Statistical Institute Electronic Data Processing and Computation Unit as at 31st March 1970 and the annexed Income and Expenditure Account for the year ended that date with the books and records maintained by the Institute and produced to us and the information and explanations given and have found them to be in accordance therewith.

Calcutta,
28th December 1970.

PRINCE WATERHOUSE PRAT & CO
Chartered Accountants

INDIAN STATISTICAL INSTITUTE

HONEYWELL H-400 COMPUTER UNIT

BALANCE SHEET AS AT 31st MARCH 1970

1968-69		Fund & Liabilities		1968-69		Property and Assets		1968-69	
Rs.	P.	Rs.	P.	Rs.	P.	Rs.	P.	Rs.	P.
		1. Loan from Government of India:				1. Expenditure incurred for:			
		As per last account				.1 Cost of Honeywell H-400 Computer ..		10,59,844.50	
16,00,000.00		16,00,000.00				.2 Custom duty and importation charges on above:			
		2. Liabilities				As per last account..		6,74,652.83	
34,965.14		10,71,168.00				Additions during the year ..		10,235.21	6,24,758.04
						.3 Insurance charges on above:			
						As per last account..		46,601.77	
				7,31,164.60		Additions during the year ..		486.45	47,087.22
						.4 Cost of motor alternator:			
						As per last account..			27,197.94
						.5 Custom duty and importation charges on above:			
						As per last account..		2,048.83	
						Additions during the year ..		8,607.65	10,656.47
						.6 Insurance charges on above:			
				27,720.39		As per last account..			373.63
						.7 Cost of magnetic tape			
						.8 Air conditioning:			
						As per last account..		1,03,488.31	
						Less: depreciation written off during the year ..		16,523.25	87,965.06
				1,03,488.31		Additions during the year ..			13,211.44
						.9 Electrical installation:			
						As per last account..		53,597.18	
						Less: depreciation written off during the year ..		5,259.72	47,337.46
						Additions during the year ..			997.36
				53,597.18		.10 Construction of floor etc.:			
						As per last account..		35,825.94	
						Less: depreciation written off during the year ..		895.65	34,930.29
				35,825.94		Additions during the year ..			3,503.35
						Carried over ..			30,88,327.46
16,00,000.00		16,00,000.00		28,71,169.60		9,42,768.43			

THIRTY-EIGHTH ANNUAL REPORT : 1968-70

HONEYWELL H-400 COMPUTER UNIT

BALANCE SHEET AS AT 31st MARCH 1970—Contd.

1968-69	Fund and		1968-69	Property and Assets			
Ra. P.	Liabilities	Ra. P.	Ra. P.		Ra. P.	Ra. P.	Ra. P.
	Brought forward ..	28,71,169.50	9,45,786.42	Brought forward			20,25,327.66
16,34,966.14							
				2.1 Advance for electrical installation ..		—	
			20,044.00	2 Advance for custom duty ..		48,041.95	48,041.95
			48,805.40				
				3. Balance with Banks forming part of the Institute's Bank Account as shown in Schedule VII to the Institute's Balance Sheet ..			5,73,121.27
			5,23,529.32				
				4. Excess of expenditure over income for the year as per Income and Expenditure Account ..			21,678.62
							21,678.62
16,34,966.14		28,71,169.50	16,34,965.14				28,71,169.50

Note : Interest payable amounting to Ra. 1,60,000/- on loan from Government of India for the two years ended 31st March 1970 has not been provided for in these accounts.

S. P. Mukherjee
Chief Accounts Officer

D. Bose
Joint Secretary

We have examined the above Balance Sheet of the Indian Statistical Institute Honey well H-400 Computer Unit as at 31st March 1970 and the annexed Income and Expenditure Account for the year ended that date with the books and records maintained by the Institute and produced to us and the information and explanations given and have found them to be in accordance therewith.

Calcutta,
28th December 1970.

PRICE WATERHOUSE FRAT & Co.
Chartered Accountants

HONEYWELL H-400 COMPUTER UNIT

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31st MARCH 1970

1968-69	Expenditure			1968-69	Income	
Ra. P.		Ra. P.	Ra. P.	Ra. P.		Ra. P.
	Depreciation on :				Excess of expenditure over income ..	21,678.62
	.1 Air conditioning ..	16,623.25				
	.2 Electrical installation ..	5,269.72				
	— .3 Construction of floor etc.	895.65	21,678.62			
			21,678.62			21,678.62

S. P. Mukherjee
Chief Accounts Officer

D. Bose
Joint Secretary

Calcutta,
28th December 1970.

