

# INDIAN STATISTICAL INSTITUTE

THIRTY-THIRD ANNUAL REPORT

April 1964—March 1965



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CALCUTTA-35

# INDIAN STATISTICAL INSTITUTE

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### CONTENTS

	PAGE
1. Introduction .. .. .	1
1.1. Genesis .. .. .	1
1.2. History of Activities .. .. .	1
2. General Administration .. .. .	4
2.1. Membership .. .. .	4
2.2. Annual General Meeting .. .. .	4
2.3. Meeting of the Council .. .. .	5
2.4. Meetings of the Governing Body of the Research and Training School .. .. .	5
2.5. Meeting of the Finance Committees .. .. .	5
2.6. Institute Staff .. .. .	5
2.7. New Appointments .. .. .	6
2.8. Obituary .. .. .	6
3. Honours and Awards .. .. .	7
4. Conferences and Scientific Tours Abroad .. .. .	8
5. Study Tours and Assignments Abroad .. .. .	10
6. Research and Training School .. .. .	11
6.1. Teaching .. .. .	11
6.2. Degree Courses .. .. .	13
6.3. Training Courses .. .. .	13
7. Visiting Scientists .. .. .	13
8. International Statistical Education Centre .. .. .	20
9. Professional Examinations .. .. .	20
10. Third Convocation .. .. .	21
11. Special Convocation .. .. .	21
12. Planning Division .. .. .	22
12.1. Planning and Regional Survey Unit, New Delhi .. .. .	22
12.2. Planning Division, Calcutta .. .. .	22

	PAGE
13. National Sample Survey Project .. .. .	22
14. Appraisal Division .. .. .	23
15. Electronics Division .. .. .	24
16. Development Workshop .. .. .	24
17. Documentation Research and Training Centre .. .. .	24
18. Library .. .. .	25
19. Statistical Quality Control ... .. .	25
20. Publications .. .. .	26
21. Visitors .. .. .	27
22. Construction of Buildings .. .. .	27
23. Branches .. .. .	27
 ANNEXURES :	
1. List of office-bearers and members of the Council, Governing Body and members of the Committees of the Council and Governing Body. .. .. .	28
2. Important Business transacted in Meetings of the Council and Governing Body, R.T.S. .. .. .	31
3. Admission to Courses .. .. .	33
3.1. Research and Training School .. .. .	33
3.2. Statistical Quality Control Units .. .. .	34
4. List of Scientific Papers .. .. .	35
4.1. Papers published .. .. .	35
4.2. Papers submitted for publication .. .. .	43
5. Electronics Division and Data Processing Unit .. .. .	51
5.1. Computer Programmes in the Electronics Division .. .. .	51
5.2. Scientific Computation and Processing of Survey Data in the Data Processing Unit .. .. .	52
6. List of National Sample Survey Reports .. .. .	54
6.1. Printed Reports .. .. .	54
6.2. Draft Reports submitted to the Government of India .. .. .	54
7. Statement of Accounts, Auditor's Report and Audited Statement of Accounts, 1964-65 .. .. .	65

# INDIAN STATISTICAL INSTITUTE

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### 1. INTRODUCTION

1.1. *Genesis* : The idea of starting the Indian Statistical Institute was conceived by a group of young men who had gathered round Professor P. C. Mahalanobis in the nineteen twenties in applying statistical methods to the solution of practical problems. This group had their workshop, so to say, in what came to be known as the Statistical Laboratory, which was located in the room of Professor Mahalanobis, then Professor of Physics in the Presidency College. A public meeting organized by this group, and held in December 1931 under the chairmanship of late Sir R. N. Mookerjee, adopted a resolution which led to the establishment of the Institute which was registered on 28 April 1932 as a non-profit distributing learned society under the Societies Registration Act XXI of 1960. A part-time computer was the only worker the Institute had in the first year of its existence, the total expenditure being Rs. 238. At the end of the thirty-third year (31 March 1965), there were on the pay-roll of the Institute over 2,000 paid workers, the total expenditure (including capital expenditure) being of the order of Rs. 165.40 lakhs. 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.). Doctorate degrees, Ph.D. and D.Sc., are also being awarded. In 1961 the Institute adopted a crest, the design of which was suggested by Shri C. D. Deshmukh, President of the Institute from 1945 to 1964. Shri Deshmukh also suggested the motto incorporated in the crest.

1.2. *History of Activities* : Since its inception, the Indian Statistical Institute has been carrying out a well-integrated programme of work. This has centred on practical applications of statistics through project work, and these projects have raised problems whose solution has led to original contributions to statistical theory. The Institute's project work has also involved close collaboration with the Government; project work used to be done on business-like lines for both private enterprises and the Government, with contract grants for specified purposes. The Institute was built up, in fact, on such "business" earnings. The lack of trained statisticians and computers led to the establishment of training courses; and the Institute's educational activities has steadily increased with passing time, and now involves cooperation with international agencies for training schemes for the whole of South East Asia.

In the early days, project work was mainly concerned with two problems. The first was the control of floods, particularly in Bengal and Orissa. The results of this work were partly immediate, in the implementation of proper measures for flood control, and partly long-term, coming to fruition in such schemes as the Damodar Valley Corporation and the Hirakud Dam Project. The second set of problems centred round agricultural field trials,

## INDIAN STATISTICAL INSTITUTE

and established contact with Sir Ronald Fisher as early as in 1926, and resulted in the introduction in India of his great contribution of the design of experiments, before these methods were adopted in other countries outside Britain. Theoretical work on the design of experiments was started in the nineteen thirties and led to important contributions. Earlier work on anthropometry and meteorology provided the basis for contributions to statistical theory, especially multivariate analysis. The work on these problems still continues in the Institute.

In 1936, theoretical and field studies were started at the desire of the Government 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 demographic problems. The detailed tabulation of the 1941 population census of India had to be abandoned owing to the exigencies of war. The Institute had been able to persuade 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 that time, research in demography has become an integral part of the Institute's activities.

During the nineteen fifties, the Institute developed two major types of project work. The National Sample Survey is the most comprehensive and containing socio-econometric survey in the world today, and is believed to have proved very valuable to the Government. Statistical Quality Control has developed into a consulting service to Industry on an India-wide basis, and its rapid growth is a measure of the way in which it is fulfilling a basic need in promoting industrial progress of the country.

The most important development of the Institute's work during the nineteen fifties has been the significant contribution to economic planning. The studies on planning were inaugurated at the Institute in Calcutta in 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. The Institute's Planning Unit continues to work 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 world, since the nineteen forties, statistical methods are being increasingly used in new fields of work. This is well seen in the number of books which have been published during this period, surveying the applications of statistics in many individual fields of natural science which would once have been thought to be remote from statistical treatment, such as geology. Sir Ronald Fisher summed up the position of statistics as "the key technology of the present century."

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

In universities the practice for a long time used to be to give courses in single subjects 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

### THIRTY THIRD ANNUAL REPORT : 1964-65

fields, namely, medicine and engineering because it was essential for the professional students to have some knowledge and skill in a number of scientific disciplines.

In 1962, Sir Ronald Fisher pointed 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 recognising 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 the natural and social sciences.

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 the theory of probability have an important place. 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 the content of knowledge, besides theory and methodology.

In addition, facilities are provided for the students to become familiar with 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, but on methods; stress is, therefore, given on practical courses and statistical analysis and the interpretation of data.

*The Research Policy:* 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 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 dated 15 June 1962 from the Cabinet Secretariat 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 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."

## INDIAN STATISTICAL INSTITUTE

In this plan, each research unit would be concerned with a particular theme. Where there is more than one professional scientist, 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 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 then become 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 organisation. The Institute policy is also to encourage joint projects of research and advanced studies by collaboration between two or more research units.

The Institute's small research units are thus intended to play a triple role. Each unit will actively engage in a programme of fundamental research, which will throw up problems of a statistical nature from time to time, some of which may well stimulate the evolution of new statistical methods. Each will contribute to the teaching of degree courses in statistics, familiarising students with types of problems, and methods of observation, measurement, and experiment, in its own field of natural science. 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 organisations, 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.

### 2. GENERAL ADMINISTRATION

2.1. *Membership* : During 1964-65, 245 new members of different categories (9 ordinary, 1 institutional, 79 sessional and 156 student) were enrolled. Nine ordinary members discontinued and 3 members (two life and one ordinary) died, bringing the total membership of the Institute to 621. As sessional and student members are enrolled anew every year, the numbers of these categories given in the previous year's report have not been taken into account, and the total membership of 621 includes 60 life members, 305 ordinary, 6 institutional, 79 sessional and 156 student members. Two ordinary members became life members during this period. The number of honorary life members remained at 6.

2.2. *Annual General Meeting* : The Annual General Meeting was held on 30 October 1964 to transact the business specified by the constitution, namely, the election of the President, Vice-Presidents and members of the Council, the adoption of the Annual Report submitted by the Council and Auditors' Report with audited statement of accounts for 1963-64 and balance sheets as at 31 March 1964 submitted by Messrs. Lovelock & Lowes, Chartered Accountants, the appointment of auditors, etc. The election of office-bearers was

### THIRTY-THIRD ANNUAL REPORT : 1964-65

due this year. The names of the President, Vice-Presidents, Chairman and other office-bearers and members of the Council as after the election of 30 October 1964, are given in Annexure I. The Auditors' Report, Audited Statement of Accounts for the year 1964-65 and Balance Sheets as at 31 March 1965, submitted by Messrs. Lovelock & Lewes, Auditors, are given in Annexure 7.

Before the commencement of the Annual General Meeting, Professor S. N. Bose mentioned the great misfortune that had befallen the country in the death of Shri Jawaharlal Nehru to whom, he added, the Institute was greatly indebted for help, encouragement and guidance. He then moved, from the chair, the following resolution which was passed, all members standing in silence :

"This Annual General Meeting of the Indian Statistical Institute places on record its sense of great loss and deep sorrow at the demise of Jawaharlal Nehru, one of the greatest sons of India, who will be remembered for the unique services rendered by him to the Institute, and the country, and for the peace and happiness of mankind."

2.3. *Meetings of the Council* : The Council of the Institute met eight times during the period on 29 May, 11 June, 18 August, 23 September, 30 October and 20 November, in 1964, and 11 February and 12 March in 1965.

2.4. *Meetings of the Governing Body of the Research and Training School* : The Governing Body of the Research and Training School met on 23 September 1964 and on 11 February 1965.

The important items of business transacted at the meetings of the Council and the Governing Body of the Research and Training School are briefly mentioned in Annexure 2.

2.5. *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 met jointly on 22 and 23 September 1964 to consider (a) the Auditors' Report and the Audited Statement of Accounts of 1963-64 ; (b) the Balance Sheets as at 31 March 1964 ; (c) proposals for reappropriation ; (d) the revised budget estimates for 1964-65 ; and (e) the tentative budget proposals for 1965-66 and other related matters.

A list of members of the Council, the Governing Body of the Research and Training School and of the Finance Committees of these bodies is given in Annexure 1.

2.6. *Institute Staff* : Professor P. C. Mahalanobis continued to work throughout the period as the Honorary Secretary as well as Honorary Director of the Institute. Dr. C. R. Rao took over as the Director of the Research and Training School from 16 August 1964.

Shri Nihar Chandra Chakravarti, Special Officer, was permitted to have his whole-time appointment in the Institute terminated after 30 September 1964 but he agreed to accept a part-time appointment up to the end of the financial year to look after certain constitutional, secretarial, legal and other matters.

Shri Saradindu Basu was, at his request, relieved of his responsibilities as Joint Director of the Institute but he continued to serve the Institute as a Special Officer in charge of the administration of the Delhi sub-offices, liaison with the Central Government and for certain other work.



## INDIAN STATISTICAL INSTITUTE

Shri Sudhir Kumar Chowdhuri continued to be in charge of administration and other work in Calcutta.

Shri Pitambar Pant remained in charge of the Planning Unit, Statistical Quality Control Unit, and some administrative work in New Delhi.

Shri S. P. Sinha, who had been appointed as Administrative Officer in July 1964, left the Institute at the end of March 1965.

Shri N. C. Chakravarti, Shri S. Basu, Shri S. K. Chowdhuri and Shri P. Pant continued to function as Honorary Joint Secretaries.

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

*Research and Training School*: Dharmadhikari, S. W., M.Sc.(Stat.), Ph.D.(Stat.), F.I.A. (by exam.), 9 April 1964; Dasgupta, Somesh, M.Sc. (Stat.), Ph.D. (Math. Stat.), 27 July 1964; Ramachandran, B., M.Sc., Ph.D., 14 August 1964; Chakravarti, M. R., M.Sc. (Physical Anthropology), D. Phil. (Phy. Anth.), 1 September 1964.

2.8. *Obituary*: The Institute suffered a grievous loss through the deaths of the following prominent persons:

Shri Suresh Chandra Sen who died in Calcutta on 28 November 1964, joined the Institute in February 1949 and looked after the administrative work in various capacities as Joint Secretary, Joint Director, and Adviser for more than sixteen years up to November 1964. He worked with great devotion for the promotion of Statistical Quality Control in India, and the success achieved in this field so far has been largely due to his patient efforts. His gentle manners, unflinching courtesy and sympathetic understanding won for him the esteem and affection of his colleagues in the Institute and a very wide circle of friends all over India.

Professor J.B.S. Haldane who died in Bhubaneswar on December 1964, made a significant contribution to the development of the teaching and research programmes of the Institute. He worked in the Institute on three occasions as a guest scientist in 1951, 1954 and 1956. When he decided to settle in India in 1957, he joined the Institute staff and was a Research Professor in the Research and Training School from August 1957 to May 1961; during this period he took a very active interest in the integrated teaching of science and guided the work of many of the research units. His independent outlook and his frank expression of views and criticisms fostered in a very effective way the growth of the scientific tradition. He used to come to the Institute from time to time and maintained close contact with many of its research scientists till the very end. His connexion with the Institute and its workers for more than twelve years was a great formative influence.

Dr. Haris Chandra Sinha who died in Calcutta on 31 December 1964 rendered valuable services to the Institute as its first Joint Secretary from 1932 to 1939 and as a member of its Council till 1944 and in various other ways. He was a lecturer in economics in the Calcutta University where he took a leading part in forming a small group of young men who used to meet in a room in the physics department of the Presidency College in the early nineteen-twenties for discussions on statistical subjects and who also helped actively in the

### THIRTY-THIRD ANNUAL REPORT : 1964-65

organisation of the Statistical Laboratory as a centre of advanced studies and researches. He took a leading part in establishing the Indian Statistical Institute in 1931 and in starting *Sankhyā*, the *Indian Journal of Statistics*, in 1933 as the official organ of the Institute. He helped in the scientific and administrative work of the Institute with great devotion for many years.

Professor Samarendranath Roy, a former Joint Secretary and Assistant Director of the Indian Statistical Institute, who died in Canada on 23 July 1964, started his researches in relativity under Professor N. R. Sen after a brilliant academic career. Coming in contact with Professor P. C. Mahalanobis, he joined the Institute as a research worker in November 1935 and was one of its most active workers till 1950 when he left for the U.S.A. He was also the Head of the Department of Statistics, Calcutta University till 1950, one of the founders of the Calcutta Statistical Association and a pioneer of statistical researches in India. He published 49 papers on theoretical statistics and was the author of a book on mathematical statistics. Roy's statistical researches won him recognition at home and abroad. He was elected a fellow of the National Institute of Sciences of India in 1947 and a fellow of the International Statistical Institute in 1951.

### 3. HONOURS AND AWARDS

Professor P. C. Mahalanobis was awarded the D.Sc. (*honoris causa*) of the Delhi University on 5 December 1964.

The Royal Statistical Society awarded the Society's Guy Medal in Silver to Dr. C. R. Rao in March 1965 for his contribution to its journal. He was also admitted to the Sc.D. degree of the University of Cambridge, on 7 December 1964.

Shri S. Bakshi (*Geological Studies—RTS*) was elected a Founder-Member of the Gondwana Centre, Tarnis, M.P., an organisation run under the auspices of the Tata Institute of Social Sciences, Bombay.

Dr. M. R. Chakravarti (*Anthropometry—RTS*) was elected a Fellow of the Royal Anthropological Institute, London, and an Associate in *Current Anthropology*—a world journal of the sciences of Man, sponsored by the Wenner Gren foundations for anthropological research, U.S.A.

Shri D. Dutta Mazumdar (*Electronics*) received the degree of D. Phil. (Science) from the University of Calcutta for his research on computer technology.

Shri Syamal Kumar Gupta (*Chemistry—RTS*) was awarded the D. Phil. degree (Soil Chemistry) by the University of Calcutta in April 1965.

Shri N. S. Iyengar (*Planning Division*) was admitted to the Ph.D. degree of the Indian Statistical Institute.

Professor M. Mukherjee was elected a Vice-Chairman, Indian Association for Research in National Income. He also served as a Member, Council of the International Association for Research in Income and Wealth.

Shri K. B. Pakraai (*Anthropometry—RTS*) was elected a member of the Sectional Committee of the Section of Anthropology and Archaeology for the 53rd session (1965-66) of the Indian Science Congress.

## INDIAN STATISTICAL INSTITUTE

Professor S. R. Ranganathan (*Documentation Research and Training Centre*) was awarded the D.Litt. (*honoris causa*) of the University of Pittsburgh, U.S.A., in June 1964. He was appointed National Research Professor in Library Science for five years from 1 March 1965.

Professor S. K. Roy (*Botany—RTS*) was elected a Foreign Member of the Czechoslovak Botanical Society.

### 4. CONFERENCES AND SCIENTIFIC TOURS ABROAD

Professor P. C. Mahalanobis left New Delhi for Boston on 24 November 1964 to attend, as a guest speaker, the 125th Anniversary of the American Statistical Association held on 27 November. On his way to Boston, he stayed in London for two days and had meetings and discussions with Dr. Thomas Balogh and Sir Harry Campion, Director, Central Statistical Office. He reached Boston on 26 November. He read a paper at the main evening session on 27 November on "Statistics as a Key Technology." This paper was published in the *American Statistician* in April 1965.

He stayed in Cambridge, Mass., till 2 December and gave lectures and had discussions on mathematical statistics and economic planning in the Faculty of Statistics and in the Faculty of Economics, at the Harvard University, Cambridge; he gave a talk at the Indian Association. He also gave lectures at the University of Connecticut, Storrs.

Going to New York on 3 December, Professor Mahalanobis had some discussions in the Rockefeller Foundation on 4 December about the need of establishing the scientific tradition as a foundation for economic development. After a short visit to Washington, D.C., he went to Philadelphia on 6 December, and gave lectures and participated in a number of meetings of the Department of Statistics, the Management Research Centre, the Department of Economics, and the Department of Public Administration in the University of Pennsylvania.

Coming back to New York on 8 December, he gave a lecture at the Thomas J. Watson Research Centre, Yorktown Heights. He gave lectures and participated in discussion meetings in Columbia University in the Department of Economics, the Department of Statistics, the Department of Political Science, and the Department of Public Law and Government.

On 11 December, Professor Mahalanobis visited the American Natural History Museum where he had discussions with Dr. Edwin H. Colbert, Chairman, Department of Palaeontology and Dr. H. L. Shapiro, Chairman, Department of Anthropology, about the possibilities of arranging joint programmes of research with the Indian Statistical Institute.

During his stay in the U.S.A., Professor Mahalanobis had informal discussions with Professor J. K. Galbraith, Dr. Leon Koyserling, Dr. Gerhard Piel, and other American scholars and scientists. He visited Dr. and Mrs. Walter A. Shewhart in Mountain Lakes, N. J., where he was shown the library and scientific papers of Dr. Shewhart which Dr. and Mrs. Shewhart were kind enough to offer as gifts to the Institute.

Professor Mahalanobis went from New York to London on 18 December 1964 and made a short stay there during which he had discussions with Professor P.M.S. Blackett, Sir Solly Zuckerman, Dr. Thomas Balogh and Lord Chalfont, Minister of Disarmament.

### THIRTY-THIRD ANNUAL REPORT : 1964-65

Professor Mahalanobis went to Moscow, on 22 September and stayed there for five days as a guest of the U.S.S.R. Academy of Sciences. He had important discussions with Academician M. V. Kjeldish, the President of the Academy and Academician Siskian, the Vice-President. He met Academicians V. A. Engelhardt, P. Kapitza, A. N. Kolmogorov, A. N. Neameyanov, I. Tamm, Corresponding Members Gafurov, Federanko and other scientists. He visited the Institute of Peoples of Asia, the Friendship University and the Central Statistical Board (C.S.B.) where he met Corresponding Member Starovsky, Director, Mr. Malyshev, Deputy Director, and other members of the C.S.B. He left for Delhi on 27 December 1964.

Invited by the Afro-Asian Haematology Congress in Israel in August 1964, Dr. S. Chaudhuri (*Haematology—RTS*) went there as a guest-lecturer and presided over the Haematology Section of the Congress. She also attended the Tenth International Haematological Congress held in Stockholm, Sweden, in September 1964.

Dr. B. C. Das (*Biometry—RTS*) participated in the Symposium on Experimental Gerontology, sponsored by the European Biological Section of the International Association of Gerontology and held in Basel, Switzerland, from 22 to 28 October 1964. He presented one scientific paper. He also met the research staff at the Centre de Gerontologie de l'Association Claude-Bernard (Paris), and research workers in gerontology at the Faculte de Medicine, for discussions on exchange of personnel for training and research, co-operative research and the International Biological Programme at Paris from 29 to 31 October 1964.

Dr. Rhea S. Das (*Appraisal*) participated in the Symposium on Experimental Gerontology, sponsored by the European Biological Section of the International Association of Gerontology and held in Basel, Switzerland, from 22 to 28 October 1964. She presented one scientific paper.

Professor T. A. Davis (*Crop Science—RTS*) participated in the Conference of the Food and Agriculture Organization of the United Nations Technical Working Party on Coconut Production, Protection and Processing held in Colombo, Ceylon, from 30 November to 8 December 1964. He presented four scientific papers at the Conference.

Invited by the Food and Agricultural Organisation of the United Nations, Professor D. B. Lahiri (N. S. S.) attended, as its Vice-Chairman, the meeting of the Expert Group on the Programme for Food Consumption Surveys held at Rome from 21 to 30 April 1964.

Dr. Ramkrishna Mukherjee (*Sociology—RTS*) attended an "Expert Committee Meeting on the Biological Aspects of Race" held in Moscow in August 1964 under the auspices of the UNESCO.

Dr. P. K. Pathak (*RTS*) attended the twenty-seventh annual meeting of the Institute of Mathematical Statistics held at the University of Massachusetts from 26 to 29 August 1964.

Dr. S. R. Ranganathan (*Documentation Research and Training Centre*) presided over the Second International Study Conference on Classification Research held at Elsinore, Denmark, from 14 to 18 September 1964. He visited Denmark and Oslo in September and addressed the Denmark Bibliotekskole, Copenhagen, and the Norwegian Joint Research

## INDIAN STATISTICAL INSTITUTE

Council's Committee on Classification, Oslo. He was the principal speaker at the Seminar on Colon Classification organised by the Rutgers, the State University, New Jersey, from 19 to 20 November 1964. On his way home, he visited the Documentation Centre of the Farbwerke Hoechst A. G., Frankfurt, the FID Library in the Hague, and the Shell International Research Centre in the Hague.

Dr. C. R. Rao attended, on invitation, the Gordon Research Conference on Statistics held at New Hampton in July 1964. He gave a lecture on the use and interpretation of the principle component analysis in applied research. He spent the summer of 1964 at the University of Stanford as a Visiting Professor. He rejoined the Institute in September 1964.

Professor S. K. Roy (*Botany—RTS*) participated, in a symposium on "Evolution and Selection within Populations" organised by the Tenth International Botanical Congress held in Edinburgh during 3 to 12 August 1964. He made a lecture-cum-scientific trip to different European countries. After the Congress, he visited the Institute of Genetics, University of Lund, Sweden; Swedish Seed Association, Svalof, Sweden; Institute of Phytopathology, Greifswald University, German Democratic Republic; and different biological Institutes of the Czechoslovak Academy of Sciences.

### 5. STUDY TOURS AND ASSIGNMENTS ABROAD

*Research and Training School*: Dr. S. John left for Australia on 16 March 1965 to accept a visiting associate professorship at the Australian National University, Canberra.

Dr. P. K. Pathak rejoined on 1 January 1965 after working in the U.S.A. for three years.

Dr. (Mrs.) M. Krishnan left for the U.S.A. on 15 August 1964 to take up a two-year research associateship in the Statistics Department, State University of New York, Buffalo.