PRICE WATERHOUSE FRAT & Co.
Chartered Accountants

INDIAN STATISTICAL INSTITUTE GENERAL PROVIDENT FUND

AUDITORS' REPORT

We have audited the Balance Sheet as at 31st March 1970 of the Indian Statistical Institute General Provident Fund, signed by us under reference to this report, and the relative Income and Expenditure Account for the year ended that date with the books and records of the Fund maintained by the Institute and produced to us and the information and explanations given and, subject to the belowmentioned remarks, have found them to be in accordance therewith. The remarks referred to above are :

1. A Board of Trustees as envisaged in Rule 14 read with Rule 2(1) of the Rules of the Fund was formed and the trust deed was registered on 28th September 1970. Accordingly the investments of the Fund were held in the name of the Institute and the Bank Accounts of the Fund were also maintained in its name as at 31st March 1970.

2. No income-tax has been deducted from the amounts paid in settlement of the members account pending recognition of the Fund by the Commissioner of Income-tax under the Income-Tax Act, 1961. The Institute has, however, undertaken to meet any liability which may arise in the event of nonrecognition of the Fund.

3. As appears from Schedule VI and VII annexed to the Institute's Accounts, the amounts shown as cash balances (both in hand and at Bank) in the Balance Sheet dealt with by this report represent the balancing figures.

4. Membership subscriptions were neither deposited to the Fund's Bank Account nor invested in the manner required by the Rule 12 of the Fund. The net amounts were retained by the Institute and a sum of Rs. 20,000/- was allowed by the Institute to the Fund by way of interest for the year ended 31st March 1970.

5. In respect of accounting year ended 31st March 1970 no interest has been declared payable to the members as required by Rule 13 of the Fund. According to the minute dated 22nd August 1969 of the Council of Indian Statistical Institute, the allocation to the members' accounts will be made when the appropriate rate of interest is ascertained from the audited accounts for the year 1969-70.

6. The extent of the amounts of employer's contribution and interest thereon forfeited from time to time under Rule 25 and available for disposal of the Trustees as provided for in Rule 27 has not been ascertained. These amounts as and when arose were, however, credited to the Income and Expenditure Account of the Fund for the respective years. Furthermore, the extent, if any, to which such forfeited amounts have been distributed to the members as interest has not been ascertained and disclosed in these accounts.

7. Under the provisions of Rule 11 of the Fund, interest/income should be included in the accounts as and when received. These accounts, however, include interest accrued and due in case of Government Promissory Notes and in all other cases interest accrued whether due or not.

8. The houses/sites for houses purchased by the members out of withdrawals from the Fund were not assigned to the Trustees as stipulated in Rule 21(f)(i) of the Rules of the Fund.

THIRTY-EIGHTH ANNUAL REPORT : 1968-70

9. An employee of the Institute was paid Rs. 5,955.56 being Employers contribution inclusive of interest less the amount alleged to have been misappropriated, as approved by the Council of the Institute. According to Rule 26(1)(b) no amount should have been paid to him on account of employer's contribution.

10. In terms of Rule 21(a)(v) loan amounting to Rs. 4,550/- was granted to a member for purchase of site for house, the cost of which amounted to Rs. 3,000/- only. The excess amount of loan granted over the cost of land i.e., Rs. 1,550/- plus interest thereon has not yet been recovered from the member as required by Rule 21(b)(3)(v).

Calcutta,
28th December 1970.

PRINCE WATERHOUSE PRATT & CO.
Chartered Accountants

INDIAN STATISTICAL INSTITUTE

INDIAN STATISTICAL INSTITUTE

BALANCE SHEET

1968-69	Fund and Liabilities	Rs.	P.	Rs.	P.	Rs.	P.
1968-69		Rs.	P.	Rs.	P.	Rs.	P.
	Members' own subscription :						
	As per last account	45,04,789.55		45,04,789.55			
	Add : during the year			7,80,278.40			
45,04,789.55	Less : refunded during the year			52,95,067.95		51,82,026.88	
				1,13,042.07			
	Employer's contribution :						
	As per last account	45,04,789.55		45,04,789.55			
	Add : during the year (including Rs. 728.71 in respect of employees of EDFCU)			7,80,278.40			
				52,95,067.95			
45,04,789.55	Less : (i) refunded during the year		1,04,378.88				
	(ii) amount forfeited		8,663.09	1,13,042.07		51,82,026.88	
	Members' voluntary subscription :						
	As per last account	1,74,944.95		1,74,944.95			
	Add : during the year			48,642.79			
1,74,944.95	Less : refunded during the year			2,23,587.74		1,97,744.60	
				35,843.14			
	Interest payable :						
	a) On members' own subscription :						
	As per last account	10,74,290.33		10,74,290.33			
	Add : for the year 1968-69			3,88,531.86			
10,74,290.33	Less : paid during the year			14,62,822.19		14,34,779.24	
				28,042.86			
	b) On employer's contribution :						
	As per last account	9,72,866.80		9,72,866.80			
	Add : for the year 1968-69			3,61,309.37			
9,72,866.80	Less : (i) paid during the year		24,575.51	13,34,135.97		13,08,910.45	
	(ii) amount forfeited		650.01	25,225.52			
	c) On members' voluntary subscription :						
	As per last account	32,813.88		32,813.88			
	Add : for the year 1968-69			14,431.48			
32,813.88	Less : paid during the year			47,045.18		40,223.52	
				8,821.64			
	Undistributed income including amounts forfeited as per Income and Expenditure Account	9,23,902.59				8,87,219.74	
	Liabilities					28,908.91	
1,81,68,197.25						1,40,81,738.22	

Notes : (a) Members' own subscription and employer's contribution include balances due to employees who ceased their employment with the Institute within 31st March 1970, but their accounts remained unsettled at that date.

(b) In terms of the Rules of the Fund, the Council of the Indian Statistical Institute was functioning as Trustees of the Fund pending appointment of a Board of Trustees, which was constituted by a deed of Trust only on 25th September 1970. Accordingly, the authentication of the accounts of the Indian Statistical Institute General Provident Fund for the year ended 31st March 1970 by the members of the Board of Trustees is not considered necessary. As in previous years, the accounts have, however, been authenticated by the Joint Secretary and the Chief Accounts Officer of the Institute, which is considered adequate for the purposes.

Calcutta,
28th December 1970.

S. P. Mukherjee
Chief Accounts Officer

D. Bose
Joint Secretary

THIRTY-EIGHTH ANNUAL REPORT : 1969-70

GENERAL PROVIDENT FUND

AS AT 31st MARCH 1970

1968-69		Property and Assets	Ra. P.		Ra. P.	
Ra.	P.		Ra.	P.	Ra.	P.
Investments at cost :						
a) Government Promissory Notes :						
		Ra. 18,65,000/- 3% conversion loan 1946-68 ..	13,00,769.60			
		Ra. 13,05,000/- 3% 1st Development loan ..	11,45,154.89			
		1970-75 ..				
		Ra. 13,00,000/- 4% loan 1955 ..	13,00,000.00			
		Ra. 63,50,000/- 5 1/2% loan 1959 ..	63,68,456.00			
		Ra. 20,25,000/- 5 1/2% loan 1962 ..	20,47,578.00			1,11,61,649.39
		Ra. 1,18,45,000/- (market value (Ra. 1,11,18,450.00)				
		b) Ra. 50,000/- 12 year National Plan Savings Certificates ..		50,000.00		
93,20,924.29		c) Fixed Deposits with State Bank of India, Shambazar ..		10,00,000.00		1,22,11,649.39
		Loans to members [including non-repayable loans under Rule 21(c)] ..				14,24,433.00
11,71,823.50		Relief loan to members ..				8,664.00
20,315.22						
Current Assets :						
Interest accrued :						
		a) On Government Promissory Notes (excluding interest accrued but not due and including interest paid at the time of purchase of securities) ..	2,32,845.38			
1,49,438.50						
20,000.00		b) On 12 year National Plan Savings Certificates ..	24,000.00			
1,42,898.92		c) On fixed deposit with State Bank of India, Shambazar ..	23,138.88	2,69,984.26		
Cash balance :						
		In custody of the Institute (as shown in Schedule VI to the Institute's Balance Sheet) ..		28,860.01		
20,168.96						
With Banks on Current Accounts :						
		(i) with State Bank of India, Strand Road ..	18,027.66			
		(ii) with Banks (forming part of the Institute's Bank Account as shown in Schedule VII to the Institute's Balance Sheet) ..	1,00,000.00	1,18,027.66		4,16,991.93
13,43,027.76						
<u>1,21,88,197.25</u>						<u>1,40,61,738.22</u>

This is the Balance Sheet referred to in our report of even date.