Shri R. L. Brahmachary carried out research on embryology at the University of Palermo, Italy, where he was invited to work from October to December 1964. On his way back, he also worked for about a month at the University of Sudan, Africa, on a Rockefeller Foundation grant.

*National Sample Surveys*: Shri N. C. Dutta left for Iran on a United Nations assignment in February 1964 for a term of two years.

Shri A. Ganguly rejoined the Institute on 1 February 1965 on the completion of a United Nations assignment as Economic Statistician to the Government of Turkey.

*Documentation Research and Training Centre*: Dr. S. R. Ranganathan worked as a visiting professor at the University of Pittsburgh, U.S.A., in June 1964.

*Electronics*: Shri Ashish Kumar Sen rejoined the Institute as Design Engineer in the ISI-Jadavpur University Computer Project, after working in the English Electric Co. for three years.

*Planning Division*: Shri M. Mukherjee was engaged in certain research work on national income in the Harvard University in consultation with Professor Simon Kuznets, from May to December 1964. He visited the Pennsylvania University as a Professor from January to May 1965, and delivered a course of lectures on the economics of underdeveloped countries.

Dr. H. Mazumdar worked at the University of Hawaii, Honolulu, as Professor of Economics and Asian Studies, from October 1964 to September 1965. He gave lectures and seminars on Aspects of Economic Development of India and Analysis of Indian Society.

### THIRTY-THIRD ANNUAL REPORT : 1964-65

*Statistical Quality Control* : Shri G. Hariharan received advanced training in SQC in the USA for six months from 29 July 1964 to 29 January 1965. During the period, he was a graduate student at the Rutgers University (four months), and studied the quality control system at the U.S. Bureau of Census, Washington. He participated in two short-term appreciation courses at the IBM Training Centre (Washington) and four Quality Control Conferences, and also carried out some research work using 1620 and 7040 IBM Computers. He visited five factories to study their SQC systems in operation.

*Bombay Branch* : Professor C. N. Vakil, Honorary Vice-President of the Branch, went to Geneva to attend a meeting of the International Labour Organisation. Shri M. A. Telang, Honorary Secretary, left on an United Nations assignment as Statistical Adviser to the Government of Liberia.

#### 6. RESEARCH AND TRAINING SCHOOL

During the period under review, research work was carried out in advanced probability, mathematics, theoretical statistics and statistical methods, statistical inference, design of experiments, sample surveys, economic planning etc. and in the fields of application like biometry, haematology, geology, anthropometry, demography and sociology, etc., for which special research units exist. A list of scientific papers is given in Annexure 4. Computational and processing work done in the Data Processing Unit is shown in Annexure 5.

The Research and Training School carried out its work under the direction of C. R. Rao as the Director. 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 : Biswanath Prasad Adhikari (*Anthropometry*) ; Prabhat Ranjan Pal (*Biochemistry*) ; Bhupendra Chandra Das (*Biometry*) Subodh Kumar Roy (*Botany*) Trupapur Antony Davis (*Crop Science*), Pran Kumar De (*Chemistry*) ; Jogabrata Roy (*Data Processing*) ; Manapadam Venkateswarier Raman (*Demography*) ; Ratan Lal Brahmachary (*Embryology*) ; Nalini Kanta Bose (*Flood Research*) ; Bimalendu Roychaudhuri (*Geological Studies*) ; Sujata Chaudhuri (*Haematology*) ; Shibabrata Chatterjee (*Psychometric Research and Service*) ; and Ramkrishna Mukherjee (*Sociology*). Sujit Kumar Mitra was in charge of training at the International Statistical Education Centre.

6.1. *Teaching : Courses, Examinations, Degrees etc.* : The activities of the Institute relating to the imparting of education, training and research facilities, and the conduct of the all-India examinations in 1964-65 are given below. The intake capacity of each course is shown in brackets.

##### I. Research Guidance.

1. Research and advanced studies, general. (6)
2. Research leading to the Ph.D. degree of the Institute. (20)

##### II. Degree Courses.

1. Four-year course leading to the B.Stat. degree of the Institute. (class of 30 yearly)
2. Two-year course leading to the M.Stat. degree of the Institute (class of 25 yearly)

## INDIAN STATISTICAL INSTITUTE

### III. *Training Courses* (for specialized studies, training of personnel, and for candidates preparing for Diploma and Certificate examinations).

1. Summer Course (Advanced) for Statisticians. (30)
2. One-year Apprentice Course. (15)
3. Statistical Officer's Course (Jointly with the CSO, 6/9 months) (25)
4. Special short-duration individual training for officers on deputation (10)
5. One-year Evening Course in Statistics at Delhi (in collaboration with the CSO) (40)
6. Advanced Course in Statistics at Delhi (in collaboration with CSO) (20)
7. One-year Evening Course in Statistics at Bombay, Hyderabad, Madras and Trivandrum (30 at each centre)
8. One-year Diploma Course in Statistical Quality Control. (40)
9. One-year Training Course in Documentation at Bangalore. (12)
10. Nine-month Course on Punched Card System. (25)
11. Computer's Training Courses at Calcutta (Junior and Senior). (50)
12. One-year Evening Course at Calcutta. (30)
13. Courses at the International Statistical Education Centre in collaboration with the International Statistical Institute under a Board of Directors with representatives of the International Statistical Institute, the Indian Statistical Institute and the Government of India (9 months). (30)
14. Occasional courses on special subjects.

### IV. *Diploma and Certificate Examinations* (all-India examinations open to external candidates).

1. Statistical Field Survey, Junior Certificate.
2. Statistical Field Survey, Senior Certificate.
3. Statistical Field Survey Diploma.
4. Computer's Certificate.
5. Statistician's Diploma.

### V. *Awards for Higher Professional Attainment.*

1. Associateship of the Indian Statistical Institute (A.I.S.I.) on the basis of report submitted, of professional work.
2. Associate Fellowship of the Indian Statistical Institute (A.F.I.S.I.) on the basis of report/thesis submitted, of professional work.

### VI. *Awards for Outstanding Contributions.*

1. D.Sc. degree of the Institute in recognition of outstanding published work in the field of statistics.
2. Fellowship of the Indian Statistical Institute for fundamental contributions in the field of Statistics.

A table showing the number of students in the various course is given in

Annexure 3.

## THIRTY-THIRD ANNUAL REPORT : 1964-65

### 6.2. DEGREE COURSES

The selection tests for admission to the B.Stat. and M.Stat. degree courses were held in July 1964 at nine centres : Banaras, Bombay, Calcutta, Delhi, Hyderabad, Madras, Nagpur, Trivandrum and Waltair. The selection of candidates to the courses was made by a committee consisting of representatives of the Indian Statistical Institute (ISI), the Central Statistical Organisation (CSO, by invitation) and the Institute of Agricultural Research Statistics (IARS). The admissions to the M.Stat. course included candidates who would proceed, on satisfactory completion of the first year M.Stat. course in the ISI, to the Professional Statistician's Certificate course in agricultural research statistics at the IARS, New Delhi.

### 6.3. TRAINING COURSES

*One-year Evening Course in Statistics* : The course is conducted at six centres (solely by the Indian Statistical Institute at Bombay, Calcutta and Madras), and in collaboration with the Central Statistical Organization at Delhi, the Indian Institute of Economics at Hyderabad and the University of Kerala at Trivandrum.

*Fourth Summer Course (Advanced) for Statisticians* : This summer course was started in 1961 to meet the desire of a number of research-workers and teachers in the statistical departments of different Indian universities and other educational or scientific institutions in India for advanced study and consultation during the summer vacation. The fourth summer course was conducted in May-June 1964 at Trivandrum.

The summer course at Trivandrum was attended by 24 participants from universities and research institutions. The University Grants Commission, New Delhi, contributed towards the travelling and other allowances of the participants from the universities.

*Statistical Officers' Course (jointly with the CSO)* : There were 19 trainees in the Statistical Officers' Course during the period under review. Three of them came for a six months' general course in statistical theory and application, while sixteen trainees stayed back for a specialization course for another three months, in machine tabulation or in some branch of statistics.

In addition, there are evening courses for computers of one year's duration (junior and senior), conducted in Calcutta only.

### 7. VISITING SCIENTISTS

A number of distinguished foreign scientists participated in the research, training and other activities of the Institute during the year. Some of them stayed at the Institute for fairly long periods and assisted in the regular work of the Institute, while others came for short periods and gave lectures and participated in seminars. Most of them were available for consultations by research workers and teachers of the Institute. A number of these scientists held consultations with Government departments like the Central Statistical Organisation and the Office of the Registrar-General, etc.

I. The following foreign scientists worked at the Institute for fairly long periods during the year :

1. Mr. R. A. Aschenbrenner, Associate Computer Engineer, Argonne National Laboratory, USA, came as an U.N. expert on electronic engineering (18 December 1964-29



## INDIAN STATISTICAL INSTITUTE

May 1965). He worked in the ISI-Jadavpur University Computer Project as a circuit designer and designed the control circuit of the magnetic drum auxiliary memory, during his stay.

2. Dr. J. Benes, Vice Director, Institute for Information Theory and Automation, Academy of Sciences, Czechoslovakia (15 October-15 November 1964). *Nine lectures: Statistical Dynamics.*

3. Mr. T. Burgess, Senior Research Officer, London School of Economics, has been working in the Planning Unit of the Institute at Delhi since 18 February 1965, on "Manpower and Education Planning in India", in collaboration with the Perspective Planning Division of the Planning Commission.

4. Professor Stovan Dedijer, Institute of Social Studies, Lund, Sweden (18 March-16 June 1964 and 28 December 1964-7 January 1965). He had a series of discussions with the Planning Commission, Council of Scientific and Industrial Research, Indian Council of Medical Research and the Delhi University, etc.

5. Mr. D. J. Desmond, Consultant in Statistical Quality Control, the U. K., came to the Institute as an expert in SQC under the United Nations Technical Assistance Board (28 November 1964-9 March 1965). He primarily helped in conducting the newly-started one-year SQC Diploma Course of the Indian Statistical Institute and also in conducting the two short introductory courses on Statistical Quality Control for candidates sponsored by the industries. He helped the SQC Units, at Bombay, Bangalore, Madras and Ernakulam in the field training of SQC trainees. He participated actively in the Management Conference held in Bombay on 29 April 1964.

6. Professor O. Elteto, Mathematical Statistician, Hungarian Central Statistical Office (7 March-21 May 1965). He was invited under the Indo-Hungarian Cultural Exchange Programme to study the mathematico-statistical methods of Indian statistics, with special reference to the problems of Statistical Sample Surveys. He had discussions in Delhi with officials of the Central Statistical Organisation and the Registrar-General. *Five lectures: (i) New income inequality measures, (ii) New log normality tests, (iii) On income distribution and sample surveys, (iv) A simulation type experiment for forecasting the personal income distribution in Hungary and (v) Sample surveys in official statistics in Hungary.*

7. Mr. J. Foltyn, Senior Lecturer, Department of Developing Economies, Economics University in Prague, Czechoslovakia (10 December 1964-24 January 1965). He came to India under the Indo-Czechoslovak Cultural Exchange Programme to acquire knowledge about the organisation and methodology of economic planning in India with special reference to the means of implementation of plans in a mixed economy.

8. Professor J. A. Gallagher, Professor of Commonwealth History, Balliol College, University of Oxford, U. K. During the year, he visited the Institute twice—in August and in December 1964. His visits were in connection with the projected work of the Historical Research Unit—*History of Modern India*, which was started in 1961. Most of his time during the visits was spent on working in the National Archives at Delhi. He also had a considerable amount of work done in the National Library at Calcutta.

### THIRTY-THIRD ANNUAL REPORT : 1964-65

9. Dr. G. Grümmer, Director, Phytopathologisches Institute, Griefswald University, German Democratic Republic (29 October 1964-10 March 1965). He was closely associated with the investigations of the Botany Research Unit (Research and Training School) on plant interactions. During his twenty-week stay in India, Professor Grümmer, in collaboration with Professor S. K. Roy, made an investigation on the incidence of the Brown-spot disease of rice, caused by the fungus *Helminthosporium oryzae* in monoculture and in varietal mixtures. He visited the agricultural farm of the Institute in Giridih for investigations. He also gave three seminars : (i) Late blight of potatoes and tomatoes in Europe ; (ii) Agricultural problems in Germany and other European countries; and (iii) Problems of economy and agriculture in both parts of Germany.

10. Dr. W. Hoeffding, Professor of Statistics, University of North Carolina, the U.S.A., came to the Indian Statistical Institute under the UNTAB scheme (1 October 1964-29 March 1965). Seminar lectures : (i) Non-parametric Inference, (ii) Probability of large deviation in multinomial distribution, (iii) Application of strong law of large numbers to u-statistics. He discussed a number of research problems in mathematical statistics and the theory of probability with the staff and advanced students of the Research and Training School. He visited Madras to deliver lectures at the Madras Centre of the Institute. He gave two lectures under the auspices of the University of Mysore and gave a lecture in Bangalore on "Non-parametric Tests for the Median and the Mean." He held a discussion with the SQC Unit staff in Bangalore on statistical tests.

11. Mr. H. Kerner, Resident Consultant, Operational Research Division, Urwick Orr and Partners International Ltd., London, U. K., came to the Institute as an expert in Operations Research under the UNTAB scheme (23 August 1964-4 July 1965). He gave three introductory courses in Operations Research (OR) at Calcutta, Bombay and Bangalore. He discussed the application of OR techniques in Calcutta, Madras, Bangalore, Kerala and Bombay regions, and gave a course of lectures on OR to the students of the SQC diploma course.

12. Mr. P. R. G. Layard, Deputy Director, Unit for Economic and Statistical Studies on Higher Education, London School of Economics, London, worked in the Planning Unit of the Institute at Delhi (18 February-30 April 1965), on "Manpower and Educational Planning in India" in collaboration with the Perspective Planning Division of the Planning Commission, Government of India. He acted as the leader of a team of British economists.

13. Academician Yu. V. Linnik, Head of the Statistical Laboratory, Mathematical Institute, Leningrad University, U.S.S.R. ; President, Leningrad Mathematical Society (29 December 1964-14 January 1965). Three lectures : (i) Behren's Fisher and related problems, (ii) On the optimal elimination of parameters in problems of inference, and (iii) On some questions of analytical statistics.

14. Mr. R. W. Moss, Research Officer, London School of Economics, has been working in the Planning Unit of the Institute at Delhi since 18 February 1965, on "Manpower and Educational Planning in India" in collaboration with the Perspective Planning Division of the Planning Commission, Government of India.

## INDIAN STATISTICAL INSTITUTE

15. Mr. G. G. Mukhin, Reader, Department of Technology and Metallurgy, People's Friendship University, Moscow, U.S.S.R. (18 January-29 March 1965). He was invited under the Indo-Soviet Cultural Exchange Programme to acquaint himself with the scientific and research work in India, particularly in the field of metallurgy. In this connection, he visited a number of industrial and educational establishments and professional colleges in Delhi, Madras, Poona, Bombay, Bangalore and Calcutta. He gave a talk on the importance of documentation in the Documentation Research and Training Centre, Bangalore. He also had discussions on economic problems with the Delhi Planning Unit.

16. Professor Arno Müntzing, Director, Institute of Genetics, University of Lund, Sweden (21 January-22 February 1965). He gave lectures and seminars to the students and advanced scholars on (i) Nature and action of genes, (ii) Accessory chromosomes, (iii) Structural chromosome differentiation, (iv) On the origin and breeding of cultivated plants, (v) In-breeding degeneration and heterosis, and (vi) Polyploidy. He took an active interest in the research work of the Institute and had discussions with the research workers. Professor Müntzing, as the chief guest, delivered the Convocation address entitled, "The importance of genetics for the evolution and breeding of cultivated plants" at the Third Annual Convocation of the Institute held on 11 February 1965. He visited the Institute's experimental agricultural farm at Giridih.

17. Mr. A. Niznansky, Research Worker, Botanical Institute, Slovak Academy of Sciences, Bratislava, Czechoslovakia (9 January-2 July 1965). He was invited under the Indo-Czechoslovak Cultural Exchange Agreement. He visited Delhi, Bombay and Madras, in connection with his research work.

18. Dr. Yu. V. Prokhorov, Head, Division of Theory of Probability, Institute of Mathematics, U.S.S.R. Academy of Sciences; Professor, Moscow State University (20 October-12 November 1964). *Lecture:* Limit theorems and their application to statistics and queuing theory. He visited Bombay and Madras where he gave lectures at the Madras University and the Madras Centre of the Institute. He had discussions with the Delhi Planning Unit of the Indian Statistical Institute. He visited the Indian Institute of Science and other educational institutions in Bangalore and in Mysore.

19. Dr. P. L. Robinson, University College, London, U.K. was a Visiting Research Professor under the Colombo Plan in the Geological Studies Unit (15 December 1963-7 July 1965). She worked in close cooperation with the members of the Unit and advised them in various phases of their work. She also advised on the organisation of the Unit's permanent museum.

20. Mr. G. S. Siampos, Chief of the Section of Movement of Population, National Statistical Service, Greece (2 September 1964-16 April 1965). He joined the International Statistical Education Centre (I.S.E.C.) in September 1964 as a Visiting Professor and stayed through the entire eighteenth term. He gave a course of lectures on vital statistics and demography. Mr. Siampos visited New Delhi and gave a lecture on 'Demographic Studies in Greece' at the Central Statistical Organisation (C.S.O.). He also participated in discussions with senior officers of the C.S.O. on various matters of demographic interest. During his stay in New Delhi; he visited the Registrar-General's Office, Directorate-General

### THIRTY-THIRD ANNUAL REPORT : 1964-65

of Employment and Training, Institute of Applied Manpower Research and the Demographic Research Centre under the Institute of Economic Growth, Delhi University. Mr. Siampos also visited the Demographic Research and Training Centre at Chembur, Bombay. He accompanied the students of the I.S.E.C. to Giridih for their practical training in socio-economic and land-utilisation surveys.

21. Professor S. K. Sirazdinov, Head, Department of Mathematics, University of Tashkent, U.S.S.R., Director, Institute of Mathematics, Uzbek SSR Academy of Sciences (20 October-9 November 1964). *Three lectures* : (i) Some Limit Theorems for Markov Chains, (ii) On SQC—the use of unbiased estimates, and (iii) Additive problems with increasing number of summands. He also visited Madras where he gave lectures at the Madras University and the Madras Centre of the Institute. He had discussions with the Delhi Planning Unit of the Indian Statistical Institute. He visited the Indian Institute of Science and other educational institutions in Bangalore and in Mysore.

22. Professor H. L. Shapiro, Chairman, Department of Anthropology, the American Museum of Natural History, New York, U.S.A. (6 February-18 March 1965). Professor Shapiro had a number of discussions with the research workers of the anthropometric, demographic and sociological research units with a view to develop certain lines of investigation to study the environmental effects on human development. Some tentative proposals were made for starting new projects. He visited some of the villages near Giridih in connection with the anthropological studies. In Bombay, he had discussions with the Director of Anthropology, Government of Maharashtra, and visited some slum areas to study the variations of growth in human psychology. *Lecture* : Environmental effects on human development.

23. Dr. A. G. Smirnov, Scientific Secretary for the Countries of South East Asia, People's Friendship University, Moscow (26 January-29 March 1965). He was invited under the Indo-USSR Exchange Programme. He visited a number of industrial and educational establishments, professional colleges in Madras, Poona, Bombay, Delhi, Calcutta and Bangalore, where he gave a talk on "Scientific and Technical Personnel and India's Economic Development." He visited the Documentation Research and Training Centre, Bangalore, where he gave a talk on the importance of documentation.

24. Professor K. Takahashi, Head, Department of Physical Medicine, University of Tokyo, Japan (1-30 March 1965). *Three lectures* : Some aspects of medical diagnosis and the use of computers.

25. Dr. R. Wagner, Secretary-General, Commission for Complex Research of Developing Countries ; Member of the Presidium, Czechoslovak Academy of Sciences ; Vice-Director, Institute for International Politics and Economics, Prague, Czechoslovakia (14 December 1964-15 February 1965). He was invited under the Indo-Czechoslovak Cultural Exchange Programme to acquaint himself with the methodology of analysis of social and economic development in India. He worked in the Planning Division, Delhi, and also in Calcutta.

II. The following is a list of foreign scientists and scholars who paid brief visits :

1. Professor A. T. Balaban, Institute of Atomic Physics, Bucharest, Rumania, (29 December 1964).

## INDIAN STATISTICAL INSTITUTE

2. Professor Charles Bettelheim, Ecole Pratique des Hautes Etudes, France, worked in the Planning Unit of the Institute at Delhi (25 October-2 November 1964). *Seminar*: "Some Aspects of French Planning."
3. Dr. G. Bogner, Vice-Director, Research Institute for Telecommunications; Secretary, Technical Department, Hungarian Academy of Sciences, Budapest. (31 December 1964-7 January 1965).
4. Dr. Robert I. Crane, Professor of History, Duke University, U.S.A. (25-28 August 1964). *Lecture*: Nature and Work of the Mental Health Research Institute, University of Michigan.
5. Professor Virgil Gligor, Zootechnical Institute, Bucharest, Rumania (28 December 1964-6 January 1965).
6. Professor Ake Gustafsson, Director, Department of Genetics, Forest Research Institute, Stockholm (8-11 March 1965). *Lecture*: The induction of mutation by physical and chemical agents.
7. Mr. Istvan Huszar, Deputy President, Hungarian Central Statistical Office, Budapest, Hungary (25 October 1964-7 November 1964). He was invited under the Indo-Hungarian Cultural Exchange Programme to acquaint himself with the organisational frames and general course of statistical work in India, the relation between statistics and planning and the methods developed for controlling and influencing economy. He had discussions with the Central Statistical Organisation, and the Delhi Planning Unit of the Indian Statistical Institute.
8. Professor M. Afzal Hussain, Chairman, Agricultural Research Council, Lahore, Pakistan; Former President, Indian Science Congress Association. (30 December 1964-6 January 1965).
9. Dr. A. Klinger, Deputy Chief, Population and Social Statistics Department, Hungarian Central Statistical Office, Budapest, (7-28 March 1965). He was invited under the Indo-Hungarian Cultural Exchange Programme to study Indian population statistics and demography. He worked for a short period at the Planning Unit of the Institute in Delhi.
10. Dr. Klans Kuhne, Director, Institute of Applied Silicate Research, German Democratic Republic (29 December 1964-7 January 1965).
11. Mr. Leon Le Barzic, Secretary-General, Franco-Indian Committee for Industrial and Technical Cooperation. (16-19 May 1964). He was invited by the Indian Statistical Institute to explore possibilities of collaboration between India and France in respect of medium and small size industries.
12. Professor B. McFarlane, Institute of Advance Studies, Australian National University, Australia. *Seminars*: (1) "Recent Developments in Poland's Economic Planning"; (2) "Recent Developments in Yugoslav Planning", held at the Delhi Planning Unit (December 1964).

THIRTY-THIRD ANNUAL REPORT : 1964-65

13. Dr. Edwin D. MacKee, Chief, Paleotectonic Map Branch, U.S. Geological Survey (29 December 1964-2 January 1965). *Lecture* : Recent Studies on Sedimentary Structures. Dr. MacKee led a short field trip to south Bengal delta areas to introduce sedimentologists of the Institute to the techniques of the study of recent sediments.

14. Mr. E. Nichols, Photographer, U. S. Geological Survey, U.S.A. (29 December 1964-2 January 1965). He accompanied Dr. MacKee in the field trip to South Bengal.

15. Dr. Trofimov Nicolai, Peoples' Friendship University, Moscow, U.S.S.R. (9 January-16 February 1964).

16. Professor N. D. Newell, Chairman, Department of Invertebrate Palaeontology, American Museum of Natural History, U.S.A. (December 1964).

17. Dr. Istvan Palos, Chief, Department of Trade and Transport Statistics, Hungarian Central Statistical Office, Budapest, Hungary (25 October -7 November 1964). He was invited under the Indo-Hungarian Cultural Exchange Programme to acquaint himself with the organisational frames and general course of statistical work in India. He had discussions at the Central Statistical Organisation, Delhi, and the Demographic Research Centre, Bombay, where he gave a lecture on population problems.

18. Dr. (Mrs.) L. R. Polanakaya, Professor of Political Science, Institute of Peoples of Asia, USSR Academy of Sciences. (20 October -19 November 1964). She was invited under the Indo-USSR Cultural Exchange Programme to study the subject "Social, Economic and Ideological Consequences of Industrialisation in Indian cities." She visited educational and other establishments in Calcutta, Madras, Poona, Bombay and Bangalore in connexion with her studies and delivered some lectures. She had talks with the Delhi Planning Unit of the Indian Statistical Institute.