PRINCE WATERHOUSE FRAY & CO.
Chartered Accountants

INDIAN STATISTICAL INSTITUTE

INDIAN STATISTICAL INSTITUTE GENERAL PROVIDENT FUND

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31st MARCH 1970

1968-69 Rs. P.	Expenditure	Rs. P.	1969-69 Rs. P.	Income	Rs. P.	Rs. P.
5,49,223.84	Excess of income over ex- penditure carried down ..	5,18,226.78		Interest:		
				(i) On G.P. Notes (net of Bank charges Rs. 723.00 of which Rs. 338.00 relates to previous year) ..	3,11,689.50	
			1,63,283.06	(ii) On 12 year National Plan Savings Certifi- cates ..	4,000.00	
			3,600.00	(iii) On Fixed Deposit with the Bank ..	1,90,314.96	
			2,88,721.71		5,15,004.46	
				Less: Interest paid for purchase of G.P. Notes during the year ..	94,821.81	4,20,182.65
				(iv) From Institute on loan account ..		30,000.00
			24,006.24	(v) Realised on loan given to the members ..		78,063.81
			78,812.84			5,18,226.78
5,49,223.84		5,18,226.78	5,49,223.84			
	Interest for 1968-69 on:			Amount brought forward from last account ..		8,23,902.88
	(i) Own sub- scription, Members' Ceased members' ..	3,86,631.86	3,68,882.28	Amount forfeited during the year ..		9,313.18
3,813.63	(ii) Employer's contribution: Members' Ceased members' ..	3,81,369.37	5,49,223.84	Excess of income over expenditure brought down		5,18,226.78
2,899.90	(iii) Member's voluntary subscription ..	14,431.48	7,64,232.71			
	Balance carried over to Balance Sheet ..	6,87,319.74				
9,23,902.59						
9,29,416.02		14,61,462.45	9,29,416.02			14,51,422.46

Note: Previous years' figures have been rearranged when necessary.

S. P. Mukherjee
Chief Accounts Officer

D. Bose
Joint Secretary

Calcutta,
28th December 1970.

PRICE WATERHOUSE FRAY & CO.
Chartered Accountants

GOVERNING BODY OF THE RESEARCH AND TRAINING SCHOOL : 1969-70

1. Shri K. P. S. Menon, Chairman (*ex-officio*); 2. Professor P. C. Mahalanobis, Honorary Secretary (*ex-officio*); 3. Dr. C. R. Rao, Director, RTS (*ex-officio*); 4. Dr. B. B. Ghosh, Acting Editor, *Capital (Associated Chambers of Commerce of India)*; 5. Dr. S. N. Sen, M.A., Ph.D., Vice-Chancellor, Calcutta University (*Indian Economics Association*); 6. Shri G. K. Bhagat, Messrs. Bengal Potteries Ltd., (*Federation of Indian Chambers of Commerce & Industry*); 7. Director (Dr. Uttam Chand), Central Statistical Organisation (*Government of India*); 8. Joint Secretary (Shri B. N. Maheshwari), Ministry of Finance (Financial Adviser to the Department of Statistics), (*Government of India*); 9. Professor S. S. Srikhande, F.N.I., Head of the Department of Mathematics, University of Bombay (*National Institute of Sciences of India*); 10. Shri V. V. Divatia, Adviser, Department of Statistics, Reserve Bank of India (*Reserve Bank of India*); 11. Professor S. K. Bose, Director, Indian Institute of Technology, Kharagpur (*Inter-University Board of India & Ceylon*); and 12. Dr. Bhabatosh Dutta, M.A., Ph.D.; 13. Dr. B. R. Seshachar, D.Sc., F.N.I., Dean, Faculty of Sciences, University of Delhi; 14. Shri Jagjit Singh, M.A., F.R.S.S., Chairman and Managing Director, India Drugs & Pharmaceuticals Ltd.; 15. Dr. B. P. Adhikari, M.Sc. (Cal.), Dr. Sc. Sc. (Paris); 16. Shri Partha Ray, I.A.S.; 17. Shri S. Basu, M.Sc., F.N.I.; 18. Shri Pitambar Pant, M.Sc., Member, Planning Commission, Government of India (*Council of the Indian Statistical Institute*).

LIST OF MEMBERS OF DIFFERENT COMMITTEES : 1969-70

Finance Committee of the Council

1. Chairman of the Institute (*ex-officio*) or his nominee; 2. Secretary of the Institute (*ex-officio*) or his nominee; 3. Director of the Research and Training School (*ex-officio*) or his nominee; 4. Dr. B. P. Adhikari; 5. Dr. B. P. Banerjee; 6. Dr. Bhabatosh Dutta; 7. Dr. Amartya Sen; 8. Dr. B. S. Minhas; 9. Shri S. C. Roy; 10. Shri P. Ray (*Member-Secretary*) or in his absence, a person nominated by the Secretary or the Chairman; 11 & 12. Two representatives nominated by the Government of India—Cabinet Secretary (Shri B. Sivaraman) or his representative and Joint Secretary, Ministry of Finance (Shri B. N. Maheshwari).