19. Dr. D. K. Roy Chowdhury, IBM Thomas J. Watson Research Centre, York Town, U.S.A. (21-22 October 1964). *Lecture* : Combinatorial properties of some line graphs.

20. Professor A. M. Rose, Department of Sociology, University of Minnesota, Minneapolis, U.S.A. (11-17 January 1965). *Three lectures* : (i) Development of sociological research in the U.S.A. (ii) Application of sociological research in the U.S.A., and (iii) The problems of inter-group relations.

21. Dr. Joan Robinson, University of Cambridge, U.K. (25 November-17 December 1965). *Lecture* : Economic Miracle in Korea. She visited the Madras Centre of the Institute and held discussions with the staff of the SQC Unit, Madras. In Delhi, she held a seminar on "Problems of Employment in India". She also visited the Institute's experimental agricultural farm at Giridih.

22. Mr. Dejo Savanananda, Deputy Secretary-General, National Statistical Office, Government of Thailand, Bangkok (14-16 January 1965).

23. Professor Wolfgang Sohlermer, Managing Director, Institute of Physical Chemistry, German Democratic Republic (29 December 1964-7 January 1965).

24. Dr. Z. Svejnar, Head, Department of Economics, Institute of International Politics and Economics, Czechoslovakia (8-17 February 1965). He visited the Delhi Planning Unit for discussions.

## INDIAN STATISTICAL INSTITUTE

25. Professor J. Sutton, Head of Geological Department, Imperial College of Science and Technology, London, U.K. (30 January-1 February 1965). He had detailed discussions with some staff-members of the Geological Studies Unit on their current investigations and future lines of work.

26. Professor Daniel Thorner, Ecole des Hautes Etudes, Paris, France, (29 January-5 February 1965). *Lecture*: Post-Marxian Theory of Peasant Economy; the School of A. V. Chayanov (1888—?).

27. Dr. Harry C. Triandis, Associate Professor of Psychology, University of Illinois, U.S.A. (25 February 1965). *Lecture*: The influence of culture on cognition.

28. Dr. (Mrs.) Leigh M. Triandis, Associate Professor of Psychology, University of Illinois, U.S.A. (25 February 1965). *Lecture*: Crosscultural studies of child training and personality.

29. Dr. J. Watson, Department of Geology, Imperial College of Science and Technology, London, U. K. (8-15 January 1965).

30. Professor T. S. Westoll, F.R.S., Department of Geology, The University, New Castle-upon-Tyne, U.K. (20-30 December 1964).

31. Dr. E. I. White, F.R.S., Department of Palaeontology, British Museum (Natural History) London, U.K. (1 January 1965).

### 8. INTERNATIONAL STATISTICAL EDUCATION CENTRE (ISEC)

Twenty-six students from eight countries attended the Eighteenth Term and Special Courses of the International Statistical Education Centre, Calcutta. The Government of India awarded twenty fellowships for the Eighteenth Term under the Technical Cooperation Scheme of the Colombo Plan. One fellowship of approximately the same value as the Colombo Plan fellowship was awarded to a candidate from Afghanistan from funds provided by the Government of India for fellowships outside the Colombo Plan. In the final examination, 23 successful trainees of the regular course were recommended Certificates of Merit, while three were recommended Certificates of Attendance. The certificates were awarded by Professor P. C. Mahalanobis, F.R.S., on 12 April 1965.

### 9. PROFESSIONAL EXAMINATIONS

9.1. *Statistician's Diploma Examination*: This examination was held from 25 May to 4 June 1964 and from 25 November to 3 December 1964 at Bombay, Calcutta, New Delhi, Giridih, Hyderabad, Lucknow and Madras. During the May session, 115 candidates registered in one or more papers, 100 appeared and 48 passed in one or more papers. In the November session, 107 candidates registered, 98 appeared and 40 candidates passed in one or more papers.

In 1964-65, the Statistician's Diploma was awarded to seven candidates who passed completely in all the papers prescribed for the examination. The total number of candidates who have been awarded the Statistician's Diploma up to the end of March 1965 is 106.

### THIRTY-THIRD ANNUAL REPORT : 1964-65

9.2. *Computer's Certificate Examination* : The examination for this Certificate was held once from 29 May to 3 June 1964 and again from 25 to 30 November 1964 at Calcutta, New Delhi, Giridih, Hyderabad, Madras and Trivandrum. In May, 24 candidates registered, 23 appeared, and 15 passed in one or more papers, while in November, 27 candidates registered, 26 appeared and 14 passed in one or more papers.

In 1964-65, six candidates qualified for the award of the computer's certificate. The total number of candidates who have qualified for this certificate up to the end of March 1965 is 146.

9.3. *Statistical Field Survey Certificate (Junior and Senior) and Diploma Examination* : These examinations were held from 30 November to 3 December 1964 at Calcutta, New Delhi, Giridih and Hyderabad. In the Junior Certificate Examination, 3 candidates registered and appeared and 2 passed, while in the Senior Certificate Examination, 1 candidate registered, appeared and passed in one or more papers. But the only one candidate for the Diploma Examination failed to qualify in any of the papers.

9.4. *Punched Card Machine Operator's Certificate Examination* : This examination was held for the first time in 30 November 1964 at the Bombay centre. Only one candidate registered and appeared in one paper in which he passed.

9.5. *Punched Card Data Processing Diploma Examination* : No candidate had registered and appeared for this examination during November 1964.

### 10. THIRD CONVOCATION

The Institute held its Third Convocation for awarding the B.Stat., M.Stat. and Ph.D. degrees on 11 February 1965. Certificates to the trainees of the International Statistical Education Centre and diplomas to the successful candidates in the statisticians' diploma courses were also distributed at this function. Shri Y. B. Chavan, Defence Minister of India and the President of the Institute, presided and Professor Arno Muntzing, Director, Institute of Genetics, University of Lund, Sweden, delivered the convocation address. Dr. C. R. Rao, Director, Research and Training School, made the annual review of research and training. Professor P. C. Mahalanobis welcomed the distinguished guests.

Four candidates were awarded the Ph.D. degree, 27 the M.Stat. degree by examination, 6 the M.Stat. degree by thesis, and 15 the B.Stat. degree. The Statisticians' Diploma was awarded to 14 candidates, 2 the Statisticians' Field Survey Diploma and 1 the Associateship of the Institute.

### 11. SPECIAL CONVOCATION

A Special Convocation was held on 29 May 1965 to confer on Shri C. D. Deshmukh the D.So. degree (*honoris causa*) of the Institute. Shri Y. B. Chavan, the President, sent a message on the occasion. Dr. C. R. Rao read the citation for the conferment of the degree. Professor S. N. Bose, F.R.S., Vice-President, gave the convocation address. Professor P. C. Mahalanobis welcomed the guests.



## INDIAN STATISTICAL INSTITUTE

### 12. PLANNING DIVISION

12.1. *Planning and Regional Survey Unit, New Delhi* : During 1964-65, the unit continued to carry on research work on economic planning and regional survey under the general supervision and guidance of Shri Pitambar Pant, Honorary Joint Secretary, Indian Statistical Institute, and Chief, Perspective Planning Division, Planning Commission. The unit maintained close collaboration with the Perspective Planning Division and with the Centre for International Studies, Massachusetts Institute of Technology, in its research activities and a number of studies were carried out jointly. One paper was published and four papers were sent for publication by the workers of the Unit (Annexure 4). Nine seminars by foreign scientists were also organised.

12.2. *Planning Division, Calcutta* : The main fields of research covered in Calcutta were studies on consumption, econometrics, national income and allied topics. The Fourth Econometric Conference held at Hyderabad in October 1964 was organised by the Planning Division. Forty-five papers were contributed to this conference by eminent econometricians from India and abroad. Seminars were held on economic trends, problems of agricultural marketing, linear programming and growth models. Among the foreign experts who took part in lectures and seminars, particular mention may be made of Professor Daniel Thorner. As in previous years, the teaching of economics and econometrics in the Research and Training School, International Statistical Education Centre and other courses was organised by the Division in collaboration with the Planning Unit in Delhi, the National Sample Survey and others. Besides four papers published and three papers submitted for publication (Annexure 4), 23 working papers and technical notes were also prepared by the workers.

A group of workers were engaged in research on family planning and their major effort was directed during the year towards the collection of base-line data from experimental and control populations and the organisation of an action programme.

Certain studies on cottage industries were taken up in February 1966. A working centre, *Kalyanshree*, was started by the Institute for the purpose and three technical notes (on the *Ambar Charka*, on the cost and productivity of different crafts, and on the general economic aspect of different crafts) were prepared earlier. The centre is running more or less on a self-supporting basis; the workers engaged are paid on a piece-rate basis out of the sale proceeds of articles manufactured in the centre.

### 13. NATIONAL SAMPLE SURVEY PROJECT

The NSS Division of the Indian Statistical Institute functions as the technical wing of the Government of India's National Sample Survey Organisation. The nineteenth round of the regular socio-economic survey and the Annual Survey of Industries for 1962 and 1963 were in operation during the year. About ten different country-wide enquiries were conducted in each of the socio-economic surveys. The special integrated schedule covering all economic aspects of a household, which had been given a try-out in the previous round, was taken up in this round as a regular feature.

### THIRTY-THIRD ANNUAL REPORT ; 1964-65

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

- (a) the statistical planning of surveys, including sample designs, concepts and definitions, methods for collecting primary information, preparation of schedules of enquiries and the training of field workers and technical work relating to field enquiries ;
- (b) the programmes of statistical processing and the laying down of detailed specifications ;
- (c) the conduct of field work in West Bengal and Bombay city together with experimental researches for the improvement of sample design and techniques ; and
- (d) the processing of NSS data.

The processing and tabulation work covered data collected in the 14th to 18th rounds of the socio-economic surveys, the sample survey of manufacturing industries from 1959 to 1962 and family living surveys (middle class and working class). The tabulation and processing work was carried out in Calcutta (Baranagar), Delhi and Giridih. The number of schedules scrutinised was about half a million, the number of cards punched was about four and a half million and there were about twenty-four million card passages. As compared with the previous year, the output shows a considerable drop. The fall in the physical volume of output is due to two causes, i) diversion of a bulk of the work to hand tabulation for obtaining quick advance estimates of some key items and (ii) a drastic cut in the overtime work.

The total equipment consisted of seventeen tabulator units as against sixteen in the previous year with the necessary auxiliary machines. Of these eight units were in Calcutta, five in Delhi and four in Giridih. The additional unit was set up at Delhi.

Ten reports were printed and seven draft reports submitted to the Government in the course of the year (Annexure 6).

In addition to the regular reports, several preliminary notes on current data were also submitted to the Government. A number of detailed tables were also prepared on the basis of the seventeenth round data for the use of the Programme Evaluation Organisation on consumption, employment and land-holding in respect of specified socio-economic groups and regions within States.

#### 14. APPRAISAL DIVISION

Theoretical and empirical research was carried out on evaluation by sampling from "universes of questions" in educational examinations and personnel selection. Results have been reported on sampling designs, psychometric properties of random samples from the universe of questions, variance functions for individual students or candidates, confidence and probability in estimating individual performance, and comparison of individual performance on samples from different universes of questions. Research was also carried out and reported on assessment of individual performance on batteries of tests. A cooperative research project on meaning systems in Bengali was undertaken jointly with the Center for Comparative Psycholinguistics, University of Illinois (U.S.A.), and exploratory research on psychological changes with aging was started in cooperation with the Centre de Gerontologie de l'Association Claude-Bernard (Paris, France). The workers of the Division had five papers published in journals and five papers were submitted for publication (Annexure 4). Dr. Rhea Stagner Das is in charge of the Division.

## INDIAN STATISTICAL INSTITUTE

### 15. ELECTRONICS DIVISION

The Indian Statistical Institute-Jadavpur University Computer Project reached its final phase during the year. The fabrication of the computer was started and the wiring of the memory unit was completed. The computer is expected to go into operation by the middle of 1965-66. The input-output equipment for the computer will be far from what was expected, as the card reader and line printer could not be obtained as a gift from the United Nations. Instead the computer will have the cheapest and barest input-output equipment viz., a paper tape reader and a punch paper tape. It will, however, be backed by an auxiliary storage in the form of a magnetic drum with about 60, 000 characters of storage.

Computation service including consulting service was given by the Electronics Division as usual to outside institutions. Problems which were received and completed are listed in Annexure 5.

Research on computer technology and allied topics were also continued. The list of papers published by workers and those sent for publication are shown in Annexure 4. Six trainees of the Applied Science Course on Computers completed their thesis assignments.

### 16. DEVELOPMENT WORKSHOP

The production of a new batch of twenty-five punched card sorters was taken up and of these four were nearly completed. Some improved modifications in the design of the sorter were worked out. Five sorters were installed at the Giridih Branch. The detailed process schedules were prepared for the production of desk calculators. One prototype of a manual key punch was built.

The project report for the manufacture of desk calculators and sorters at the factory at *Gopitu Nivas* was prepared by Messrs. M. N. Dastur & Co. (P) Ltd., consultants. The power supply at the factory at *Gopitu Nivas* was received and the internal electrical installation was almost completed. Some UNTAA machine tools were installed there.

The production was continued of special components for the defence requirements of the Government of India.

Thirty-seven apprentices completed their training under the Apprenticeship Training Scheme and twenty-two apprentices were admitted.

### 17. DOCUMENTATION RESEARCH AND TRAINING CENTRE (DRTC)

All the six candidates of the 1962-63 batch, who took the final examinations, passed (three with distinction). The eight trainees of the second batch (1963-64) took the post-course apprenticeship in the Indian Statistical Institute, Calcutta, during 15 April to 10 June 1964. The formal training course for eight trainees of the 1964-65 batch is in progress.

The Second Annual Seminar on Documentation was held in the DRTC, Bangalore, from 21 to 25 December 1964, and 77 delegates including two from the USA attended the seminar. Twenty-one papers were received for the seminar, of which six were contributed by the staff and students of the DRTC. A meeting of the Board of Studies, DRTC, was held on 26 December 1964.

### THIRTY-THIRD ANNUAL REPORT : 1964-65

A draft glossary of 350 cataloguing terms was sent to the Indian Standards Institution for circulation among members of the Documentation Sectional Committee. Dr. Ranganathan prepared a *Memoir on Education and Library System of the Nation*, at the invitation of the Government of India.

A new quarterly—*Library Science with a slant to documentation*—was started by the Sarada Ranganathan Endowment for Library Science in collaboration with the DRTC. Dr. Ranganathan donated to the DRTC valuable books and periodicals on library science and other allied subjects.

#### 18. LIBRARY

The Institute library has at present a collection of 1,07,122 volumes of books and bound journals, 25,220 reprints, monographs and specialised technical reports, as also a large collection of maps, micro-films and photo-prints. During the year, the library acquired 5,293 books and 2,215 periodicals. The library also acquired a complete set of the microfiche edition of the Census of India Reports (1872-1951) and the microfilms of *Bandemataram* and papers from the collection of Sir Tej Bahadur Sapru. Scientific and technical publications in Russian and Japanese languages were received from various agencies under the exchange arrangements.

Thirty-seven English translations were provided to research workers from scientific documents in Russian, German, French, Czechoslovak, Spanish, Italian and Japanese. Two books were translated from Russian : 1. Random processes with independent increments by A. V. Skorokhod and 2. Economics of Countries in the Socialist Camp in figures, 1961. The library continued to issue documentation lists and compiled subject bibliographies and reading lists in different subjects. Besides documentary reproduction work, the photographic unit attached to the library also provided photographs required by the scientific departments. The Museum and Central Records made systematic acquisitions, indexing and filing specimens, maps and other materials.

#### 19. STATISTICAL QUALITY CONTROL (SQC)

The SQC Units functioned during the year in nine centres: Bangalore, Baroda, Bombay, Calcutta, Coimbatore, Delhi, Ernakulam, Madras and Trivandrum and rendered effective SQC service to 76 factories. While service was extended to 10 additional plants during the year, regular servicing in 15 plants ceased after completion of the work. Special arrangements were made to service three large establishments in the public sector and organise SQC in the plants.

Training was given special importance during the year and a number of training courses was organised for different levels of personnel by the Training and Promotion Unit and the other operating units at different centres. In-plant training courses were conducted in Bangalore, Bombay, Coimbatore and Madras not only for the supervisory and operating staff but also appreciation courses for senior officers and technicians. In addition to the general training courses in SQC organised in Calcutta and Madras, special courses in Operational Research were held in Calcutta, Bombay and Bangalore for middle management and nearly 100 persons participated. Over 370 persons have thus been given the requisite training in SQC methodology.

## INDIAN STATISTICAL INSTITUTE

A special feature of the year was the establishment of the training school for SQC as recommended by the Policy Advisory Committee (*Chairman* : Shri C. D. Deshmukh and *Member-Secretary* : Shri Pitambar Pant) and accepted by the Government. The One-year Post-graduate Diploma Course in SQC, specially evolved for imparting theoretical and practical training to enable persons to occupy responsible positions in the SQC field, commenced functioning during the year. Twenty-eight selected candidates are under training. Two foreign experts, Mr. D. J. Desmond and Mr. H. Kerner, assisted in the course under the UNTAB programme.

Mr. D. J. Desmond worked with the Division from 28 November 1963 to 9 March 1965. He participated directly in the teaching work, and also supervised the field training of the candidates in different parts of the country.

Mr. Hans Kerner has been working with the Division from 23 August 1964. In accordance with the course syllabus, he gave lectures in Operational Research and also supervised the field training of the candidates, which involved the application of O.R. techniques. Dr. Desmond was also associated with the separate short training courses in SQC for candidates sponsored by the industries.

Three special courses in Operational Research which were organised under the guidance of Mr. Kerner in Calcutta, Bombay and Bangalore, for middle management provoked considerable interest in the application of these techniques to industrial problems arising out of SQC investigations.

Against an income of Rs. 4.29 lakhs during the previous year, the estimated income from consultancy etc., increased in the year to Rs. 5.31 lakhs. The total estimated expenditure for the year was Rs. 14.31 lakhs including an exclusive grant of Rs. 2.44 lakhs for the SQC Diploma Course, which commenced late in the year.

In addition to the training and consultancy service, considerable promotional work was also undertaken by the Division as part of the programme of the SQC movement. The Unit staff gave 33 technical talks, attended 32 conferences and seminars, paid 42 promotional visits to factories and conducted 10 pilot investigations.

The SQC Units collaborated with sister institutions like the National Productivity Council, the Institution of Engineers, the Institution of Foundry Engineers and the Institute of Management, in giving promotional talks and participating in the seminars and also as guest speakers in the training courses organised by the institutions.

A well-attended Management Conference, organised in Bombay in April 1964, was inaugurated by Dr. C. D. Deshmukh and presided over by Shri P. L. Tandon.

The Policy Advisory Committee met once in Bombay, and considered, among other items, measures to accelerate the spread of SQC in India.

### 20. PUBLICATIONS

The following were published : *Sankhyā* : *The Indian Journal of Statistics* : Volume 26, Series A, 4 parts ; Volume 27, Series A, part 1 ; Volume 28, Series B, 4 parts.

*Indian Statistical Series : Towns of Mysore State* by V. L. S. Prakasa Rao, was published jointly by the Statistical Publishing Society and the Asia Publishing House, under the auspices of the Indian Statistical Institute.

*Samvadadhvam* : House Journal of the Indian Statistical Institute, Volume 6, Nos. 2 and 3.

## THIRTY-THIRD ANNUAL REPORT : 1964-65

### 21. VISITORS

Over 250 visitors from India and abroad (from 30 countries and international organizations) came to the Institute during the year.

### 22. CONSTRUCTION OF BUILDINGS

Additional floor space of 23,700, sq.ft. of pucca structure and 5,000 sq.ft. of hutments were constructed during the year.

### 23. BRANCHES

23.1. *Mysore State Branch* : There were 31 members of different categories at the end of the year. The office-bearers of the Branch for 1964-65 were elected at its eleventh annual general body meeting held on 13 August 1964.

The selection test on behalf of the Appraisal Division of the Indian Statistical Institute, was held at the Bangalore Centre on 10 May 1964.

Some further data were collected by Sri P. S. Narayana on the Survey on Industrial Estates. Some experiments are in progress in the Kolar Gold Fields area on the Survey on Dust in Atmosphere.

The following visiting professors took part in group discussions and lectures : Dr. G. Grümmer, Director, Phytopathologisches Institute, Greifswald University, German Democratic Republic ; and Dr. W. Hoeffding, Professor of Statistics, University of North Carolina, USA.

23.2. *Bombay Branch* : The office-bearers for 1964-65 were elected at the annual meeting of the Council and General Body held during 9-10 November 1964.

The Branch continued to render its general assistance in the conduct of NSS field work for the eighteenth and nineteenth rounds in Bombay City entrusted to the Indian Statistical Institute. The work was completed in June 1964. The conference for the nineteenth round of the NSS was held in June 1964, and after intensive training to the field workers, the survey was started in July 1964.

Twenty-four candidates were selected out of the 48 who applied, after an admission test held on 16 August 1964, for the One Year Evening Course in Statistics. The lectures began from 8 September 1964 and the first term examination was held in October 1964. The Branch conducted the Statisticians Diploma Examination and the Punch Card Machine Operators Examination in May and November 1964. Admission tests were also held for B.Stat. and M.Stat. trainees.

The Branch library, which could be set up during the year with the appointment of a full-time librarian, has 670 volumes and 380 periodicals.

23.3. *Kerala Branch* : The One-year Evening Course in Statistics conducted by the Research and Training School was started in Trivandrum in March 1963 under the auspices of the Kerala Branch. Thirteen students were admitted to the course, out of the 20 who had applied. Four part-time teachers gave lectures for the evening course.

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

*President :* Shri Y. B. Chavan, Minister of Defence, Government of India.

*Vice-Presidents :* Professor S. N. Bose, F.R.S., D.Sc., F.N.I., N.P.; Professor D. R. Gadgil, M.A., M.Litt.; Dr. Q. M. Hussain, M.A., Ph.D.; Dr. Balabhadra Prasad, D.Sc., F.N.I.; Dr. S. R. Ranganathan, M.A., D.Litt. F.L.A., N.P.; Shri Vishnu Sahay, Governor of Assam; Shri P. C. Sen, Chief Minister, West Bengal.

**THE COUNCIL : 1964-65**

*Chairman :* Shri K. P. S. Menon.

*Vice-Chairmen :* Shri B. B. Ghosh, M.Sc.; Dr. J. N. Mukherjee; Shri S. C. Roy, M.A., B.L.

*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 Secretaries :* Shri S. Basu, M.Sc., F.N.I.; Shri N. C. Chakravarti, M.A.; Shri S. K. Chowdhuri, B.A.; Shri Pitambar Pant, M.Sc.

*Members of the Council :* 1. Shri S. K. Acharyya, Bar-at-Law; 2. Shri R. Banerjee, I.A.S.; 3. Dr. U. P. Basu, D.Sc., F.N.I.; 4. Shri K. T. Chandy, LL.M. (Lond.), Bar-at-Law; 5. Dr. Bhabatosh Dutta, M.A., Ph.D.; 6. Professor H. C. Ghosh, M.A., P.R.S.; 7. Shri D. B. Lahiri, M.Sc., F.N.I.; 8. Dr. P.S. Lokanathan, D.Sc. Econ. (Lond.); 9. Shrimati Nirmalkumari Mahalanobis; 10. Shri N. T. Mathew, M.A., M.Sc.; 11. Dr. B. S. Minhas, M.A., Ph.D.; 12. Shri Bhaskar Mitter; 13. Shri J. K. Pande, M.A.; 14. Dr. I. G. Patel, B.A. (Cantab), Ph.D. (Cantab.); 15. Dr. C. R. Rao, M.A., M.Sc., Ph.D. (Cantab), F.N.I.; 16. Shri Satis Chandra Sen, M.A., LL.B.; 17. Shri S. C. Sen, B.A. (Cantab); 18. Dr. B. R. Seshachar, D.Sc., F.N.I.; 19. Shri P. L. Tandon; 20. Dr. R. S. Verma, M.Sc., D.Sc., F.N.I.

*Government Nominees on the Council :* Cabinet Secretary (or his representative), Cabinet Secretariat, Government of India; Joint Secretary (Shri D. J. Madan), Ministry of Finance, Department of Expenditure, Government of India; Chief Director (Shri R. Prasad), National Sample Survey, Government of India.

*Coopted Members in the Council :* 1. Dr. S. Dhawan; 2. Shri A. K. Mustafa; 3. Dr. B. P. Adhikari, M.Sc. (Cal.), Dr. es. Sc. (Paris).

**GOVERNING BODY OF THE RESEARCH AND TRAINING SCHOOL : 1964-65**

1. Shri K. P. S. Menon, Chairman (*ex-officio*); 2. Professor P. C. Mahalanobis, Hon. Secretary (*ex-officio*); 3. Dr. C. R. Rao, Director, RTS (*ex-officio*); 4. Shri Dinesh Bahl, Managing Director, Capital Private Ltd., (*Associated Chambers of Commerce of India*); 5. Dr. S. N. Sen, M.A., Ph.D., Head of the Department of Economics, Calcutta University (*Indian Economic Association*); 6. Shri B. K. Dutta, Managing Director, United Bank of

### THIRTY-THIRD ANNUAL REPORT : 1964-65

India (*Federation of Indian Chambers of Commerce and Industry*); 7. Joint Director (Dr. Uttam Chand), Central Statistical Organisation (*Government of India*); 8. Joint Secretary (Shri D. J. Madan), Ministry of Finance, Department of Expenditure (*Government of India*); 9. Dr. V. S. Huzurbazar, Professor and Head of the Department of Mathematics and Statistics, Poona University (*National Institute of Sciences of India*); 10. Dr. N. S. R. Sastry, M.A., M.Sc., Ph.D., Director of Statistics (*Reserve Bank of India*); 11. Shri D. C. Pavate, M.A. (Cantab.), Vice-Chancellor, Karnatak University, Dharwar (*Inter University Board*); and 12. Professor S. N. Bose, F.R.S.; 13. Dr. U. P. Basu; 14. Dr. R. S. Verma; 15. Dr. B. P. Adhikari; 16. Shri S. K. Chowdhuri; 17. Shri S. Basu; 18. Shri P. Pant (*Council of the Indian Statistical Institute*).

#### STATISTICAL QUALITY CONTROL : POLICY ADVISORY COMMITTEE : 1964-65

1. *Chairman* : Shri C. D. Deshmukh. *Members* : 2. Professor P. C. Mahalanobis; 3. Professor M. S. Thacker, Member, Planning Commission; 4. Shri G. D. Somani; 5. Shri S. Ananta Ramakrishnan, Chairman, Simpson Group of Industries; 6. Shri D. P. Agarwal, General Manager, Hyderabad Allwyn Metal Works Ltd.; 7. Shri P. L. Tandon, Chairman, Board of Directors, Hindustan Lever Ltd.; 8. Dr. Lal C. Verman, Director, Indian Standards Institution; 9. Shri H. D. Shourie, Director (Production), Ministry of Commerce and Industry, Government of India; 11. Shri S. C. Sen, Indian Statistical Institute; 12. Dr. K. R. Nair, Central Statistical Organisation; 13. Rear Admiral D. Sankar, Naval Head Quarters; 14. Shri Inderjit Singh, General Manager, Bhilai Steel Plant; 15. *Member-Secretary* : Shri Pitambar Pant.

#### FINANCE COMMITTEE OF COUNCIL

1. *Chairman*, Indian Statistical Institute (*ex-officio*); 2. *Secretary* of the Institute (or his nominee); 3. Director of the Research and Training School (or his nominee); 4. Shri R. Banerjee; 5. Shri K. T. Chandu; 6. Shri B. B. Ghosh; 7. Shri N. C. Ghosh; 8. Shri S. C. Roy; 9. Shri S. K. Chowdhuri (*Member-Secretary*) or a person nominated in his place by the Secretary or the Chairman; 10 and 11. two representatives nominated by the Government of India.

#### FINANCE COMMITTEE OF GOVERNING BODY

1. *Chairman*, Indian Statistical 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 or a Joint Director, if any, in charge of Research and Training School; 4 and 5. two representatives of the Government of India: at present Dr. Uttam Chand, Joint Director, Central Statistical Organisation; and Shri D. J. Madan, Joint Secretary, Ministry of Finance, Government of India; 6. a representative of the Reserve Bank of India on the Governing Body: at present Dr. N. S. R. Sastry; 7 and 8. two representatives to be elected by the Governing Body of the Research and Training School from amongst themselves: Shri Kumar Mitter and Shri Dinesh Bahl. The Joint Secretary of the Institute who acts as Member-Secretary of the Finance Committee of the Council also discharges the function of the Registrar-Convenor of the Finance Committee of the Governing Body.



## INDIAN STATISTICAL INSTITUTE

### JOURNAL COMMITTEE

1. Dr. B. P. Adhikari; 2. Professor S. N. Bose; 3. Professor D. B. Lahiri; 4. Dr. Sujit Mitra; 5. Dr. C. R. Rao; 6. Dr. J. Roy; 7. Dr. T. N. Srinivasan; 8. Dr. V. S. Huzurbazar (representative of the Governing Body of the Research and Training School) and 9. Shri Anikendra Mahalanobis (*Member-Secretary*).

### EXAMINATIONS COMMITTEE

1. Dr. B. P. Adhikari; 2. Dr. P. K. Bhattacharyya; 3. Shrimati Chameli Bose; 4. Shri N. C. Chakravarti; 5. Shri V. M. Dandekar; 6. Dr. A. George; 7. Dr. M. N. Ghosh; 8. Shri N. C. Ghosh; 9. Dr. V. S. Huzurbazar; 10. Shri N. T. Mathew; 11. Dr. B. S. Minhas; 12. Dr. S. K. Mitra; 13. Dr. M. N. Murthy; 14. Shri R. G. Narasimhan; 15. Dr. G. R. Seth; 16. Dr. J. Roy; 17. Shri J. M. Sengupta; 18. Shri M. A. Telang; 19. Shri Sadasiv Sengupta (*Member-Secretary*); 20 and 21. two representatives of the Governing Body of the Research and Training School (Dr. Uttam Chand and Dr. S. N. Sen); and 22. Dr. K. R. Shah.

### BOMBAY BRANCH : 1964-65

*Hon. President :* Shri S. K. Wankhede.

*Vice-Presidents :* Professor C. N. Vakil; Dr. N. S. R. Sastry; Dr. C. Nanjundayya.

*Hon. Secretary :* Shri K. A. Antony.

*Joint Secretary :* Shri V. V. Divatia.

*Hon. Treasurer :* Shri P. K. Bhowmik.

*Members of the Council :* Dr. R. L. N. Iyengar, Dr. V. N. Patankar, Professor V. B. Kamath; Professor P. N. Phutane, Shri S. V. Borkar.

### MYSORE STATE BRANCH : 1964-65

*President :* Shri H. S. Narayana Rao.

*Secretary :* Professor Srinagabhushana.

*Joint Secretary :* Shri C. A. Setty.

*Members :* Shri M. V. Venkataraman, Shri P. S. Narayana, Shri M. C. Satyanarayana, Shri P. Krishna, Shri M. Narayana Iyengar, Shri S. K. Iyengar, Professor R. Natara-  
jan and Shri N. C. Ramanna.

### KERALA BRANCH : 1964-65

*Chairman :* Professor Samuel Mathai.

*Secretary and Treasurer :* Dr. (Miss.) A. George.

*Members :* Dr. Thangavelu; Dr. C. K. N. Nair; Shri B. K. Raja Rao.

## THIRTY-THIRD ANNUAL REPORT : 1964-65

### Annexure 2 : Important Business Transacted in Meetings of the Council and Governing Body, Research and Training School

#### MEETINGS OF THE COUNCIL

29 May 1964 : Request to Professor P.C. Mahalanobis to carry on the non-statutory functions of the Chairman in addition to his functions as Honorary Secretary until a new Chairman could formally assume charge; scope of the decision of the Council on 25 March 1964 in respect of the pay structure etc. being extended to cover teaching and research staff of the Institute in sectors other than RTS; Shri K. R. Shah elected member of the Examinations Committee in place of Dr. K. R. Nair; fixation of subscription rate for Institute members residing outside India; report on negotiations with the Government regarding the new arrangement for NSS work; arrangement for improvement of administrative and financial control; proposal for the appointment of an administrative officer/financial controller.

11 June 1964 : The setting up of a committee with Shri R. Banerjee (*Chairman*), Shri D. J. Madan, Shri H. C. Ghosh and a representative of the Institute Administration (*Convenor*) to examine proposals and make recommendations by 31 July 1964 regarding the revision of pay scales of Workshop and Estate Office staff; implementation of the Council decisions of 25 March 1964 about pay structure etc.; programme of the construction work for 1964-66 approved for use by the appropriate works committee; installation of IBM 1401, to approach Government for a considerable loan to meet expenses; payment of an additional dearness allowance as in the Government from 1 February 1964; reporting about the co-optation of members in the Hospitality Committee.

18 August 1964 : Dr. C. D. Deshmukh, co-opted member for this meeting; Shri S. P. Sinha, Administrative Officer, co-opted as a member of the Council; nomination for the election of President, Vice-President, office-bearers and members of the Council; Shri Y. B. Chavan, Minister of Defence, Government of India, Shri P. C. Sen, Chief Minister, West Bengal, and Shri K. P. S. Menon were nominated for election as President, Vice-President and Chairman respectively of the Institute; Professor P. C. Mahalanobis thanked Dr. C. D. Deshmukh and mentioned about his association with the Institute; administrative arrangements: appointment of Shri S. P. Sinha as Administrative Officer; change in the present arrangement (Professor P. C. Mahalanobis, Director of RTS since 1949-50 and from 30 June 1963 as Honorary Director) after Dr. C. R. Rao takes over as the Director of the RTS; purchase of land and buildings at Takdah; changes in the Standing Service Orders; use of Institute's crest in the title page of *Sankhyā*; fixation of workers in pay scales.

23 September 1964 : Consideration of auditors' report, audited statement of accounts and audited balance-sheet for 1963-64; expenditure from the Development Fund on *Rose-Villa*, Giridih; valuation of pipe-line work in the NSS; approval of the allocation of expenditure; action in respect of accounts; consideration of revised budget estimate of 1964-65; Finance Committee's recommendation; capital grant for the UNTAA sector; overtime allowance; appointments for new posts and vacancies; provision for leave salary fund etc.; SQO expenditure; payment of an additional dearness allowance, city compensatory allowance etc.; approved budget estimate for 1964-65 and the tentative budget proposals for 1965-66 subject to modifications; nomination for the election of Shri Vishnu Sahay as Vice-President; nomination of Dr. C. R. Rao for election as Council member; report of the Examinations Committee on results of the May-June 1964 examinations.

## INDIAN STATISTICAL INSTITUTE

20 October 1964 : Annual Report including auditors' report and audited statement of accounts approved for submission to the Annual General Meeting ; appointment of Messrs. Lovelock and Lewos, Chartered Accountants, as auditors of the Institute for the year 1964-65.

20 November 1964 : Dr. S. Dhawan, Director, Indian Institute of Science, Bangalore, Shri A. K. Mustafa, Secretary, CSIR, Dr. B. P. Adhikari, Professor, Research and Training School, Indian Statistical Institute, co-opted as members of the Council ; formation of the Finance Committee of the Council and of the Examinations and Journal Committees ; nomination of representatives of the Council on the Governing Body ; committee with Professor S. N. Bose, Professor P. C. Mahalanobis, Dr. C. R. Rao and Shri S. Basu (*member-convenor*) to draft the bye-laws for fellowship and honorary fellowship ; formation of associateship committee ; revision of Standing Service Orders ; functions of Director in respect of non-RTS sectors ; purchase of land in Giridih.

11 February 1965 : *Obituary* : Shri S. C. Sen, Professor J. B. S. Haldane, Dr. Haris Chandra Sinha ; nomination of Shri Gajendra Kumar on the panel of Consulting Engineers for the Works Advisory Committee ; conferment of Degrees, Associateships and Diplomas ; award of D.Sc. degree (*honoris causa*) to Dr. C. D. Deshmukh ; Summer Course (Advanced) for Statisticians ; offer of library and scientific papers from Dr. W. A. Shewhart.

12 March 1965 : Purchase of land in Hyderabad ; report of the Examinations Committee for November-December 1964 professional examinations ; appointment of Shri N. N. Majumdar, part-time administrative and financial adviser for six months from 15 March 1965.

### MEETINGS OF THE GOVERNING BODY, RESEARCH AND TRAINING SCHOOL

23 September 1964 : Consideration of auditors' report, audited statement of accounts and audited balance-sheet for 1963-64 and also revised budget for 1964-65 and budget proposals for 1965-66 ; expenditure from Development Fund on *Rose-Villa*, Giridih ; consideration of revised budget estimates of 1964-65 ; Finance Committee's recommendation ; overtime allowance ; provision of Leave Salary Fund.

11 February 1965 : *Obituary* : Shri S. C. Sen, Professor J. B. S. Haldane, Dr. Haris Chandra Sinha ; nomination of representatives of the Governing body on the Journal and Examinations Committees ; setting up of the Syllabus Committee for the degree courses of the Research and Training School ; conferment of Degrees, Associateships and Diplomas ; award of D.Sc. degree (*honoris causa*) to Dr. C. D. Deshmukh ; Summer Course (Advanced) for Statisticians ; offer of library and scientific papers from Dr. W. A. Shewhart.

THIRTY-THIRD ANNUAL REPORT: 1964-65

Annexure 3 : Admission to Courses

3.1. RESEARCH AND TRAINING SCHOOL

sl. no.	courses	number		
		applied	appeared at selection tests	admitted
FULL-TIME COURSES				
1.	Research and Advanced Studies	119	91	26
2.	One-year post-M.Sc. Apprentice Course			
3.	M.Stat. 1st year	98	62	14
4.	M.Stat. 2nd year (by promotion)	—	—	29
5.	B.Stat. 1st year	439	334	24
6.	B.Stat. 2nd year (by promotion)	—	—	21
7.	B.Stat. 3rd year (by promotion)	—	—	25
8.	B.Stat. 4th year (by promotion)	—	—	26
9.	Statistical Officers' Course (jointly with the CSO)	—	—	25
10.	Three-month Course on Electronic Computer Programming	126	101	14
11.	International Statistical Education Centre (selected by the International Statistical Institute)	—	—	27
12.	Six-week Summer Course for Statisticians, May-June 1964	61	—	24
13.	Full-time courses : sub-total of admissions			255

PART-TIME AND EVENING COURSES

1.	One-year Evening Course in Statistics, Part I, Calcutta			
1.1	September 1964-March 1965	78	46	22
2.	One-year Evening Course in Statistics, Part II, Calcutta			
2.1	March 1964-September 1964	—	—	10
3.	Computer's Training Course, Junior, Calcutta			
3.1	March-September 1964	105	63	18
3.2	September 1964-March 1965	98	46	17

INDIAN STATISTICAL INSTITUTE

srl. no.	courses	number		
		applied	appeared at selection tests	admitted
PART-TIME AND EVENING COURSES (contd.)				
4.	Computer's Training Course, Senior, Calcutta			
4.1	March-September 1964	—	—	21
4.2	September 1964-March 1965	—	—	5
5.	Nine-month Course on Data Processing Systems, Calcutta			
5.1	September 1964-March 1965	110	48	7
6.	One-year Evening Course in Statistics, Delhi (in collaboration with the CSO)			
6.1	September 1964-August 1965	181	70	40
7.	One-year Evening Course in Statistics			
7.1	Bombay : September 1964-August 1965	—	—	24
7.2	Madras : September 1964-August 1965	—	—	22
7.3	Trivandrum : September 1964-August 1965	—	—	13
7.4	Hyderabad : September 1964-August 1965	—	—	8
14.	Part-time and Evening Courses : sub-total of admissions			116
15.	All Courses : total admissions			371

3.2. STATISTICAL QUALITY CONTROL UNITS

srl. no.	courses	units	dates	number of participants
1.	Inplant Training Course at Hyderabad Allwyn Metal Works	Bangalore	August-October	12
2.	Short-term course on SQC at the Chief Inspectorate of Armaments, Kirkee	Bombay	22 February to 5 March 1965	25
3.	Course on Operational Research	Bombay	8-10 February 1965 and 8-12 March 1965	22
4.	Appreciation Course on SQC for senior officers of the Ammunition Factory, Kirkee.	Bombay	23-24 February 1965	40
5.	Appreciation Course for Foremen and Assistant Foremen of the Ammunition Factory, Kirkee	Bombay	25-27 February 1965	60

THIRTY-THIRD ANNUAL REPORT : 1964-65

sr. no.	course	units	dates	number of participants
STATISTICAL QUALITY CONTROL UNITS (contd.)				
6.	Course on Operational Research	Calcutta	September-December 1964 (two afternoons per week)	20
7.	Introductory Course on SQC	Calcutta	15-27 March 1965	34
8.	SQC Diploma Course	Calcutta	Started in August (one year course)	28
9.	Basic Course on SQC for Defence Personnel	Calcutta	30 November to 4 December 1964 and 1-6 February 1965	18
10.	Training Course for Supervisory Staff of Shri Rajendra Mills, Salem	Coimbatore	April-June 1964	10
11.	One Week Training Course in Operational Research to Industrial Engineers undergoing training at the National Productivity Council.	Madras	27 December 1964 to 2 January 1965	20
12.	Appraisal training courses for Inspectors and Senior Supervisors of the following establishments :	Madras		
	(i) India Piston Ltd.			15
	(ii) Addison & Co. (Tool Works)			10
	(iii) Indian Leaf Tobacco Development Co. Ltd.			50
	(iv) Sree Krishna Jute Mills Ltd.			10
All Courses				374

Annexure 4 : List of Scientific Papers

4.1. PAPERS PUBLISHED

A. Statistics

- P1. BHATTACHARYYA, P. K. (with Dasgupta, S.) (1964) : Classification between Univariate Exponential Populations, *Sankhyā*, 26, sr. A, 17-24.
- (P1) DASGUPTA, S. (with Bhattacharyya, P. K.) (1964) : Classification between Univariate Exponential Populations, *Sankhyā*, 26, sr. A, 17-24.
- P2. ——— (with Anderson, T. W. and Mudholkar, G. S.) (1964) : Monotonicity of the Power Functions of Some Tests of the Multivariate Linear Hypothesis, *Annals of Mathematical Statistics*, 35, 200-205.

INDIAN STATISTICAL INSTITUTE

- P3. ——— (with Anderson, T. W.) (1964) : Monotonicity of the Power Functions of Some Tests of Independence between Two Sets of Variates, *Annals of Mathematical Statistics*, 35, 206-208.
- P4. ——— (with Anderson, T. W.) (1964) : A Monotonicity Property of the Power Functions of Some Tests of the Equality of Two Covariance Matrices, *Annals of Mathematical Statistics*, 35, 1059-1063.
- P5. ——— (1964) : Nonparametric Classification Rules, *Sankhyā*, 26, sr. A, 25-30.
- P6. DHARMADHIKARI, S. W. (1964) : A Generalisation of a Stochastic Model considered by V. M. Dandekar, *Sankhyā*, 26, sr. A, 31-38.
- P7. ——— (1965) : An Example in the Problem of Moments, *American Mathematical Monthly*, 62, 302-303.
- P8. HANURAV, T. V., (1965) : A Note on Komamiya-Joshi's Bound for Minimum Distance Codes, *Journal of the Indian Statistical Association*, 3, 38-40.
- P9. KRISHNAN, T. (1964) : Discriminant Function for Item Selection, *Journal of Education and Psychology*, 22, 137-150.
- P10. ——— (1965) : Fiducial Method and Truncation, *Journal of the Indian Statistical Association*, 3, 17-19.
- P11. LAHANI, D. B. (1964) : Multi-subject Sample Survey System : Some Thoughts Based on Indian Experience. *Contributions to Statistics*, Volume presented to Professor P. C. Mahalanobis on the occasion of his 70th birthday, 175-220.
- P12. ——— (1965) : Some Arithmetical Properties of the Tourier Co-efficients of the Modular Invariant. *Current Science*, 34-208.
- P13. MAHALANOBIS, P. C. (1964) : Objects of Science Education in Underdeveloped Countries, *Sankhyā*, 26, sr. B, 253-256. The Commonwealth Conference on the teaching of Science in Schools, Colombo, 9-21 December 1963.
- P14. ——— (1965) : Statistics as a Key Technology, *American Statistician*, 19, 2, 43-46.
- P15. MENON, V. V. (1964) : Existence of Trees with given Degrees, *Sankhyā*, 26, sr. A, 63-68.
- P16. ——— (with C. Ramanujacharyulu) (1964) : About the Snake-in-the-Box Problem. *Publications de l'Institut de Statistiques de l'universite de Paris*, 13, 131-135.
- P17. ——— (1965) : Isomorphism between Graphs and their Adjoint Graphs, *Canadian Mathematical Bulletin*, 8, 7-15.
- P18. MURTHY, M. N. (1964) : On Mahalanobis' Contributions to the Development of Sample Survey Theory and Methods, *Contributions to Statistics*. Volume presented to Professor P. C. Mahalanobis on the occasion of his 70th birthday.
- P19. ——— (1964) : Product Method of Estimation. *Sankhyā*, 26, sr. B, 257-300.
- P20. MURTHY, U.S.R. (with K. Vijayan) (1964) : On Accessibility in Graphs, *Sankhyā*, 26, sr. A, 299-302.
- P21. PATRAK, P. K. (1964) : On Sampling Schemes providing Unbiased Ratio Estimators, *Annals of Mathematical Statistics*, 35, 222-231.
- P22. ——— (1964) : Sufficiency in Sampling Theory, *Annals of Mathematical Statistics*, 35, 795-808.

THIRTY-THIRD ANNUAL REPORT : 1964-65

- P23. ——— (1964) : On Inverse Sampling with Unequal Probabilities, *Biometrika*, *51*, 185-193.
- P24. ——— (with Sethuraman, J.) (1964) : On the Asymptotic Distribution of the Mean of Distinct Units in Sampling from a Finite Population, *Publ. Math. Inst. Hung. Acad. Sci.*, *9*, 113-116.
- P25. ——— (1964) : On Estimating the Size of a Population and Its Inverse by Capture Mark Method, *Sankhyā*, *26*, sr. A, 75-80.
- P26. RAMANUJACHARYULU, C. (1964) : Analysis of Preferential Experiments, *Psychometrika*, *29*, 257-261.
- (P16) ——— (with Menon, V. V.) (1964) : About the Snake-in-the-box Problem, *Publications de l'Institut de Statistiques de l'universite de Paris*, *13*, 131-135.
- P27. RAO, C. R. (1964) : Problem of Selection Involving Programming Techniques. *IBM Scientific Computing Symposium on Statistics*, 29-51.
- P28. ——— (1964) : The Use and Interpretation of Principal Components Analysis in Applied Research. *Sankhyā*, *26*, sr. A, 329-358.
- P29. ——— (with Rubin, H.) (1964) : On a Characterization of the Poisson Distribution. *Sankhyā*, *26*, sr. A, 295-298.
- P30. SETHURAMAN, J. (1964) : On the Probability of Large Deviations of Families of Sample Means. *Annals of Mathematical Statistics*, *35*, 1304-1316.
- P31. ——— (1965) : On the Probability of Large Deviations for Random Variables in  $D(0, 1)$ . *Annals of Mathematical Statistics*, *36*, 280-285.
- (P24) ——— (with Pathak, P. K.) (1964) : On the Asymptotic Distribution of the Mean of Distinct Units in Sampling from a Finite Population. *Publ. Math. Inst. Hung. Acad. Sci.*, *9*, 113-116.

B. Anthropometry

- P32. PAKRAST, K. B. (1964) : A Note on Differential Sex-ratios and Polyandrous People of India. *Man in India*, *44*, 161-174.
- P33. ——— (1964) : A Note on Some Aspects of Socio-demographic Situation in East India, 1951. *Bulletin of Cultural Research Institute (Government of West Bengal)*, *3*, 62-71.
- P34. ——— (1964) : Anthropology and Social Legislation of Today. *Souvenir of the Department of Anthropology, Calcutta University*, 6-11.
- P35. ——— (1965) : On Some Aspects of Family Structures of the Refugees of West Bengal. *Sociological Bulletin*, *14*, 13-20.

C. Biometry

- P36. DAS, B. C. (1964) : Estimates of Hospital Demand based on Age-specific Measures of Utilization. *Opsearch*, *1*, 165-168.
- P37. ——— (1964) : Indices of Blood Biochemistry in Relation to Age, Height and Weight. *Gerontologia*, *9*, 179-192.



## INDIAN STATISTICAL INSTITUTE

- P38. ——— (1965): Age-related Trends in the Blood Chemistry and Haematology of the Indian Carp (*Calla Calla*). *Gerontologia*, 10, 47-64.
- P39. DAS, RHEA S. (1964): Service Gate Information and Prediction of Demand for Hospital Services. *Opsearch*, 1, 141-150.