Finance Committee of the Governing Body

1. Chairman of the Institute (*ex-officio*) or a Vice-Chairman, authorised by him; 2. Secretary of the Institute (*ex-officio*) or in his absence, a Joint Secretary; 3. Director, RTS (*ex-officio*) or a Joint Director, if any in charge of RTS; 4. & 5. Two representatives of the Government of India (Dr. Uttam Chand and Shri B. N. Maheshwari); 6. Representative of the Reserve Bank of India on the Governing Body (Shri V. V. Divatia); 7. & 8. Two representatives to be elected by Governing Body from amongst themselves—Dr. B. R. Seshachar and Dr. B. P. Adhikari.

Journal Committee of the Institute

1. Professor S. N. Bose, F.R.S., National Professor and President of the Institute; 2. Professor D. B. Lahiri; 3. Dr. B. S. Minhas; 4. Dr. Sujit Kumar Mitra; 5. Dr. Jagabrata Roy; 6. Dr. Amartya Sen; 7. Dr. D. Basu; 8. & 9. Editors of *Sankhyā* (*ex-officio*); 10. One representative of the Governing Body of the Research and Training School—Dr. S. S. Srikhande; 11. One member to be nominated by the Secretary of the Institute in consultation with the Director of the Research and Training School; 12. Dr. J. K. Ghosh, *Editorial Secretary* and 13. Shri A. Mahalanobis, *Secretary*.

Examinations Committee of the Institute

1. Dr. B. P. Adhikari, Research and Training School; 2. Shri Dehabrata Basu, F.I.A., Assistant Manager (E.D.P.), L.I.C., Calcutta Division; 3. Dr. P. K. Bose, Pro Vice-Chancellor, Calcutta University; 4. Dr. A. C. Das, State Statistical Bureau, West Bengal; 5. Dr. (Miss) A. George, Professor of Statistics, Kerala University; 6. Dr. V. S. Hazurbazar, Professor of Mathematics and Statistics, Poona University; 7. Professor V. B. Kamath, Personnel Manager for Training & Development, The West Coast Paper Mills Ltd., Dundeli (N.K.); 8. Professor D. B. Lahiri, National Sample Survey, Indian Statistical Institute; 9. Dr. B. S. Mhna, Planning Unit, New Delhi; 10. Dr. S. K. Mitra, I.S.I.; 11. Professor M. Mukherjee I.S.I.; 12. Dr. M. N. Murthy N.S.S.; 13. Dr. D. D. Joshi, Professor of Statistics, Institute of Social Sciences, University of Agra; 14. Dr. B. Ramasohandran, R.T.S. I.S.I. 15 & 16. Two representatives of the Governing Body of the Research and Training School (Dr. Nirma Chakravarti, C.S.O.; and Shri Raja Rao, N.S.S.); 17. Dr. Jogabrata Roy, Research and Training School; 18. Shri J. M. Sengupta I.S.I.; 19. Dr. G. R. Seth, IARS, New Delhi, and 20. Shri S. Sengupta I.S.I., *Member-Secretary*.

BOMBAY BRANCH : 1969-70

Honorary President : Shri S. K. Wankhede.

Honorary Vice-Presidents : 1. Professor C. N. Vakli; 2. Dr. C. Nanjuddayya.

Honorary Secretary : Professor P. N. Phutane.

Honorary Treasurer : Dr. M. N. Vartak,

Members of the Council : 1. Dr. R. L. N. Iyengar, 2. Professor V. B. Kamath, 3. Dr. P. M. Visaria, 4. Professor B. G. Iyer, 5. Shri N. G. Vallabhan, 6. Shri B. K. Raja Rao, 7. Shri S. L. Pillay.

MYSORE STATE BRANCH : 1969-70

Chairman : Professor R. R. Umarji.

Vice-Chairman : Shri C. S. Sehadri.

Secretary : Professor Srinagabhushana

Joint Secretary : Shri C. A. Setty

Treasurer : Shri P. S. Narayana

Executive Committee Members : 1. Shri K. G. Katwey, 2. Professor M. Narayana Iyengar, 3. Shri H. C. Ramanna, 4. Shri B. V. S. Rao, 5. Shri A. N. Nankana, 6. Shri Ravi L. Kirlokar.

KERALA BRANCH : 1969-70

Management Committee

Chairman : Professor A. Aiyappan, Vice-Chancellor, University of Kerala.

Secretary and Treasurer : Dr. (Miss) A. George, Professor & Head of the Department of Statistics, University of Kerala.

Members : 1. Dr. R. Krishna Pillai, 2. Shri P. S. Janardhan Nayar, 3. Shri J. Rajasekharan Nair.