### D. Botany and Crop Science

- P40. DAVIS, T. A. (1964): Leaf Spiral and Yield in Coconuts. *Nature*, 204, 496-497.
- P41. ——— (with C. Selvaraj) (1964): Floral Asymmetry in Malvaceae. *J. Bombay Nat. Hist. Soc.*, 61, 402-409.
- P42. ——— (1964): Coconut Withering Disease of Ceylon and the Indian Root (wilt). A Comparison of Symptoms. *Proc. FAO Working Party*, Part 2, 283-292.
- P43. ——— (1964): Contribution to the Physiology of the Coconut Palm. *Proc. FAO Coconut Working Party*, Part 2, 142-166.
- P44. ——— (1964): Devising Instruments for Coconut Research. *Proc. FAO Coconut Working Party*, Part 2, 70-77.
- P45. ——— (1964): Possible Geo-physical Influence on Asymmetry in Coconut and Other Plants. *Proc. FAO Coconut Working Party*, Part 2, 59-69.
- P46. ——— (1965): Birgus Latro, the Robber Crab. *Coconut Bull.*, 18 (12), 456-465.

### E. Data Processing, Electronics and Computers

- P47. BANDYOPADHYAY, PRATUL (1964): A Model of Weak Interactions. *Progress of Theoretical Physics*, Japan, 32, 810.
- P48. ——— (1965): A Note on the Non-Conservation of Parity in Weak Interaction. *Progress of Theoretical Physics*, Japan, 34, 1.
- P49. HALDER, A. K. (with Saha, K.) (1964): Union List of Periodicals: A Punch Card Model. *Annals of Library Science and Documentation*, 2, 77-86.
- P50. MITRA, SAMABENDRA K. (1964): Mathematical Deduction of Kirchhoff's Laws from the Fundamental Principles. *International Conference of Microwaves, Circuit Theory and Information Theory*, Tokyo, Part 2, 137.
- (P49) SAHA, K. (with Halder, A. K.) 1964: Union List of Periodicals: A Punch Card Model. *Annals of Library Science and Documentation*, 2, 77-86.

### F. Demography

- P51. BISWAS, S. (1964): A Note on the Impact of Reproduction Wastage and Infant Mortality on the Total Fertility. *Calcutta Statistical Association Bulletin*, 13, 51-52.
- P52. DE, A. K. (with Som, R. K.) (1964): Abridged Life Tables for Rural India, 1957-58. *Milbank Memorial Fund Quarterly*, XLII, 2.
- P53. RAMAN, M. V. (1964): A Note on Illness Coverage by Medical and Non-medical Investigators. *Journal of the Indian Medical Profession*, 11, 4931-33.

THIRTY-THIRD ANNUAL REPORT : 1964-65

- P54. ——— (1964) : Some Social Practices and Attitudes and their Effect on Fertility. *Report of the Fifth Annual Conference on Family Planning*, Patna, 26-30.
- P55. ——— (1964) : The Development of Fertility Research in India. *Journal of Family Welfare*, 11, 33-38.
- P56. ——— (1965) : Contribution of Medical Profession to the Promotion of Family Planning. *Indian Medical Gazette*, 4, 21-26.
- P57. SENGUPTA, ANJMA (1965) : A Study of Rythm Method in Exploring the Patterns of Libido in the Human Female. *Journal of Family Welfare*, XI, 3, 47-67.
- (P52) SOM, R. K. with (DE, A. K.) : Abridged Life Tables for Rural India. 1957-58. *Milbank Memorial Fund Quarterly*, XLI, 2.

G. Documentation

- P58. GOPINATH, M. A. (1964) : Use of Normative Principles for the Comparison of Schemes of Classification. *Seminar DRTC*, 2, 1-964.
- P59. ——— (with Sugra Begum) (1964) : Capital Expenditure on Buildings and Equipment. *Library Science*, 1, 352-363.
- P60. ——— (with Neelameghan, A.) (1964) : Problems of General vs. Special Classification Schemes : Possible Solution through new Design Methodology. *Seminar, IASLIC*, 3, 36-41.
- P61. ——— (with Neelameghan, A.) (1964) : Pragmatic Approach in the Design of a Depth Classification Schedules, Case Study. *Library Science*, 2, 55-68.
- P62. ——— (with Ranganathan, S. R. and Neelameghan, A.) (1964) : Raising the Library Manpower. *Library Science*, 1, 364-383.
- P63. NEELAMEGHAN, A. (1964) : Cooperation between Specialist User and Documentalist. *Herald of Library Science*, 3, 303-313.
- P64. ——— (1964) : Documentalist and the Study of the History of a Subject, Timeless Fellowship. Karnatak University (*Dharwar School of Library Science*), 1, 39-44.
- (P60) ——— (with Gopinath, M. A.) (1964) : Problems of General vs. Special Classification Schemes : Possible Solution through New Design Methodology. *Seminar, IASLIC*, 3, 36-41.
- (P61) ——— (with Gopinath, M.A.) (1964) : Pragmatic Approach in the Design of a Depth Classification Schedules, Case Study. *Library Science*, 2, 55-68.
- (P62) ——— (with Gopinath, M. A., and Ranganathan, S. R.) (1964) : Raising the Library Manpower. *Library Science*, 1, 364-383.
- P65. ——— (with Ranganathan, S. R.) (1964) : Book Science : Depth Classification. *Library Science*, 1, 97-132.
- P66. ——— (with Ranganathan, S. R.) (1964) : Drug : Depth Classification. *Library Science*, 1, 224-280.

INDIAN STATISTICAL INSTITUTE

- P67. ——— (with Ranganathan, S. R.) (1964): Annual Public Library Finance. *Library Science, 1*, 346-351.
- P68. RANGANATHAN, S. R. (1964): Model Public Libraries Bill: An Evaluation. *Herald of Library Science, 3*, 209-229.
- P69. ——— (1964): Age of Documentation. *Herald of Library Science, 3*, 322-325.
- P70. ——— (1965): Library Classification on the March. *Herald of Library Science, 4*, 84-91.
- P71. ——— (1964): Choosing a Career: Librarianship. *Library Herald, 7*, 1-5.
- P72. ——— (1964): Subject Heading and Facet Analysis. *J. Doc., 20*, 109-119.
- P73. ——— (1964): Fifteen year Library Development Programme for Plan Periods 4 to 6. *Library Science, 1*, 281-308.
- P74. ——— (1964): Model Public Libraries Bill. *Library Science, 1*, 384-414.
- P75. ——— (1965): Library Classification through a Century. *Library Science, 2*, 1-30.
- P76. ——— (1965): Array Change or Level Change? *Library Science, 2*, 87-95.
- P77. ——— (1964): Classification Research in India 1957-1963: Trend Report *Library, 13*, 181-190.
- P78. ——— (1964): Conflict in Classification for Document Retrieval. *Seminar DRTC 2*, Supplement S1, 1-1.29.
- P79. ——— (1964): Indian Librarianship: A Peep into the Future. *Timeless Fellowship, Karnatak University (Dharwar), 1*, 17-22.
- (P62) ——— (with Gopinath, M. A. and Neelameghan, A.) (1964): Raising the Library Manpower. *Library Science, 1*, 364-383.
- P80. ——— (1965): International Library Scene. *Buch Und Welt: Festschrift für Gustav Hofmann, Zum 65. Geburtstag dargebracht*, 191-196.
- (P65) ——— (with Neelameghan, A.) (1964): Book Science: Depth Classification. *Library Science, 1*, 97-132.
- (P66) ——— (with Neelameghan, A.) (1964): Drug: Depth Classification. *Library Science, 1*, 224-260.
- (P67) ——— (with Neelameghan, A.) (1964): Annual Public Library Finance. *Library Science, 1*, 346-351.

H. Embryology

- P81. BRAHMAHARY, R. L. (with Reverbori, G.) (1964): Effects of Chromomyoin A<sub>3</sub> on the Embryonic Development of *Ciona Intestinalis*. *Acta Embryologica, 7*, 180-190.
- P82. ——— (1965): The Effect of Starvation on the Free Amino Acids of *Ciona*. *Experientia, 21*, 123.

THIRTY-THIRD ANNUAL REPORT : 1961-65

I. Flood Research

- P83. BOSE, N. K. (with Sinha, A. K.) (1964) : 1959 October Flood of Damodar River. *Indian Journal of Power and River Valley Development*, 1-4.
- P84. ——— (with Sinha, A. K.) (1965) : Prediction of Flood stages in the Yamuna at Delhi. *Indian Journal of Power and River Valley Development*, 1-8.
- P85. ——— (1965) : Necessity of a River Board for the Ajoy : A Note. *Indian Journal of Power and River Valley Development*, 37-40.
- (P83) SENHA, A. K. (with Bose, N. K.) (1964) : 1959 October Flood of Damodar River. *Indian Journal of Power and River Valley Development*, 1-4.
- (P84) ——— (with Bose, N. K.) (1965) : Prediction of Flood Stages in the Yamuna at Delhi. *Indian Journal of Power and River Valley Development*, 1-8.

J. Geology

- P86. BAKSI, S. K. (1964) : Fossil Ferrous Gollapilli Sandstone from a New Locality and its Significance. *Quart. Jour. Geol. Min. Met. Soc. India*, 36, 171-172.
- P87. SENGUPTA, SUPRIYA (1965) : Grand Banks Earthquake of 1929 and the instantaneous cable brakes, *Nature*, 204, 674-675.

K. Haematology

- P88. CHAUDHURI, S. (with Ghosh, J., Das, S. and Tapaswi, P.) (1964) : Anthropometric and Haematological Study of Children attending an Outpatient Clinic. *Journal of the Indian Academy of Pediatrics*, 1, 125-135.
- (P88) DAS, S. (with Chaudhuri, S., Ghosh, J., and Tapaswi, P.) (1964) : Anthropometric and Haematological Study of Children attending an Outpatient Clinic. *Journal of the Indian Academy of Pediatrics*, 1, 125-135.
- (P88) GHOSH, J. (with Chaudhuri, S., Das, S. and Tapaswi, P.) (1964) : Anthropometric and Haematological Study of Children attending an Outpatient Clinic. *Journal of the Indian Academy of Pediatrics*, 1, 125-135.
- (P88) TAPASWI, P. (with Chaudhuri, S., Ghosh, J. and Das, S.) (1964) : Anthropometric and Haematological Study of Children attending an Outpatient Clinic. *Journal of the Indian Academy of Pediatrics*, 1, 125-135.

L. Planning, Economic Statistics and Econometrics

- P89. BHAT, L. S. (1964) : Aspects of Regional Planning in India. *Geographers and the Topics* (Longmans), 297-322.
- P90. BHATTACHARYYA, N. (1964) : On Some Variable Elasticity Engel Curve Forms. *Sankhyā*, 26, sr. B, 1-16.
- P91. IYENGAR, N. S. (1964) : A Consistent Method of estimating the Engel Curve from Grouped Survey Data. *Econometrica*, 32, 4, 591-618.
- P92. MURHERJEE, M. (1964) : Scientific Approach in Planning. *Essays on Econometrics and Planning*. Volume presented to Professor P. C. Mahalanobis on the occasion of his 70th birthday, 193-176.

## INDIAN STATISTICAL INSTITUTE

- P93. NAQVI, S. (1965) : Some Problems of Research in Indian Economic History included in the Symposium on Research. *Indian Economic History*, published by the Asia Publishing House, 182-188.
- P94. PAL, M. N. (1964) : Operational Research Techniques in Regional Planning. *Opersearch*, 2, 231-247.
- P95. SRINIVASAN, T. N. (1964) : Optimal Savings in Two-sector Model Growth. *Econometrics*, 32, 358-373.
- P96. ——— (1965) : Lefober-Chakraverti Model of Development. *Economic Weekly*, 265-264.

### M. Psychometry

- P97. BHAGOLIWAL, B. S. (1965) : Typographic Dimensions Affecting the Legibility of Hindi Print: A Factorial Experiment. *Journal of Education and Psychology*, 22, 205-214.
- P98. CHATTERJI, S. (with Mukherjee, M.) (1964) : Development of a Battery of Tests to predict Success in Librarianship Training Course. *Indian Journal of Applied Psychology*, 2, 92-100.
- P99. DAS, RHEA S. (1965) : Methods for Evaluating Individual Performance in Industrial and Educational Settings : A Review of Research in the Indian Statistical Institute. *Psychological Researches in India*, Kapoor, S. D. (Ed.) Jalota Commemoration Volume Committee, Varanasi, 115-130.
- P100. ——— (1965) : An Application of Factor and Canonical Analysis to Multivariate Data. *British Journal of Mathematical and Statistical Psychology*, 18, 57-67.
- (P98) MUKHERJEE, M. (with Chatterji, S.) (1964) : Development of a Battery of Tests to predict Success in Librarianship Training Course. *Indian Journal of Applied Psychology*, 2, 92-100.

### N. Sociology

- P101. BANDYOPADHYAY, S. (with Chattopadhyay, K.) (1964) : A Method of Classifying Family Structures. *Indian Sociological Bulletin*, 2, 22-23.
- P102. ——— (with Mukherjee, R.) (1964) : Social Research and Mahalanobis's D<sup>2</sup>. *Contributions to Statistics*. Volume presented to Professor P. C. Mahalanobis on the occasion of his 70th birthday, 269-282.
- P103. CHAKRAVARTI, P. (with Chattopadhyay, K.) (1964) : Some Aspects of Toto Ethnography. *Bulletin of the Cultural Research Institute*, 3, 61-62.
- (P101) CHATTOPADHYAY, K. (with Bandyopadhyay, S.) (1964) : A Method of Classifying Family Structures. *Indian Sociological Bulletin*, 2, 22-23.
- (P103) ——— (with Chakravarti, P.) (1964) : Some Aspects of Toto Ethnography. *Bulletin of the Cultural Research Institute*, 3, 61-62.
- (P102) MUKHERJEE, R. (with Bandyopadhyay, S.) (1964) : Social Research and Mahalanobis's D<sup>2</sup>. *Contributions to Statistics*. Volume presented to Professor P. C. Mahalanobis on the occasion of his 70th birthday, 269-282.

THIRTY-THIRD ANNUAL REPORT : 1964-65

4.2. PAPERS SUBMITTED FOR PUBLICATION

(The journal to which the paper has been submitted for publication is mentioned within brackets)

A. Statistics

- S1. DASGUPTA, S. : Optimum Classification rules for Classifying an Observation into one of two Multivariate Normal Populations. (*Annals of Mathematical Statistics*).
- S2. ——— : Classification into Structured Normal Populations. (*Annals of Mathematical Statistics*).
- S3. DEARMADHIKARI, S. W. : On the Functional Equation  $f(x+y) \pm f(x)f(y)$ . (*American Mathematical Monthly*).
- S4. ——— : A Characterisation of a Class of Functions of Finite Markov Chains. (*Annals of Mathematical Statistics*).
- S5. HANURAV, T. V. : Optimum Utilization of Auxiliary Information—Sampling Two units from a Stratum. (*Journal of Royal Statistical Society*).
- S6. ——— : The Criterion of Hyper-admissibility and the Optimality of the Horvitz Thompson Estimator. (*Annals of Mathematical Statistics*).
- S7. ——— : On the Non-existence of a 'best estimator' of the Population Total for Sampling from Finite Populations. (*Metrika*).
- S8. ——— : Some Remarks on the Use of Auxiliary Information in Finite Population Sampling. (*Journal of American Statistical Association*).
- S9. ——— : The Estimation of O-A-B Blood Group Frequencies by a Sample Survey. (*Sankhyā*).
- S10. ——— : Inbreeding with Cyclical Mating Systems. (*Journal of Genetics*).
- S11. ——— : On Some Burst-error Correcting Codes. (*Information and Control*).
- S12. IYER, M. : On Colouring a Chess-board. (*American Mathematical Monthly*)
- S13. KRISHNAN, T. : Truncation in Quantal Assay. (*Annals of the Institute of Statistical Mathematics*).
- S14. ——— : Item Analysis by Simultaneous Quantal and Quantitative Responses. (*British Journal of Statistical Psychology*).
- S15. ——— : Sufficiency for Quantal Assay. (*Sankhyā*).
- S16. ——— : Sufficiency and Truncation in the Generalised Exponential Family. (*Australian Journal of Statistics*).
- S17. MENON, V. V. : A Theorem on Partitions of Mass-distributions. (*Pacific Journal of Mathematics*).
- S18. ——— : On Colouring a  $n \times n$  Chessboard. (*American Mathematical Monthly*).
- S19. ——— : A Redistribution Problem. (*Cahier du Centre d'Etudes de Recherche Operationelle*).
- S20. ——— : On Interchange Graphs. (*American Mathematical Monthly*).

INDIAN STATISTICAL INSTITUTE

- S21. MURTHY, U. S. R. (with Vijayan, K.): On a Method of Finding Optimal Policy for Production and Distribution with Penalty Costs for Undersupply. (*Cahier du Centre d'etudes Recherche Operationelle*).
- S22. PADMANABHAN, A. R.: Some Results in Measure Theory. (*The Mathematics Student*).
- S23. ———: Some Lattices of Measures. (*American Mathematical Monthly*).
- S24. ———: A Lattice of Measures. (*Journal of the Indian Mathematical Society*).
- S25. ———: Some Remarks on Information Theory. (*Israel Journal of Mathematics*).
- S26. PADMANABHAN, A. R.: A Lemma for Von-Neumann Algebras. (*Mathematica Japonicae*).
- S27. PARTHASARATHY, T.: General Minimax Theorem. (*Mathematics Student*).
- S28. PATHAK, P. K.: A symmetric stopping rule and its application to probability sampling. (*Annals of Mathematical Statistics*).
- S29. ———: Addendum to Sufficiency in Sampling Theory. (*Annals of Mathematical Statistics*).
- S30. ———: Efficiency of Des Raj's estimator. (*Sankhyā*).
- S31. ———: Estimating population parameters from conditional sampling schemes. (*Bulletin of International Statistical Institute*).
- S32. ———: (with Shukla, N. D.): Non-negativity of a Variance Estimator. (*Sankhyā*).
- S33. RAO, C. R.: Efficiency of an Estimator and Fisher's Lower-bound to Asymptotic Variance. (35th session of the International Statistical Institute, Belgrade).
- S34. ———: Generalised Inverse for Matrices and its Applications in Mathematical Statistics. (*Professor Neyman's Festschrift Volume*).
- S35. ———: The Theory of Least Squares when the Parameters are Stochastic and its Application to the Analysis of Growth Curves. (*Biometrika*).
- S36. ———: Covariance Adjustment and Related Problems in Multivariate Analysis. (*Multivariate Symposium at Dayton*).
- S37. ———: Estimation of Parameters in Linear Models and its Application to the Measurement of Signals. (5th Berkeley Symposium on Mathematical Statistics and Probability).
- S38. RAO, T. J.: On the Estimation Bias and Variance in Ratio Method. (*Australian Journal of Statistics*).
- S39. ———: On Certain Unbiased Ratio Estimators. (*Annals of Institute of Statistical Mathematics*).
- S40. RAOPATAN, T. E. S.: Linear Operators Leaving a Convex set Invariant in Banach Spaces. (*Illinois Journal of Mathematics*).
- S41. RAMAOPANDRAN, B.: An Extension of a Theorem of Mairanovskii, with Applications (*Sankhyā*).
- S42. ———: On Decomposing the Convolution of a Normal and a Poisson Law. (*Sankhyā*).

THIRTY-THIRD ANNUAL REPORT : 1964-65

- S43. ———: Non-linear Species in the Construction of Symmetric PBIB Designs. (*Sankhyā*).
- S44. ———: Consistent Relations. (*Psychometrika*).
- S45. ———: On Planner Graphs. (*Casopis Pro Pestavani Matematike, Czechoslovak Journal of Mathematics*).
- S46. ———: Imbedded Higher Dimensional Geometries with Application to Statistical designs. (*Sankhyā*).
- S47. SETHURAMAN, J.: (with Rubin, H.): On the Probability of Moderate Deviations. (*Sankhyā*).
- S48. ———: (with Rubin, H.): Bayes Risk Efficiency. (*Sankhyā*).
- S49. ———: A Characterisation of the Three Limiting types of the Extreme (*Sankhyā*).
- S50. ———: Limit Theorems for Stochastic Integrals. (*Theory of Probability and its Applications*).
- S51. ———: (with Savage, I. R.): Properties of the Generalised Sequential Probability Ratio Test based on Ranks. (*Annals of Mathematical Statistics*).
- S52. SINGH, M. P.: On the Efficiency of systematic sampling in ratio and product Estimation (*Metrika*).
- S53. SUBRAHAMANYAM, M. T.: On Generalised Estimates in sampling from Finite Populations. (*Metrika*).

B. Anthropometry

- S54. CHAKRAVARTI, M. R. (with Verma, B. K.): A Contribution to the Genetics of Head Claspings and arm Folding. (*Man*).
- S55. ———: (with Verma, B. K.): Hairy Prinna in the Females of Oraon and Munda tribes of Ranchi District, Bihar, (India). (*Current Science, Bangalore*).
- S56. ———: (with Verma, B. K.): The Ethnic Value of Relative Digital Length in 638 Hands of Munda and Oraon girls. (*Science and Culture*).
- S57. PAKRASI, K. B.: Disrupted Conjugal Living: Variations by Rural-urban Locations and Zones of India: 1951. (*Artha Vijnan*).
- (S54) VERMA, B. K. (with Chakravarti, M. B.): A Contribution to the Genetics of Head Claspings and Arm Folding. (*Man*).
- (S55) ———: (with Chakravarti, M. R.): Hairy Prinna in the Females of Oraon and Munda Tribes of Ranchi District, Bihar (India). (*Current Science, Bangalore*).
- (S56) ———: (with Chakravarti, M. R.): The Ethnic Value of Relative Digital Length in 638 Hands of Munda and Oraon girls. (*Science and Culture*).
- S58. ———: A Note on the Relative Length of Fingers in Kerala girls. (*Current Science, Bangalore*).



INDIAN STATISTICAL INSTITUTE

C. *Biometry*

- S59. DAS, B. C.: Effects of Yeast on the Survival and Growth of Postembryonic Carp. (*Indian Journal of Microbiology*).
- S60. ———: Yeast Dosage Level and the Post-embryonic Survival and Growth of the Carp *Labeo rohita* (Ham). (*Journal of Experimental Zoology*).

D. *Botany and Crop Science*

- S61. DAVIS, T. A.: Floral Structure and Stamens in *Bombax ceiba*. (*J. Genetics*).
- S62. ———: Addition to the Theories on the Morphology of Horns in Coconut Fruits. (*Ceylon Coconut Quarterly*).
- S63. ———: Morphology of Horns in Exceptional Fruits of Seven Palm Species. (*Postemorphology*).
- S64. ———: (with K. K. Ghosal): Variation in the Floral Organs of *Bibiscus rosea* Linn. (*J. Indian Bot. Soc.*).
- S65. ———: (with Mariamma, K. O.): The Three Kinds of Stamens in Bombay Ceiba. (*Bulletin Jardin Botanique de l'Etat*).
- S66. ———: (with Kundu, A.): Aestivation of Perianths of *Areca Catechu* Linn. Fruits (*Canadian J. Bot.*).
- S67. ———: (with Kundu, A.): Floral Structure and Stamens in *Ceiba pentandra*. (*J. Bombay Nat. Hist. Soc.*).
- (S64) KUNDU, A. (with Davis T. A.): Aestivation of Perianths of *Areca Catechu* Linn. Fruits (*Canadian J. Bot.*).
- (S67) KUNDU, A. (with Davis, T. A.): Floral Structure and Stamens in *Ceiba pentandra*. (*J. Bombay Nat. Hist. Soc.*).
- S68. ROY, S. K. (with Grümmer, G.): Intervarietal mixtures of rice and incidence of Brown-spot disease *Helminthosporium Brado de Haam*. (*Nature*).

E. *Chemistry*

- S69. DE, P. K. (with Gupta, S. K.): Transformation of Ammonium Sulphate in Water-Logged rice soils. (*Soil Science*).
- S70. ———: (with Gupta, S. K.): Fixation of Ammonium in Waterlogged soils. (*Soil Science*).
- S71. ———: (with Gupta, S. K.): Effect of the Addition of Ammonium Sulphate to water-logged soils on the Composition of the Soil Solutions. (*Indian Journal of Agricultural Science*).
- (S69) GUPTA, S. K. (with De, P. K.): Transformation of Ammonium Sulphate in Water-logged rice soils. (*Soil Science*).
- (S70) ———: (with De, P. K.): Fixation of Ammonium in water-logged soils. (*Soil Science*).
- (S71) ———: (with De, P. K.): Effect of the addition of ammonium sulphate to water-logged soils on the composition of soil solutions. (*Indian Journal of Agricultural Science*).

THIRTY-THIRD ANNUAL REPORT : 1964-65

F. Data Processing, Electronics and Computers

- S72. DUTTA MAJUMDAR, D. : Studies on the Design of Magnetic Heads for Digital Data Recording. (*Journal of Inst. of Telecomm. Engineers*).
- S73. BANDOPADHYAY, PRATUL : A Theory of Electrons. (*Helv. a Physica Acta*) Switzerland.
- S74. ——— : A Note on the Muon-Electron Mass-Difference. (*Helvetica Physica Acta*). (Switzerland).

G. Demography

- S75. BISWAS, S. : A Note on the Spacing between Consecutive Births of Normally Fecund women of a certain class of Hospital population. (*Population Review*).
- S76. ——— : A Statistical Note on Some Aspects of Hospitalisation during Maternity. (*Indian Journal of Public Health*).
- S77. CHAKRAVARTY, B. : Social Class Mortality Indices for Calcutta City 1959-60. (*Population Review*).
- S78. DAS, RHEA S. : Hospital Utilization as Function of Age, Sex, and Diagnosis. (*Gerontologia*).
- S79. GUPTA, P. B. : Fertility and Economic Growth. (*Indian Population Bulletin*).
- S80. ——— : A Method of Estimating the Reduction in Birth Rate by Sterilisation of Married Couples. (*Sankhyā*).
- S81. ——— : The Problem of Fertility Control in India (1965 *World Population Conference at Belgrade*).
- S82. RAMAN, M. V. : Observations on Certain Situations relevant to Family Planning. (*Journal of Family Welfare*).
- S83. ——— : Some Aspects of Fertility in Kerala. (*Proceedings, Seminar on Demography, Trivandrum 1964*).
- S84. ——— : Contra-indications of Fertility Reduction in India. (*Indian Journal of Public Health*).
- S85. ——— : Attitudes toward Family Size and Fertility Control in Indian Assessment. (*World Population Conference, Belgrade. August-September 1965*).
- S86. SENGUPTA, ANIMA : Developing Family Planning Volunteer Group Leadership at the ISI : An Institutional Experiment. (*Indian Journal of Social Work*).

H. Documentation

- S87. GOPINATH, M. A. (with Neelameghan, A. and Ranganathan, S. R.) : Classification of Medical Radiology. (*Library Science*).
- S88. ——— : A Problem and its Solution (Department of Library Science, Banaras Hindu University. *Library Science Annual*).
- (S87) NEELAMEGHAN, A. (with Ranganathan, S. R. and Gopinathan, M. A.) : Classification of Medical Radiology. (*Library Science*).

## INDIAN STATISTICAL INSTITUTE

- S89. ——— : A Problem and its Solution. (Department of Library Science, Banaras Hindu University, *Library Science Annual*).
- S90. RANGANATHAN, S. R. : Library Science and its Development. (*State Book Festival, Ambala, Souvenir*).
- S91. ——— : Library Service and Triumurti (Trinity) (Department of Library Science University of Rajasthan, Departmental Magazine *Libra*).
- S92. ——— : Study Circle and Joy. (*Library Herald*).
- S93. ——— : Future of Library Service and Library Science in India (Department of Library Science, Banaras Hindu University. *Library Science Annual*).
- (S87) ——— : (with Gopinath, M. A. and Neelamoghan, A.): Classification of Medical Radiology, (*Library Science*).

### I. Embryology

- S94. BRAHMAHARY, R. L. : Further Investigations on the Effect of Chromomycin on the Morphogenesis of Clons. (*Acta Embryologicae*).

### J. Geology

- S95. BAKSI, S. : Stratigraphic Note on the Barail Series in the Southern part of the Shillong Plateau, Assam, India. (*Bulletin of the American Association of Petroleum Geologists, Tulsa, Oklahoma, U.S.A.*).
- S96. ——— : Glauconitic Mudstone from 'Raghavapuram Shale', West Godavari district, Andhra Pradesh. (*Current Science, Bangalore*).
- S97. JOHNSON, P. R. : The Geological Significance of Two Pre-Gondwana Inliers in the Middle Godavari Valley, Andhra Pradesh, India. (*Quart. Jour. Geological, Mining and Metallurgical Society of India*).
- S98. RAYCHOWDHURI, B. : An Attempt to determine the Fe-Mg Ratio in Blendes by X-ray Diffractometric Methods. (*American Mineralogist*).
- S99. RAYCHOWDHURI, T. : A New Metoposaurid Amphibian from the Formation of India. (*Philosophical Transaction of the Royal Society, London, Sr. B*).
- S100. SENGUPTA, S. : On the Use of the Term 'Amplitude' in Ripple Mark Description. (*Journal of Sedimentary Petrology, USA*).
- S101. ——— : Possible Subsurface Structures below the Himalayas and the Gangetic Plains. (*22nd International Geological Congress, 1964*).

### K. Haematology

- S102. CHAUDHURI, S. (with Ghosh, J.): Comparative study of Serum Proteins—Total Albumin and Globulin by Colorimetric Biuret and agar gel Electrophoretic Methods (*Sankhyā*).
- S103. ——— : (with Ghosh, J) : Sociological, Haematological, Blood group and Genetic Study of Hindu Bengalee Families with Target Cell Anaemia in Calcutta, West Bengal. (*Journal of the Association of Physicians, India*).

THIRTY-THIRD ANNUAL REPORT : 1964-65

- S104. ———: (with Ghosh, J.): Pyridoxine or Vit B in Healthy Individuals and in Anaemic. Patients. (*Journal of the Afro-Asian Haematology Association*).
- S105. ———: (with Ghosh, J.): Thalassemia Haemoglobin E Disease in two Families, one Individual with Association of Chronic Myeloid Leukaemia. (*Journal of the Afro-Asian Haematology Association*).
- S106. ———: (with Ghosh, J. and Mukherjee, B.): Study of Blood Groups, Abnormal Haemoglobin Pattern and ABH Secretors non-Secretors in three Upper Castes of West Bengal. (*Journal of the Royal Anthropological Institute of Great Britain and Ireland*).
- S107. ———: (with Das, S.): Study of Serum Copper in Children. (*Journal of Indian Academy of Pediatrics*).
- (S107) DAS, S. (with Chaudhuri, S.): Study of Serum Copper in Children. (*Journal of Indian Academy of Pediatrics*).
- (S102) GHOSH, J. (with Chaudhuri, S.): Comparative Study of Serum Proteins—total Albumin and Globulin by Colorimetric Biuret and agar gel Electrophoretic Methods (*Sankhyā*).
- (S103) ———: (with Chaudhuri, S.): Sociological, Haematological, Blood Group and Genetic Study of Hindu Bengalee Families with Target Cell Anaemia in Calcutta, West Bengal. (*Journal of the Association of Physicians of India*).
- (S104) ———: (with Chaudhuri, S.): Pyridoxine or Vit B in Healthy Individuals and in Anaemic Patients. (*Journal of the Afro-Asian Haematology Association*).
- (S105) ———: (with Chaudhuri, S.): Thalassemia Haemoglobin E disease in two Families, one Individual with Association of Chronic Myeloid Leukaemia. (*Journal of the Afro-Asian Haematology Association*).
- (S106) ———: (with Chaudhuri, S. and Mukherjee, B.): Study of Blood Groups, Abnormal Haemoglobin Pattern and ABH Secretors Non-secretors in three Upper Castes of West Bengal. (*Journal of the Royal Anthropological Institute of Great Britain and Ireland*).
- (S106) MUKHERJEE, B. (with Chaudhuri, S. and Ghosh, J.): Study of Blood Groups, Abnormal Haemoglobin Pattern and ABH Secretors Non-secretors in three Upper Castes of West Bengal. (*Journal of the Royal Anthropological Institute of Great Britain and Ireland*).

L. Planning, Economic Statistics and Econometrics

- S108. BRATTACHARYA, N. (with Iyengar, N. S.): Some Observations on Fractile Graphical Analysis. (*Econometrica*).
- S109. CHATTERJEE, I.: The Trend of pH Reaction in Transplanted Rice Soils of Bengal. (*Indian Agriculture*).
- S110. DUTTA MAJUMDAR, D. K.: Projected Demand of Cereals and Cereal Products in India during Third and Fourth Five Year Plans. (*Econometrica*).
- S111. ———: Reference Period in Family Budget Enquiries. (*Sankhyā*).

## INDIAN STATISTICAL INSTITUTE

- S112. ——— : Trend of Cereal Consumption in India. (*Sankhyā*).
- (S108) IYENGAR, N. S. (with Bhattacharya, N.): Some Observations on Fractile Graphical Analysis. (*Econometrica*).
- S113. MENHAS, B. S. (with Vidhyanathan, A.): Analysis of Crop Output Growth by component Elements. (*Journal of the Indian Society of Agricultural Statistics*).
- S114. PAL, M. N.: A note on Parouah's Comments over CES Production Function. (*Opsearch*).
- S115. ROY, B.: Wages and Cost of Living of Jute and Sugar Workers in India: 1950-1958. (*Labour Economic Journal*).
- S116. RUDRA, A. (with Manne, Alan, Joseph, Pushpam, Prakash, Vinod, Ramsunder, A. V., Sabherwal, V. C., Saluja, M. R. and Sharma, H. C.): Consistency Model of India's Fourth Plan. (*Sankhyā*).
- S117. SABHERWAL, V. C.: The Consist Routine. (*Sankhyā*).
- S118. ——— : Consist Routine: A Computer Programme for solving a set of Simultaneous Equations. (*Sankhyā*).

### M. Psychometry

- S119. DAS, RHEA S.: Measurement of the Characteristics and Structure of Communication in an Experimental Decision-oriented Problem. (*Professor Boaz Honorary Volume*).
- S120. ——— : Prediction of Individual Performance in Production and Management. (*Proceedings, Seminar on Behavioral Sciences in Management Education, Indian Institute of Management, Calcutta*).
- S121. NAIR, S. S.: Does an Increase in Homogeneity of Knowledge of a Group of Candidates Always Cause an Increase in the Probability of Answering A Test Item Correctly? (*Journal of Mathematical Psychology*).
- S122. SINGHAL, SUSHILA: A Non-Language Test Battery for Predicting Primary School Success. (*Journal of Applied Psychology*).

### N. Sociology

- S123. BANDYOPADHYAY, S. (with Chattopadhyay, K.): Caste Ranking in Some West Bengal Villages (an exploratory formulation). (*Indian Journal of Social Research*).
- (S123) CHATTOPADHYAY, K. (with Bandyopadhyay, S.): Caste ranking in some West Bengal villages (an exploratory formulation). (*Indian Journal of Social Research*).
- S124. MUKHERJEE, R.: Indian Tradition and Social Change. (*D. P. Mukerji Commemoration Volume*).
- S125. ——— : On Rural-urban Differences and Relationships in Social Characteristics (summary). (*UNESCO*).

THIRTY-THIRD ANNUAL REPORT : 1964-65

Annexure 5 : Electronics Division and Data Processing Unit

5.1. COMPUTER PROGRAMMES IN THE ELECTRONICS DIVISION

sl. no.	problem	sponsored by	method and check	programmed by
1.	Simulation of the micro-programme of Addition Instruction in ISI-JU Computer.	—	—	Dr. A Ghosh
2.	Computation on ARL (Average Run Length) for Causum Charts.	S.Q.C.		Shri R. Bose
3.	Matrix Inversion one $13 \times 12$ and four $9 \times 9$	A. Ghosh ISI-JU Computer Project, Jadavpur University.	Pivotal Condensation Method.	Shri R. Bose
4.	Calculation of Multiple Regression Co-efficients.	Geology Department, Jadavpur University.	—	Shri R. Bose
5.	Minimisation of Cost Estimation.	Defence Research Institute, Poona.	—	Shri R. Bose
6.	Evaluation of 'k' Integrals incorporating e-e scattering in semi-conductors for different values of electron density.	Shri S. Roy, Institute of Radio Physics and Electronics, Calcutta University.	Gauss-Laguerre Method	Shri R. Bose
7.	Computation of Some Numerical Tables on Phase and Aptitude Contrast Microscopy.	Department of Applied Physics, Science College, Calcutta University.	—	Shri M. Roy
8.	Problem of Numerical Integration.	Institute of Radio Physics and Electronics, Calcutta University.	—	Shri M. Roy
9.	Numerical Evaluation of some given Functions.	D. Dutta Majumdar, Science College, Calcutta University.	—	Shri M. Roy
10.	Computation of Trajectory	Defence Research Institute, Poona.	Runge-Kutta's Method	Shri M. Roy
11.	The reduction of h-f Records to Electron Density Height Profiles.	Dr. A. K. Saha, National Physical Laboratory.	—	Shri M. Roy
12.	Numerical Integration having Infinite Limits.	Dr. T. Roy, Jadavpur University.	Gauss-Laguerre Method	Shri M. Roy
13.	Analysis of Preferential Experiment	R.T.S., Indian Statistical Institute.	—	Shri S. Mukherjee
14.	Simulation Computation of Latent Roots and Vectors of matrices of order $12 \times 12$ .	Presidency College	Jacobi's Method	Shri S. Mukherjee
15.	Random Experiment Problem.	S.Q.C.	—	Shri S. Mukherjee
16.	Solution of First Order Simultaneous diff. equation	Indian Association for the Cultivation of Science, Jadavpur.	Picard's Method	Shri S. Subramanian.

INDIAN STATISTICAL INSTITUTE

5.2. SCIENTIFIC COMPUTATION AND PROCESSING OF SURVEY DATA IN THE  
DATA PROCESSING UNIT

sl. no.	project	requisitioned by
1.	Fractile Graphical Analysis of Consumer Expenditure Data (NSS Rounds 4 to 16)	Dr. K. R. Nair, Government of India.
2.	Calculation of age-sex specific Consumption Scale (NSS Round).	Dr. J. Roy, Indian Statistical Institute.
3.	Inter-correlation and Regression Analysis of Test Scores of Secondary School Students.	Miss M. Mukherjee, Indian Statistical Institute.
4.	Analysis of Data on Occupational and Educational interests of School Students.	Mrs. N. Patel, Association of Teachers in Anglo Indian Schools.
5.	Frequency Distribution and Moments of Length and Breadth of Jute Fibre.	Indian Jute Research Institute, Barrackpore.
6.	Analysis of Rural Health Research Survey Data (1964)	Dr. C. E. Taylor, Rural Health Research Project.
7.	Analysis of Child Growth Study Data.	Dr. C. R. Rao, (for All India Institute of Hygiene and Public Health, Calcutta).
8.	Calculation of Income Elasticities from Middle Class Family Budget Data.	Shri M. L. Ganguly, Indian Statistical Institute.
9.	Mechanised Pay-bill and General Accounts Work.	Accounts Section, Indian Statistical Institute.
10.	Fractile Graphical Analysis of Consumer Expenditure Data by Subrounds (NSS Rounds 4 to 16).	Shri N. Bhattacharyya, Indian Statistical Institute.
11.	Sample Survey of Manufacturing Industries Preparation of Frequency Tables.	Shri M. L. Ganguly, Indian Statistical Institute.
12.	Estimation of Daily Rainwater Inflow into Panchet and Maithon Dams.	Damodar Valley Corporation.
13.	Preparation of Variance Curve for Psychometry Test Scores.	Dr. Rhea S. Das, Indian Statistical Institute.
14.	Computation of River Volume.	Port Commissioners, Calcutta.
15.	Computation of Suspended Solid Discharge.	Port Commissioners, Calcutta.
16.	Correlation Analysis of Psychometric Data.	Dr. Rhea S. Das, Indian Statistical Institute.
17.	Correlation of 'G' Coefficients from River Flow Data.	Flood Research Unit, Indian Statistical Institute.
18.	Low Water Study of River Ganga-graph Plotting.	Flood Research Unit, Indian Statistical Institute.
19.	Distribution of Birth and Death by Recall Period, Sex, Subsample and subround 'NSS Round 14.	Shri M. Majumdar, Indian Statistical Institute.
20.	Correlation and Regression Analysis for Data of Acclimatization Study.	Himalayan Mountaineering Research Institute.

THIRTY-THIRD ANNUAL REPORT : 1964-65

sl. no.	project	requisitioned by
<i>Scientific Computations</i>		
21.	Computation of Efficiencies of Estimations under Different Sampling Schemes.	Shri T. V. Hanurav, Indian Statistical Institute.
22.	Solution of Differential Equation of First Order.	Electronics Division, Indian Statistical Institute.
23.	Finding Orthogonal and Orthonormal Basis for Hiebert Matrices of Order 6 to 8.	Electronics Division, Indian Statistical Institute.
24.	Simulation of Raleigh—Pearson's Random Walk Problem.	Electronics Division, Indian Statistical Institute.
25.	Simultaneous Differential Equation of Second Order.	Electronics Division, Indian Statistical Institute.
26.	Computation of the First 100 Fourier Coefficients of the Modular Invariant $j$ .	Professor D. B. Lahiri, Indian Statistical Institute.
27.	Empirical Study of Schemes for Sampling from a Normal Population.	Dr. M. N. Murthy, Indian Statistical Institute.
28.	Inversion of 5 Matrices of Order $28 \times 28$ .	Saha Institute of Nuclear Physics, Calcutta.
29.	Inversion of Matrix of Order $16 \times 16$ (Input-Output Matrix for West Bengal)	Shri R. Dhar, State Statistical Bureau, West Bengal.
30.	Generation of 16 Million Random Numbers and Testing for Randomness.	Dr. J. Roy, Indian Statistical Institute
31.	Frequency Distribution of Run Length of Cumulative Sum Charts.	Mr. D. J. Desmond, Indian Statistical Institute.
32.	Preparation of Random Number Cards	Dr. J. Roy, Indian Statistical Institute.
33.	Preparation of Random Normal Deviates with Punched Output	Dr. J. Roy, Indian Statistical Institute
34.	Tabulation of Incomplete Gama Function Ratio and its Inverse.	Shri G. Kalyanasundaram, Indian Statistical Institute.
35.	Tabulation of Incomplete Beta Function Ratio and its Inverse.	Shri P. Das Gupta, Indian Statistical Institute.
36.	Extensive Tables of Poisson Probability Distribution.	Dr. J. Roy, Indian Statistical Institute
37.	Power Functions of Chi-square.	Dr. J. Roy, Indian Statistical Institute.
38.	Exact distribution of linear compound of two $X$ -variates.	Dr. J. Roy, Indian Statistical Institute.
39.	A Linear Programming Problem on Inter-zonal Movement of Cement in 1970-71.	Shri M. N. Pal, Indian Statistical Institute.
40.	Tabulation of Truncated Probits.	Shri T. Krishnan, Indian Statistical Institute.
41.	Tabulation of Truncated Logits.	Shri T. Krishnan, Indian Statistical Institute.
42.	Calculation of Hit Probabilities	Dr. Rhea S. Das, Indian Statistical Institute.



INDIAN STATISTICAL INSTITUTE

Annexure 6 : List of National Sample Survey Reports

6.1. PRINTED REPORTS

sl. report no.	no.	title
1.	85	Tables with Notes on Employment and Unemployment in Urban Areas (Fourteenth Round : July 1958-June 1959).
2.	86	Tables with Notes on Manufacturing Industries, 1957(2).
3.	87	Tables with Notes on Average Budget of Agricultural Labour Households in Rural Areas (Eleventh and Twelfth Rounds : August 1956-August 1957).
4.	88	Tables with Notes on Household Receipts and Disbursements (Fourteenth Round : July 1958-June 1959).
5.	89	Tables with Notes on Dwelling Habits of Occupants of the Two-roomed Government Residences in New Delhi, July 1960.
6.	90	Tables with Notes on Survey of Scheduled Industries 1958 : Sample Survey of Manufacturing Industries 1958.
7.	91	Tables with Notes on the Annual Survey of Industries 1959 (P1) (Sample Sector, Summary Results).
8.	92	Some Results of the Land Utilisation Survey and Crop-cutting Experiments (Sixteenth Round : July 1960-June 1961).
9.	93	Sample Survey of Manufacturing Industries, 1958 : Factory Establishments : Summary Results.
10.	94	Tables with Notes on Small Scale Manufacture, Rural and Urban—Household Enterprises Smaller than Registered Factories (Fourteenth Round : July 1958-June 1959).

6.2. DRAFT REPORTS SUBMITTED TO THE GOVERNMENT OF INDIA

(The date of submission is given in brackets)

sl. reports no.	no.	title
1.	125	Tables with Notes on the Results of the Land Utilisation Survey and Crop-cutting Experiments (Eighteenth Round : July 1962-June 1963) (28 April 1964).
2.	126	Tables with Notes on the Sample Survey of Manufacturing Industries 1958. (Factory Establishment : Detailed Results) P <sub>2</sub> Tables. (28 April 1964).
3.	127	Tables with Notes on the Annual Survey of Industries—1959 (Sample-Sector : Detailed Results) (29 April 1964).
4.	128	Tables with Notes on the Enquiry on Physically Handicapped Persons (Sixteenth Round : July 1960-August 1961) (2 September 1964).
5.	129	Tables with Notes on the Annual Survey of Industries 1961 (Sample Sector : Summary Results) (18 September 1964).
6.	130	Special Study on Morbidity (30 January 1965).
7.	131	Tables with Notes on the Annual Survey of Industries 1962 : (Sample Sector : Summary Results) (8 February 1965).

THIRTY-THIRD ANNUAL REPORT : 1964-65

**Annexure 7 : Statement of Accounts, Auditors' Report and  
Audited Statement of Accounts, 1964-65.**

REPORT ON ACCOUNTS

1. *Accounts :*

.1 The Council in its meeting held on 23 September 1964 approved the Institute's overall estimated revenue expenditure of Rs. 160.12 lakhs including Rs. 2.44 lakhs for the SQC training course. This expenditure is made up of Rs. 72.99 lakhs for the Non-NSS sectors including UNTAA, Rs. 84.98 lakhs for the NSS sector and Rs. 2.15 lakhs for the Miscellaneous Project Sectors.

.2 To finance this expenditure the Institute's internal receipt was estimated at Rs. 8.86 lakhs and for the balance of Rs. 151.46 lakhs the Institute sought grants from Government of India (Rs. 149.31 lakhs from the Cabinet Secretariat and Rs. 2.15 lakhs from the Ministry of Health).

.3 Against the Institute's proposal of Rs. 149.31 lakhs, including Rs. 2.44 lakhs for SQC training course the Government on the basis of the recommendation of the Statutory Committee sanctioned a sum of Rs. 132.75 lakhs only thus leaving a financial gap of Rs. 16.56 lakhs. This is an apparent gap. The real gap is Rs. 12.56 lakhs i.e. after deleting the sum of Rs. 4.00 lakhs being the provision made in the revised budget for expenditure on the 1401 EDDPM project as the Government did not agree to finance this. The Statutory Committee's report for the year under review was received by the Institute on March 8, 1965, that is only three weeks before the close of the financial year. The Institute's observations on this report were placed before the Council in its meeting held on May 5, 1965 in New Delhi.

.4 The actual revenue expenditure including expenditure on SQC training course incurred by the Institute during the financial year 1964-65 is Rs. 147.39 lakhs and against this the total income was Rs. 142.30 lakhs thus leaving a balance of Rs. 5.09 lakhs as excess of expenditure over income. This can broadly be analysed as under :

Non-project sectors including UNTAA	..	Rs. 3.31 lakhs
NSS sector	.. ..	Rs. 1.14 lakhs
Miscellaneous project sectors	.. ..	Rs. 0.64 lakh
		<hr/>
		Rs. 5.09 lakhs
		<hr/>

*Reasons for gap between expenditure and resources :*

I. *Non-project sectors including UNTAA :* The excess expenditure of Rs. 3.31 lakhs as mentioned earlier in this report is in relation to Government grants based on the recommendation of the Statutory Committee. The position of actual expenditure in relation to the revised budget estimates approved by the Council in September 1964 plus the post budgetary liability on account of additional dearness allowance paid to the workers is a net saving of Rs. 10.58 lakhs.

## INDIAN STATISTICAL/INSTITUTE

The excess of Rs. 3.31 lakhs is largely due to the fact that while in recommending grant for the Institute the Statutory Committee excluded the expenditure on 1401 EDPM system from the amount for which the Institute sought grant, it did not take any note of the amount estimated and included in the internal receipt budget on account of the operation of the 1401 EDPM machine. Had this internal receipt for 1401 EDPM system been left out of the total internal receipt, the amount of net grant sought would have gone up to that extent i.e. by about Rs. 1.25 lakhs in which case the excess expenditure would have amounted to Rs. 2.06 lakhs. The other notable items on which excess expenditure has been incurred are as follows :—

(a) *Stipend, Scholarship etc.*: In the overall budget estimate of Rs. 4.01 lakhs under this head the provision for the RTS sector alone was for Rs. 3.00 lakhs against which the Government, on the basis of the Statutory Committee's recommendations, sanctioned Rs. 2.00 lakhs only. This cut apparently is responsible for excess expenditure of Rs. 1.00 lakh.

It may be mentioned in this connection that the report of the Statutory Committee recommending the above cut was received by the Institute sometime in March 1965 that is when the expenditure has already been incurred and therefore, it was impossible for the Institute to change its plan and programme so as to restrict this expenditure within the sanctioned limit.

(b) *Visiting Professor*: Excess expenditure under this head amounted to about Rs. 0.42 lakh. During the year, the Institute succeeded in getting a large number of foreign scientists to work for the Institute. No salary or remuneration was paid to the visiting scientists, only the local expenses were met by the Institute.

The Institute's difficulties about restricting expenditure under this head within the budgetted limit are that availability of services of foreign scientists does not depend on any unilateral programme of the Institute but on the conveniences etc. of the scientists concerned.

Few years ago the Government fixed a ceiling of Rs. 1.50 lakhs for expenditure on this head and the provision in the budget is being made accordingly. Since the fixation of this ceiling, the cost of travelling and other allied expenses have gone up considerably and also the activities of the Institute have increased appreciably but without any corresponding revision of the ceiling. The above factors are responsible for the excess expenditure.

II. *Project sector*: Members are aware that with effect from 1 April 1964 the "Contract system" of NSS work has been replaced by "Grant-in-aid". The total expenditure on this sector during the year under review was Rs. 82.40 lakhs. Against this the total income was Rs. 81.26 lakhs thus resulting in an excess expenditure of Rs. 1.14 lakhs. Members would be pleased to know that in this sector also there was a net saving of Rs. 3.81 lakhs in relation to the revised budget proposals as approved by the Council in September 1964.

The notable heads on which excess expenditure has been incurred in this sector are as under:

(a) *Bank charges and interest*: Against the budget estimate of Rs. 3.75 lakhs the actual expenditure under this head is Rs. 4.11 lakhs. This excess of Rs. 0.36 lakh is due to increase in bank rates once from 1 October 1964 and again from 17 February 1965.

THIRTY-THIRD ANNUAL REPORT : 1965-66

(b) *Postage, telegram, electricity, telephone and railway and air freight* : The excess expenditure under this head amounted to Rs. 0.27 lakh. This is partly due to the consumption of electricity in the newly constructed five buildings at 205, B. T. Road and partly due to increase in rates of electricity, freight charges occasioned by the impact of the Government budget.

III. *Miscellaneous project sectors* : The total excess expenditure under this head is Rs. 0.64 lakh. This is made up of Rs. 0.44 lakh in the Family Planning sector and Rs. 0.20 lakh in the Demographic Studies sector. The Government sanction in respect of the excess in the Family Planning sector has since been received by the Institute and for the excess in the Demographic Studies sector the Institute will be approaching the appropriate authority very soon.

IV. *Capital Expenditure Account* : The total expenditure incurred by the Institute under this head amounted to Rs. 18.10 lakhs. This is made up of Rs. 17.20 lakhs for the General Capital programme and Rs. 0.90 lakh for the capital programme of the UNTAA sector. The Government sanctioned a sum of Rs. 17.50 lakhs for the General capital programme but no sanction was received during the year on account of UNTAA sector.

2. *Financial Resources and Application* :

The total expenditure incurred by the Institute during the year to meet its "Revenue" and "Capital" obligations amounted to Rs. 165.49 lakhs (Revenue Rs. 147.39 lakhs and Capital Rs. 18.10 lakhs). The following resources were applied to meet this expenditure.

a) Grants from Cabinet Secretariat, Government of India :		
For project sector .. ..	Ra. 81.23 lakhs	
„ Non-project sectors including UNTAA .. ..	Ra. 53.50 „	
„ Capital expenditure sector ..	Ra. 17.50 „	
b) Grants from Director of Health Services, Government of India :		
For Family Planning Project ..	Ra. 0.48 „	
„ Demographic Studies Project	Ra. 0.80 „	
c) Internal Receipts .. ..	Ra. 6.38 „	
d) Miscellaneous receipts .. ..	Ra. 0.11 „	
e) Creditors .. ..	Ra. 5.69 „	
		Ra. 165.49 lakhs

It may be pointed out here that the amount of Rs. 5.69 lakhs, as shown due to the creditors, is exactly the total excess expenditure incurred by the Institute during the year under review under the heads "Revenue" and "Capital" taken together.

## INDIAN STATISTICAL INSTITUTE

### 3. Allocation of the Common services expenditure :

The expenditure of the common services sector have been allocated between project and non-project sectors according to the principles laid down by the Finance Committee of the Council.

### 4. Position of Outstanding claims with the Government :

As on 31 March 1964 a large number of claims amounting to about Rs. 34.91 lakhs were under negotiation with the Government. Out of these claims, during the year under review, Government settled a few claims amounting to Rs. 4.34 lakhs. A further amount of Rs. 0.91 lakh out of the outstanding claims was adjusted reducing the net balance of the outstanding claims to Rs. 29.66 lakhs. With the addition of Rs. 7.10 lakhs being the total amount of expenditure incurred during the year but remained unreimbursed the position of total claims outstanding as on 31 March 1965 comes to Rs. 36.76 lakhs (items 7.1-7.3, 8.1-8.3 and 10.1-10.5 of the balance sheet). The amount of Rs. 7.10 lakhs mentioned above is made up of Rs. 5.09 lakhs, Rs. 0.60 lakh, Rs. 0.47 lakh and Rs. 0.94 lakh being excess expenditure on Revenue *a/c*, Capital *a/c*., cost of NSS schedule printing and on account of ISEC Colombo Plan Fellowship respectively. It may be repeated this year also that non-settlement of these claims has been holding over the reorganisation of the Provident Fund and repayment of loans from the subsidiary funds.

### 5. Subsidiary Funds :

Except the 1401 EDPM system Fund no other subsidiary funds need any comment. About the 1401 EDPM system fund it should be mentioned that initially the Institute sought Government grant for financing this project but the Institute's proposal did not find favour with the Government. Naturally, considering the immense scope for expansion and help in scientific research work the Institute decided to run this project on a commercial basis and the very first year of its performance, the result as reflected in the accounts, can be taken as fairly encouraging.

### 6. The Indian Statistical Institute General Provident Fund :

As suggested by the Auditors the accumulated interest upto 31 March 1965 on National Savings Certificate amounting to Rs. 0.38 lakh has been accounted for this year. This has resulted in a sizable surplus, as reflected in the Fund's Income & Expenditure *A/c*.

Out of the bank balance of Rs. 16.68 lakhs a sum of Rs. 10.00 lakhs has since been invested in Fixed Deposit at the rate of 7% per annum with the State Bank of India, Shambazar Branch, Calcutta.

It may be noted that of the total G. P. Notes of book value Rs. 37.46 lakhs (face value Rs. 44.70 lakhs), securities of the book value of Rs. 19.00 lakhs (face value of Rs. 22.95 lakhs) have been pledged with the State Bank of India, Shambazar Branch, for obtaining an overdraft of Rs. 18.00 lakhs of the Institute.

## AUDITORS' REPORT

We have examined the Balance Sheet of the Indian Statistical Institute as at 31st March, 1965, and the relative Income and Expenditure Account for the year ended on that date with the books and records maintained by the Institute and subject to the following have found them to be in accordance therewith.

1. Values of assets acquired prior to 31st March, 1952, were calculated from inventories made at that date.

2. The value of partly processed National Sample Survey Work amounting to Rs. 71,40,143.00 has been certified by the N.S.S. Department and we were unable to verify it.

3. Confirmation in respect of the amounts due from Government shown under items Nos. 7.1, 7.2, 7.3, 8.1, 8.2, 8.3, 10.1, 10.2, 10.3, 10.4 and 10.5 of the Balance Sheet amounting to Rs. 36,75,869.69 have not been seen by us.

4. Certain Machines and Equipments received by the Institute as gifts valued at Rs. 11,221.50 have been capitalised this year and adjusted through the General Fund Account.

5. Certain Books and Journals amounting to Rs. 1,57,885.65 have been capitalised this year, though this was charged to Income and Expenditure Account during the year.

6. Additions of Building, Sheds and Structures during the year include interest amounting to Rs. 31,816.50 paid on the Cash Credit Account with the State Bank of India.

7. Title deeds in respect of Lands at Delhi, Madras and Bangalore amounting to Rs. 5,74,531.42 could not be verified by us.

Calcutta,  
18th October, 1965.

LOVELOCK & LEWIS  
*Chartered Accountants*

## INDIAN STATISTICAL

## BALANCE SHEET

1963-64	FUNDS & LIABILITIES	1964-65
Ra. P.		Ra. P.
1,06,81,401.89 (including UNTAA)	1. GENERAL FUND : (excluding value of UNTAA equipment—Note 2) As per Schedule No. III enclosed ... ..	1,02,02,831.59
	2. OTHER FUNDS : As per contra	
	.1 Visiting Professors & Fellows Fund ... .. 113.13	
	.2 Leave Salary Fund ... .. 2,70,749.23	
	.3 Gratuity Fund ... .. 21,87,512.91	
	.4 Development Fund No. I ... .. 1,10,521.94	
	.5 Development Fund No. II ... .. 12,70,865.05	
	.6 Supervision Fee Fund ... .. 2,16,304.87	
41,36,390.14	.7 1401 EDPM System Fund ... .. 6,94,087.22	47,48,155.25
	3. TEMPORARY LOAN FROM FUNDS TO CAPITAL EXPENDITURE ACCOUNT : As per last account ... .. 7,47,000.00	
7,47,000.00	Less : amount repaid during the year (Development Fund No. II) ... .. 20,000.00	7,18,000.00
	4. TEMPORARY ADVANCE FROM FUNDS TO CURRENT EXPENDITURE ACCOUNT : As per last account ... .. 11,92,000.00	
	Less : repaid during the year	
	i) Provident Fund ... .. 6,50,000.00	
	ii) Gratuity Fund ... .. 5,000.00	6,55,000.00
	Add : during the year	5,37,000.00
11,92,000.00	i) Provident Fund ... .. 4,50,000.00	9,87,000.00
	5. OVERDRAFT FROM STATE BANK OF INDIA, SHAMBAZAR, SECURED AGAINST CERTAIN G.P. NOTES OF ISI GENERAL PROVIDENT FUND AND G.P. NOTES OF DIRECTOR'S (TRUST) FUND AND DEVELOPMENT FUND NO. II ... ..	16,03,891.05
15,06,960.01		
	6. CASH CREDIT ADVANCE FROM STATE BANK OF INDIA, SHAMBAZAR BRANCH AGAINST GUARANTEE FROM GOVERNMENT OF INDIA : .....	55,00,000.00
55,00,000.00		
	7. CASH ADVANCE FROM GOVERNMENT OF INDIA FOR NSS WORK : .....	15,00,000.00
15,00,000.00	As per last account ... ..	
	8. OUTSTANDING LIABILITIES : As per Schedule No. IV enclosed ... ..	33,00,750.20
32,21,237.07		
2,85,53,989.11	Carried Over : ... ..	2,80,20,428.09

**INSTITUTE**

**AS AT 31 MARCH 1965.**

1963-64		PROPERTY & ASSETS		1964-65	
Ra.	P.			Ra.	P.
88,06,793.34		1. FIXED ASSETS :			
		.1 As per Schedule No. I enclosed	....		
		.3 Land, buildings, sheds and structures at 202 B.T. Road (Note 1)	....		88,63,973.35
		Expenditure during the year	... ..		16,021.53
		2. CAPITALISED RENTAL OF TELEPHONES UNDER O.Y.T. SCHEME :			
		As per last account	... ..	16,584.85	
		Less : depreciation @ 5%	... ..	829.25	
16,584.85		Add : during the year	... ..	15,755.60	22,401.80
				6,546.00	
5,43,582.49		3. ASSETS ACQUIRED FOR UNTAA WORKSHOP : As per Schedule No. II enclosed	... ..		5,81,212.55
17,32,820.20		4. EQUIPMENT GIVEN BY USSR THROUGH UNTAA AND GOVERNMENT OF INDIA : (Note : 2)	... ..		Nil
		5. JOINT PROJECT FOR THE CONSTRUCTION OF ELECTRONIC COMPUTERS : (in progress)			
		As per last account	... ..	1,38,532.30	
1,38,532.30		Add : during the year	... ..	2,29,301.62	3,07,833.92
		6. RECOVERABLE CAPITAL OUTLAY :			
		As per last account	... ..	39,789.05	
39,789.05		Less : amount received during the year	... ..	6,396.10	34,392.95
		7. AMOUNT RECOVERABLE FROM GOVERNMENT OF INDIA :			
		.1 On account of Capital Expenditure			
		a) for expenditure upto 1959-60	3,16,817.00		
		Less : reimbursement received upto 1958-59	... ..	25,999.00	
		b) for expenditure for the year 1960-61	... ..	55,814.00	
		c) for expenditure for the years 1961-62 & 1962-63.	... ..	2,01,342.01	
		d) for expenditure for the year 1963-64	... ..	1,40,899.46	
		e) for expenditure for the year 1964-65	18,10,072.16		
		Less : amount received during the year	... ..	17,50,000.00	60,072.16
		f) for repairs, renovation etc., for 202 B.T. Road :			
		As per last account	... ..	3,17,703.07	
				7,01,629.70	
9,32,375.54		Less : refund received on account of High Tension Electricity (UNTAA Workshop)	... ..	985.00	7,00,644.70
1,32,00,277.67		Carried Over :	... ..		1,15,88,479.80

*Note 1 :* The expenditure under the above item upto 31 March 1964 has not been capitalised and has been debited to a different head in those years. Necessary adjustment for capitalisation will be made in the accounts of 1965-66, as details are not available for such adjustment to be made this year.

*Note 2 :* Deleted from the Balance Sheet in accordance with Item 3.3 of the proceedings of the Council meeting held on 23 September 1964 after providing depreciation thereon for the year. The amount deleted is made up as follows :

As per last year's account	... ..	17,22,620.20
Add : difference between the rate of depreciation charged by the Institute upto 31-3-64 and the rate suggested by the Government	... ..	7,40,668.08
		24,63,288.28
Less : depreciation for the year	... ..	1,64,767.42
		23,08,520.86



INDIAN STATISTICAL  
BALANCE SHEET

1963-64 Rs. P.	FUNDS & LIABILITIES	1964-65 Rs. P.	Rs. P.
2,85,53,989.11	Brought Forward : ... ..		2,86,20,426.08
	9. FORD FOUNDATION GRANT :		
	As per last account ... ..	39,129.78	
39,129.78	<i>Less</i> : expenditure during the year ... ..	2,709.97	36,419.81
	10. RECKEFELLER FOUNDATION GRANT :		
	As per last account ... ..	28,741.79	
	<i>Add</i> : refund of travellers cheques ... ..	758.00	
		20,489.79	
28,741.79	<i>Less</i> : expenditure during the year ... ..	12,076.35	16,524.44
	11. DEPOSITS AND OTHER LIABILITIES :		
	.1 Hospitality and House Committee Suspense ... ..	71,683.61	
	.2 Income Tax ... ..	1,27,186.48	
	.3 Library and other deposits ... ..	27,542.27	
	.4 Staff Insurance and S.W. Housing Scheme etc. ... ..	8,290.95	
	.5 Director of Health Services for purchase of Census Reports ... ..	8,126.00	
2,42,109.17	.6 Others ... ..	5,002.48	2,47,831.79
Nil	12. AMOUNT DUE TO 1401—EDPM SYSTEM FUND: CONTINGENT LIABILITY :		1,13,718.37
	<p>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 tax rebate which is being allowed to the Institute Staff participating in the Provident Fund on their contributions to the Fund, will be borne by it.</p>		
2,88,63,969.85	Carried Over : ... ..		2,90,34,022.50

# INSTITUTE

AS AT 31 MARCH 1965

1963-64 Rs. P.	PROPERTY & ASSETS	1964-65	Rs. P.
1,22,00,277.87	Brought Forward : ... ..		1,15,86,479.60
	7.2 On account of NSS Project Sector :		
	As per last account ... ..	8,60,286.00	
	Less : i) amount received on account of Income Distribution Committee work (1962-63) ... ..	89,600.00	
8,60,286.00	ii) Value of NSS end-products doubtly claimed in 1963-64	90,000.00	7,00,686.00
—	.3 For NSS Schedule Printing ... ..		46,930.60
	8. REIMBURSEMENT EXPECTED FROM GOVERN- MENT OF INDIA IN DIFFERENT NON-PROJECT AND NSS PROJECT SECTORS :		
	.1 Non-Project Sectors :		
	a) for excess expenditure upto 1959-60 As per last account ... ..	2,25,727.00	
	b) for excess expenditure in 1960-61 As per last account ... ..	1,84,517.00	
	c) for excess expenditure in 1962-63 including UNTAA Sector ... ..	4,24,844.00	
	d) for excess expenditure for the year 1963-64 including UNTAA Sector ... ..	1,89,458.76	
	Less : amount received during the year on account of 1962-63 ... ..	10,24,546.76 43,700.00	
10,24,546.76	Add : excess expenditure over income for the year 1964-65 ... ..	9,80,846.76 3,31,081.77	13,11,928.53
	.2 NSS Project Sector :		
5,44,011.00	for excess expenditure upto 1958-59 As per last account ... ..		5,44,011.00
Nil	.3 Excess of expenditure over income in the NSS Sector for the year 1964-65 ... ..		1,13,984.74
13,63,686.00	9. EXCESS OF EXPENDITURE OVER INCOME IN THE NSS SECTOR FOR THE YEAR 1963-64 : As per last account ... ..		13,63,686.00
	10. AMOUNT SPENT IN EXCESS OF INCOME RECEIVABLE FROM GOVERNMENT OF INDIA :		
23,033.64	.1 Research and Planning Committee of the Planning Commission for Sociological Studies : As per last account ... ..	23,033.64	
4,650.00	.2 For 25th Anniversary of the Institute : As per last account ... ..	4,650.00	
35,912.09	.3 For ISEC Colombo Plan Fellowship : As per last account ... .. Add : expenditure during the year	35,912.09 94,625.03	1,30,537.12
		1,68,220.76	
1,80,46,283.14	Carried Over : ... ..		1,66,57,686.47

**INDIAN STATISTICAL  
BALANCE SHEET**

1963-64 Rs. P.	FUNDS & LIABILITIES	1964-65 Rs. P.	Rs. P.
2,88,03,009.85	Brought Forward :     ...		2,90,34,922.50

2,88,03,009.85

TOTAL :   ...     ...     ...

2,90,34,922.50

Calcutta,  
18th October, 1965.

INSTITUTE

AS AT 31 MARCH 1965

1963-64		PROPERTY & ASSETS		1964-65	
Rs.	P.			Rs. P.	Rs. P.
1,00,46,283.16		Brought Forward :	...	1,68,220.76	1,56,57,686.47
		10.4 DIRECTOR OF HEALTH SERVICES FOR			
		DEMOGRAPHIC STUDIES :			
		As per last account	...	48,543.66	
		Add : expenditure during the year	...	79,307.20	
				1,28,850.86	
		Less : amount received during			
		the year :			
		a) for 1964-65	...	80,000.00	
49,543.66		b) for arrears for 1963-64	...	29,782.00	39,088.86
				89,782.00	
		.5 DIRECTOR OF HEALTH SERVICES			
		FOR FAMILY PLANNING SURVEY :			
		As per last account	...	16,224.73	
		Add : expenditure during the year	...	91,649.77	
				1,07,874.50	
16,224.73		Less : amount received during the year	...	47,500.00	80,374.50
		11. STOCK OF BUILDING MATERIALS INCLUDING			
		WORK IN PROGRESS AT COST :			
5,57,382.52		(Work in progress Rs. 1,16,279.09)	...		5,37,217.67
		12. VALUE OF PARTLY PROCESSED NSS WORK :			
71,40,143.00		As per last account	...		71,40,143.00
		13. LOANS AND ADVANCES :			
		.1 Departmental Improp	...	73,361.34	
		.2 Festival advance to workers	...	3,472.16	
		.3 Suspense and advance	...	3,29,640.76	
		.4 Educational and other loans	...	50,809.36	
		.5 Security deposits	...	16,140.30	
		.6 ISI Co-operative Society	...	2,263.27	
		.7 Advance to Sankhya Yantra (P) Ltd.	...	8,210.00	
		.8 Sundry Debtors	...	63,293.82	
6,39,072.06		.9 Advance and part-payments for land	...	51,332.41	5,98,624.42
		14. ASSETS OF OTHER FUNDS : As per contra			
		.1 Visiting Professors & Fellows Fund	...	113.13	
		.2 Leave Salary Fund	...	2,70,740.23	
		.3 Gratuity Fund	...	21,67,512.91	
		.4 Development Fund No. I	...	1,19,521.94	
		.5 Development Fund No. II	...	12,79,865.95	
		.6 Supervision Fee Fund	...	2,16,304.87	
41,36,390.14		.7 1461 EDPM System Fund	...	6,04,087.22	47,48,156.25
		15. CASH AT BANK :			
		Ford Foundation	...	36,410.81	
		Rockefeller Foundation	...	16,524.44	
				52,944.25	
83,913.17		Other Banks (Rs. 4,143.27 with Nath Bank Ltd. in liquidation)	...	16,083.73	69,027.88
		16. CASH AND OTHER BALANCES	...		28,589.69
1,05,017.41					
2,88,63,989.85		TOTAL :	...		2,90,34,922.50

In terms of our report of even date.

LOVLOOK & LAKHS  
Chartered Accountants.

INDIAN STATISTICAL  
INCOME AND EXPENDITURE ACCOUNT

1963-64		EXPENDITURE		1964-65	
Rs.	P.			Rs.	P.
		1. To salary, dearness allowance, remuneration to teachers etc. ... ..		76,81,276	07
		.1 ,, House rent allowance ... ..		6,96,458	96
		.2 ,, City compensatory allowance ... ..		4,30,266	37
		.3 ,, Employer's contribution for workers' Provident Fund for 1964-65 Less : employer's contribution charged in excess in previous years	5,02,223. 70 32. 28	5,02,191	42
73,20,686	43				91,89,191
		3,96,725. 96 2. ,, Travelling expenses ... ..			4,32,651. 04
		6,30,313. 34 3. ,, Overtime allowances ... ..			4,83,459. 56
		6,50,742. 98 4. ,, Contribution to leave salary fund ; ... ..			Nil
		Nil .1 ,, Payment for leave vacancies ... ..			42,277. 59
		2,11,124. 94 5. ,, Visiting professors, foreign scientists, fellows and experts ... ..			2,16,800. 99
		3,58,621. 89 6. ,, Scholarships, stipends and other assistance to trainees ... ..			3,77,553. 94
		18,727. 88 7. ,, Prizes to workers for initiative ... ..			1,820. 00
		2,78,889. 85 8. ,, Contribution to Gratuity Fund ... ..			3,01,334. 22
		9. ,, Machine tabulation expenses :			
		.1 ,, Hire and maintenance of tabulating equipment, key punches and verifiers including freight, transport and other charges ... ..		8,28,372	21
		.2 ,, Cost of cards and cabinets, stores & stationeries etc. ... ..		2,48,737	08
		.3 ,, Service charges to 1401 E.D.P.M. system ... ..		90,817	25
		12,09,191. 39 .4 ,, Payment to Army Statistical Organisation—direct by the Government of India ... ..		80,000	00
		1,55,069. 39 10. ,, Printing and publications ... ..			1,02,801. 46
		55,047. 78 11.1 ,, Society type activities ... ..	32,920. 37		
		.2 ,, Examination expenses ... ..	27,619. 50		60,539. 87
		1,70,702. 99 12.1 ,, Books and journals (including cost of binding etc.) ... ..	1,66,196. 42		
		.2 ,, Microfilm, photo and audiography ... ..	3,614. 60		1,60,710. 02
		27,059. 94 13. ,, Expenses of Translation Unit in Japan ... ..			8,691. 84
		1,19,884. 20 14. ,, Repairs, replacement and maintenance of office equipment, furniture and accessories ... ..			1,09,701. 28
1,16,02,687	96	Carried Over : ... ..			1,27,23,260. 17

## INSTITUTE

FOR THE YEAR ENDED 31 MARCH 1965

1963-64		INCOME		1964-65	
Rs.	P.			Rs.	P.
1. By Block grants from Government of India for Non-Project Sectors :					
		.1	.. Research and Training School including Computing Machines and Electronic Laboratory ... ..	26,81,673.00	
		.2	.. Planning Division ... ..	10,69,725.00	
		.3	.. Statistical Quality Control ... ..	7,61,906.00	
		.4	.. International Statistical Education Centre ... ..	1,76,638.00	
46,97,000.00		.5	.. Utilisation and maintenance of Soviet equipment (UNTAA) ... ..	6,59,999.00	53,49,941.00
2. .. Block grants from Government of India for NSS Project Sector :					
		.1	.. Direct to the Institute ... ..	80,62,788.00	
42,59,286.00		.2	.. Through Army Statistical Organisation ... ..	60,000.00	81,22,788.00
71,40,143.00		.3	.. Value of partly processed NSS work ... ..		—
3. .. SQC receipts from non-Governmental source :					
			.. Membership fees, training fees and service charges etc. ... ..		4,38,479.72
4,20,343.86			.. Membership subscription ... ..		7,979.96
3,285.84			.. Fees for training courses and sale proceeds of syllabus etc. ... ..		22,118.61
26,819.40			.. Examination fees and other receipts ... ..		16,481.18
19,183.50			.. Receipts from produce at Giridih experimental farm etc. ... ..		5,860.99
3,165.76			.. Receipts for work done by :		
		.1	.. Development workshop (part of the C.M.E.L. of RTS) ... ..	14,820.77	
		.2	.. RTS Data Processing Unit ... ..	16,614.13	
2,90,018.06		.3	.. UNTAA workshop ... ..	84,561.52	1,16,796.42
9. .. Grant for minor projects :					
		.1	.. Amount received from Director of Health Services, Government of India for :		
			a) Demographic Studies ... .. 50,000.00		
			b) Demographic reports for the period 1961-61 ... .. 10,000.00	60,000.00	
84,825.00		.2	.. Amount received from Director of Health Services, Government of India for Family Planning Survey	47,500.00	1,07,500.00
10. .. Miscellaneous receipts for :					
		.1	.. National Apprenticeship (UNTAA) ... ..	24,930.00	
		.2	.. Newspaper Readership Survey for Ananda Bazar Patrika Private Ltd. ... ..	11,000.00	
		.3	.. Others :		
			a) Library ... .. 1,138.58		
21,136.00			b) Appraisal ... .. 6,136.00	7,273.58	43,203.68
1,66,84,085.24		Carried Over : ... ..			1,42,30,239.38

INDIAN STATISTICAL  
INCOME AND EXPENDITURE ACCOUNT

1963-64 Rs. P.	EXPENDITURE	1964-65 Re. P.	Re. P.
1,16,02,887.98	Brought Forward : ... ..		1,27,23,280.17
	15.1 To Stationeries and consumable stores ... ..	1,85,502.91	
	.2 ,, Other miscellaneous expenses, viz., advertisement, insurance premium, law charges, coolie, cartage, conveyance and other petty expenses like hot weather contingencies etc. ... ..	1,55,682.36	3,41,185.28
3,26,380.82		1,55,682.36	
	16. ,, Other non-salary contingencies :		
	.1 ,, Electricity and telephone charges ... ..	2,44,078.92	
	.2 ,, Postage, telegram charges, money order commis- sion, freight etc. ... ..	68,449.44	
	.3 ,, Audit fees and expenses ... .. 20,000.00 Less : written back ... .. 3,295.00	16,705.00	
6,29,655.77		4,86,674.90	8,15,908.28
	.4 ,, Bank charges and interest ... ..		
	17.1 ,, Rent, rates and taxes (including those of field, camps and out-station offices) ... ..	2,53,000.51	
3,82,226.24	.2 ,, Repairs and/or maintenance of buildings, land etc. and petty construction ... ..	1,80,964.57	4,33,965.08
1,11,021.65	18. ,, Transport ... ..		1,18,403.53
3,08,768.52	19. ,, Workers' welfare and amenities (including overtime tiffin and meal charges) ... ..		2,02,563.08
Nil	20. ,, Director's discretionary expenditure		Nil
	21.1 ,, Laboratory and workshop stores, tools and minor accessories etc.... ... ..	89,252.29	
1,19,109.83	.2 ,, Material and other charges for experimental farm- ing and rice research scheme at Giridih etc. ... ..	14,225.17	1,03,477.48
50,71,993.00	22. ,, Value of partly processed work in the NSS ... ..		—
1,85,82,903.59	TOTAL : ... ..	1,47,38,762.84	

*Note :* Depreciation amounting to Rs. 7,00,832.75

Calcutta,  
18th October, 1965.

INSTITUTE

FOR THE YEAR ENDED 31 MARCH 1965.

1963-64 Rs. P.	INCOME	1964-65 Rs. P.	Rs. P.
1,69,84,985.24	Brought Forward :     ...     ...		1,42,30,239.36
	11. By Excess of expenditure over income :		
	.1 ,, In Non-Project Sectors including UNTAA sector	3,31,081.77	
	.2 ,, NSS Project Sector     ...     ...     ...	1,13,984.74	
	.3 ,, Miscellaneous sector :		
	a) Demographic Studies	19,307.20	
15,68,818.35	b) Family Planning Survey	44,149.77	63,456.97
		<hr/>	<hr/>

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1,85,52,903.59

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1,47,38,782.84

for the year has been adjusted with General Fund

In terms of our report of even date.

LOVELL & LEWIS  
Chartered Accountants



## INDIAN STATISTICAL

## SCHEDULE

## STATEMENT SHOWING THE VALUE OF

particulars	net value of assets as per last account	assets wrongly accounted now adjusted	depreciation for the year	
			rate	amount
(1)	(2)	(3)	(4.0)	(4.1)
<b>A. LAND AND LAND DEVELOPMENT :</b>				
1. <i>Calcutta :</i>				
.1 1,2920 and 0.1483 acres of land to the contiguous West of Institute building (freehold) ...	65,645.80	—	—	—
.2 Cost of development of above land ...	17,170.89	—	—	—
.3 Cost of land at 205 Barrackpore Trunk Road (including cost of development) (freehold) ...	4,09,198.80	—	—	—
.4 Cost of land at 156, 160, 165, 166/1 G. L. Tagore Road (freehold) ...	98,863.71	—	—	—
.5 Cost of development of above land ...	—	—	—	—
.6 102 Barrackpore Trunk Road including advance for Rs. 22 644/- paid in 1955-56 (freehold)	—	—	—	—
2. <i>Giridih :</i>				
.1 34.58 acres of land acquired at Giridih (freehold)	9,514.51	—	—	—
.2 Cost of development and fencing etc. ...	29,880.55	—	—	—
.3 Farming development ...	10,682.00	—	—	—
.4 Irrigation and water supply ...	25,010.00	—	—	—
.5 Acquisition of land in village 'Makhatpur', Giridih (freehold) ...	61,144.01	—	—	—
3. <i>Delhi :</i>				
.1 Land acquired in Delhi (lease-hold) ...	4,00,000.00	—	—	—
4. <i>Baroda :</i>				
.1 Land in Baroda (freehold) ...	27,611.32	—	—	—
5. <i>Bangalore :</i>				
.1 Acquisition of land in Bangalore (freehold) ...	1,62,918.92	—	—	—
6. <i>Madras :</i>				
.1 Acquisition of land in Madras (freehold) ...	21,012.50	—	—	—
Sub-total : (A1-6) ...	13,27,361.71	—	—	—
<b>B. BUILDINGS :</b>				
1. <i>Calcutta :</i>				
.1 Institute's Main Building at 203 B. T. Road	9,05,424.83	—	2.5%	22 835.62
.2 Constitution of buildings at 203 B. T. Road	7,56,898.91	—	2.5%	18 897.47
.3 Construction of buildings at 205 B. T. Road	11,91,072.60	—	2.5%	29 776.82
Sub-total : (B 1.1-1.3) ...	28,52,396.34	—	—	71 309.91
<b>C. SHEDS &amp; STRUCTURES :</b>				
1. <i>Calcutta :</i>				
.1 Construction of sheds and structures for Stores, Workshop, Servants' quarters, Carpentry etc.	1 00,070.26	—	7.5%	14 322.77
.2 Construction of sheds and structures at 205 B. T. Road ...	28,258.02	—	7.5%	2 110.42
.3 Construction of sheds and structures at 156, 160, 165 & 166/1 G. L. Tagore Road (P.W.D. Road) ...	—	—	—	—
2. <i>Delhi :</i>				
.1 Partitions, structures etc. in Delhi ...	2,412.40	—	7.5%	180.08
.2 Erection of a Nissan Hut ...	1,801.82	—	7.5%	141.87
Sub-total : (C 1.1-2.2) ...	2,23,533.20	—	—	16 764.09

INSTITUTE

NO. I

ASSETS AS ON 31 MARCH 1965.

written down value	acquired during the year					total	net value of assets as on 31-3-65
	out of capital grant : at cost	gift	out of Rockefeller Foundation grant	out of current expenditure grant			
(5)	(6.0)	(6.1)	(6.2)	(6.3)	(6.4)	(7)	
85,545.90	—	—	—	—	—	85,545.90	
17,170.09	15,667.96	—	—	—	15,667.96	32,838.65	
4,09,198.60	24,487.67	—	—	—	24,487.67	4,33,686.27	
96,663.71	—	—	—	—	—	96,663.71	
—	6,618.51	—	—	—	6,618.51	6,618.51	
—	3,30,564.00	—	—	—	330,564.00	3,30,564.00	
9,514.51	—	—	—	—	—	9,514.51	
29,689.55	—	—	—	—	—	29,689.55	
10,682.00	—	—	—	—	—	10,682.00	
25,610.00	—	—	—	—	—	25,610.00	
61,144.01	—	—	—	—	—	61,144.01	
4,00,000.00	—	—	—	—	—	4,00,000.00	
27,011.32	—	—	—	—	—	27,011.32	
1,52,018.92	—	—	—	—	—	1,52,018.92	
21,612.50	—	—	—	—	—	21,612.50	
13,27,361.71	3,77,338.14	—	—	—	3,77,338.14	17,04,699.85	
8,82,789.21	37,895.10	—	—	—	37,895.10	9,20,684.31	
7,37,001.44	2,63,575.90	—	—	—	2,63,575.90	10,00,577.34	
11,61,205.78	3,47,573.72	—	—	—	3,47,573.72	15,08,569.50	
27,81,086.43	6,49,044.72	—	—	—	6,49,044.72	34,30,131.15	
1,76,647.49	—	—	—	—	—	1,76,647.49	
26,139.60	2,665.13	—	—	—	2,665.13	28,804.63	
—	60,410.34	—	—	—	60,410.34	60,410.34	
2,231.47	—	—	—	—	—	2,231.47	
1,749.76	—	—	—	—	—	1,749.76	
2,06,768.21	63,075.47	—	—	—	63,075.47	2,69,843.68	

(Continued)

## INDIAN STATISTICAL

## SCHEDULE

## STATEMENT SHOWING THE VALUE OF

particulars	net value of assets as per last account	assets wrongly accounted now adjusted	depreciation for the year	
			rate	amount
(1)	(2)	(3)	(4.0)	(4.1)
<b>D. MACHINERY &amp; EQUIPMENT :</b>				
1. Calculating, Punching & Other Tabulating equipment ... ..	6,20,813.81	—	15%	93,092.05
2. Office Machinery & Equipment ... ..	3,13,117.32	—	15%	46,967.67
3. Workshop equipment ... ..	78,084.86	—	15%	11,712.78
4. Photo & optical equipment ... ..	10,877.40	—	15%	1,631.61
5. Laboratory equipment ... ..	7,78,293.63	—	15%	1,16,744.18
6. Printing Press, Monotype Accessories etc. ... ..	11,118.00	—	15%	1,667.70
7. Construction equipment ... ..	31,065.55	—	15%	4,659.83
Sub-total : (D 1-7) ... ..	18,43,170.37	—	—	2,76,475.80
<b>E. PASSENGER LIFT : ... ..</b>	<b>18,621.54</b>	<b>—</b>	<b>10%</b>	<b>1,862.15</b>
<b>F. ELECTRICAL EQUIPMENT AND INSTALLATION :</b>				
1. High Tension Electricity ... ..	66,983.60	—	10%	6,698.36
2. Electrical equipment & Fittings ... ..	2,78,945.08	—	10%	27,894.51
Sub-total : (F 1-2) ... ..	3,45,908.68	—	—	34,590.87
<b>G. FURNITURE &amp; FITTINGS : ... ..</b>	<b>6,33,276.03</b>	<b>2,640.10</b>	<b>10%</b>	<b>63,003.63</b>
<b>H. BOOKS &amp; JOURNALS : ... ..</b>	<b>12,25,383.39</b>	<b>—</b>	<b>5%</b>	<b>61,269.17</b>
<b>I. MOTOR CARS &amp; VEHICLES : ... ..</b>	<b>1,59,436.67</b>	<b>—</b>	<b>20%</b>	<b>31,887.33</b>
<b>J. ELECTRONIC COMPUTER (HEC 2M) AND OTHER TABULATING EQUIPMENT : ... ..</b>	<b>1,41,143.35</b>	<b>—</b>	<b>15%</b>	<b>21,171.50</b>
<b>K. LIBRARY EQUIPMENT (INCLUDING EQUIPMENT PROCURED THROUGH FORD FOUNDATION GRANT AND ROCKFELLER FOUNDATION GRANT) : ... ..</b>	<b>36,562.96</b>	<b>—</b>	<b>15%</b>	<b>5,484.44</b>
<b>L. CONSTRUCTION OF OVER-BRIDGE : ... ..</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>
<b>GRAND TOTAL : ... ..</b>	<b>88,06,793.24</b>	<b>2,640.10</b>	<b>—</b>	<b>6,83,879.69</b>

INSTITUTE

NO. I—Contd.

ASSETS AS ON 31 MARCH 1965—Contd.

written down value	acquired during the year					total	net value of assets as on 31-3-65
	out of ospital grant : at cost	gift	out of Rockefeller Foundation grant	out of current expenditure grant			
(5)	(6.0)	(6.1)	(6.2)	(6.3)	(6.4)	(7)	
5,27,521.56	—	—	—	—	—	5,27,521.56	
2,66,149.65	36,494.65	—	—	—	36,494.65	302,644.30	
66,372.10	25,295.70	—	—	—	25,295.70	91,667.80	
9,245.79	2,752.50	—	—	—	2,752.50	11,998.29	
6,61,540.45	55,315.36	11,221.50	1,129.20	—	67,666.06	7,29,215.61	
9,450.30	—	—	—	—	—	9,450.30	
26,405.72	—	—	—	—	—	26,405.72	
15,66,694.57	1,19,859.21	11,221.50	1,129.20	—	1,32,208.91	16,98,903.48	
16,759.39	—	—	—	—	—	16,759.39	
80,267.24	—	—	—	—	—	80,267.24	
2,61,050.67	67,495.76	—	—	—	67,495.76	3,18,546.33	
3,11,317.81	67,495.76	—	—	—	67,495.76	3,78,813.57	
5,67,571.40	1,22,000.96	—	—	—	1,22,000.96	6,89,572.36	
11,84,114.22	40,958.02	—	—	1,57,885.65	1,98,843.67	13,62,967.89	
1,27,549.34	16,442.37	—	—	—	16,442.37	1,43,991.71	
1,19,971.85	—	—	—	—	—	1,19,971.85	
31,078.52	—	—	5,330.99	—	5,330.99	36,409.51	
—	11,917.02	—	—	—	11,917.02	11,917.02	
82,20,273.45	14,68,131.57	11,221.50	6,460.19	1,57,885.65	16,43,698.91	98,63,972.36	

INDIAN STATISTICAL INSTITUTE

SCHEDULE NO. II

STATEMENT OF ASSETS ACQUIRED FOR UNTAA WORKSHOP AS ON 31 MARCH 1965

sl. no.	particulars	balance as on 31-3-64	depreciation for the year		written down value	addition during the year	refund received during the year	net value of assets as on 31-3-65
			rate	amount				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1.	Construction of sheds and structures at Rabindra Nath Tagore Road, Baranagar ...	3,50,378.49	7.5%	26,278.39	3,24,100.10	70,615.63	—	3,04,715.73
2.	Installation of high tension electricity ...	78,052.00	10%	7,805.20	70,246.80	19,365.82	985.00	88,617.62
3.	Machine equipment (lathe etc.) ...	61,531.00	15%	9,229.65	52,301.35	—	—	62,301.35
4.	Workshop equipment ...	53,621.00	15%	8,043.15	45,577.85	—	—	46,577.85
	Total	5,43,582.49		61,356.39	4,82,226.10	89,071.45	985.00	5,61,212.55

INDIAN STATISTICAL INSTITUTE

SCHEDULE NO. III

GENERAL FUND : AS ON 31 March, 1985

particulars	amount		
	Rs.	P.	Rs. P.
1. Opening Balance ... ..			1,06,61,401.89
2. Add :			
1. Amount recovered from V. L. S. Prakash Rao on account of expenses incurred for his training abroad...			6,138.33
2. Under value of work-in-progress-construction as on 31-3-84 ... ..			1,762.50
3. Depreciation charged in excess upto 31-3-84 on USSR equipment ... ..			7,40,888.08
4. Assets acquired during 1984-85 out of Capital Grant			18,10,072.16
5. Capitalisation of books and journals purchased through Current Account ... ..			1,57,885.65
6. Capitalisation of gift equipment (laboratory) ... ..			11,221.50
7. Capitalisation of Library equipment purchased through Rockefeller Foundation grant ... ..			5,330.99
8. Capitalisation of laboratory equipment purchased through Rockefeller Foundation grant ... ..			1,129.20
			<u>27,34,208.41</u>
			1,33,96,610.30
3. Less :			
1. Value of NSS end products shown excess in 1983-84...			90,000.00
2. Depreciation for 1984-85—			
a) Fixed assets as per Schedule I ... ..	5,83,879.69		
b) O.Y.T. telephone ... ..	829.25		
c) UNTAA Workshop ... ..	51,356.39		
d) USSR equipment ... ..	<u>1,64,767.42</u>		
3. Assets wrongly accounted now adjusted ... ..			2,640.10
4. Refund received on account of installation of high tension electricity at UNTAA Workshop ... ..			985.00
5. Value of equipment given by USSR through UNTAA and Government of India deleted from the Balance Sheet as per Council resolution dated 23-9-84 ... ..			<u>23,09,520.88</u>
			31,92,978.71
4. Closing Balance ... ..			<u>1,02,02,631.59</u>

SCHEDULE NO. IV

STATEMENT OF OUTSTANDING LIABILITIES PAYABLE AS ON 31-3-85

sl. no.	particulars	amount	
		Rs.	P.
(0)	(1)	(2)	
1.	For goods and services ... ..	11,75,449.35	
2.	For employer's share of contributions to ISI General Provident Fund ... ..	5,02,223.70	
3.	For Leave Salary Fund ... ..	2,70,000.00	
4.	For Gratuity Fund ... ..	14,13,077.15	
	Total ... ..	<u>33,60,760.20</u>	

**INDIAN STATISTICAL  
CAPITAL EXPENDITURE  
RECEIPTS AND PAYMENTS ACCOUNT**

1963-64 Rs. P.	RECEIPTS	1964-65 Rs. P.	Rs. P.
	1. Opening Balance :		
1,838.87	.1 Cash in hand ... ..	7,518.25	
5,10,661.33	.2 Stock of building materials As per last account ... ..	5,57,382.52	5,54,900.77
	2. Grants received from Government of India :		
17,50,000.00	.1 For current year's capital expenditure ... ..	17,50,000.00	
70,000.00	.2 For arrear upto 1958-59 ... ..	2,90,818.00	20,40,818.00
Nil	3. Refund on account of electrical installation at UNTAA Workshop ... ..		985.00
44,582.85	4. Recovery of capital outlay ... ..		10,398.88
1,00,000.00	5. Loan received from Current Expenditure Account ...		Nil
24,77,083.05			26,17,102.35

Calcutta,  
18th October, 1965.

# INSTITUTE

## ACCOUNT

FOR THE YEAR ENDED 31 MARCH 1966.

1965-66 Rs. P.	PAYMENTS	Rs. P.	1964-65 Rs. P.
	Capital Expenditure during the year :		
	1. Land and land Development :		
	.1 Cost of land at 102 B.T. Road including advance for Ra. 22,644/- paid in 1955-56 ... ..	5,30,584.00	
	.2 Development of land and fencing etc. at :		
	a) 203 Barrackpore Trunk Road ... ..	15,667.98	
	b) 205 Barrackpore Trunk Road ... ..	24,487.67	
	c) P.W.D. Road (156, 160, 165 and 168] Gopal Lal Tagore Road) ... ..	6,618.51	3,77,338.14
71,232.50			
	2. Buildings :		
	.1 Institute's main building at 203 B.T. Road ... ..	37,895.10	
	.2 Construction of buildings at 203 B.T. Road ... ..	2,63,575.90	
10,00,236.60	.3 Construction of buildings at 206 B.T. Road ... ..	3,47,573.72	6,49,044.72
	3. Sheds and Structures :		
	.1 Sheds and structures at 205 B.T. Road ... ..	2,665.13	
29,890.30	.2 Sheds and structures at P.W.D. Road ... ..	60,410.24	63,075.47
	4. Construction of overbridge between 202 and 203 Barrackpore Trunk Road ... ..		11,917.62
Nil			
	5. Expenditure for renovations etc. at 202 Barrackpore Trunk Road ... ..		16,021.52
10,424.07			
	6. Machinery and Equipment :		
	.1 Office machinery and equipment ... ..	30,494.65	
	.2 Laboratory equipment ... ..	49,942.50	
	.3 Electronic laboratory and workshop equipment ... ..	30,668.56	
2,30,555.07	.4 Photo and audio-visual equipment ... ..	2,752.50	1,19,858.21
31,978.19			
	7. Electrical equipment ... ..		67,495.76
1,07,194.25			
	8. Furniture and Fittings ... ..		1,22,000.96
40,116.94			
	9. Books and Journals ... ..		40,958.02
31,703.00			
	10. Motor Car ... ..		16,442.37
2,086.00			
	11. O.Y.T. Telephone ... ..		6,646.00
5,807.66			
	12. Library equipment ... ..		Nil
84,668.46			
	13. Joint project for the construction of Electronic Com- puters and Accessories ... ..		2,29,301.62
2,55,550.49			
	14. UNTAA workshop including installation of electrical transformer etc. ... ..		89,971.45
	Sub-total: ... ..		18,10,072.16
4,756.75	15. Recoverable Capital Expenditure ... ..		Nil
6,302.00	16. Earnest money for Takhah Planters' Club ... ..		Nil
Nil	17. Repayment of loan taken from Development Fund II ... ..		29,000.00
Nil	18. Loan paid to Current Expenditure Account ... ..		2,40,000.00
	19. Closing balance :		
5,57,382.52	.1 Stock of building materials ... ..	5,37,217.67	
7,618.25	.2 Cash in hand ... ..	812.52	5,38,039.19
<u>24,77,083.06</u>			<u>26,17,102.35</u>

We have examined the Receipts and Payments Account in respect of the Capital Expenditure Account of the Indian Statistical Institute for the year ended 31 March, 1966 with the books and records maintained by the Institute and have found it to be in accordance therewith.

LOVELOCK & LEWIS  
Chartered Accountants



**INDIAN STATISTICAL INSTITUTE**  
**VISITING PROFESSORS AND FELLOWS FUND**  
**BALANCE SHEET AS AT 31 MARCH 1965**

1963-64 Rs. P.	Funds & Liabilities	1964-65 Rs. P.	1963-64 Rs. P.	Property & Assets	1964-65 Rs. P.
113.13	Fund : As per last account ...	113.13	113.13	Cash in hand ...	113.13
<hr/>		<hr/>	<hr/>		<hr/>
113.13		113.13	113.13		113.13

In terms of our report of even date

Calcutta  
18th October, 1965

LOVELOCK & LEWES  
Chartered Accountants

**INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31 MARCH 1965**

1963-64 Rs. P.	Expenditure	1964-65 Rs. P.	1963-64 Rs. P.	Income	1964-65 Rs. P.
Nil		Nil	Nil		Nil
<hr/>		<hr/>	<hr/>		<hr/>
Nil		Nil	Nil		Nil

In terms of our report of even date

Calcutta,  
18th October, 1965

LOVELOCK & LEWES  
Chartered Accountants

# INDIAN STATISTICAL INSTITUTE

## LEAVE SALARY FUND

BALANCE SHEET AS AT 31 MARCH 1965.

1963-64 Rs. P.	Funds & Liabilities	1964-65 Rs. P.	1963-64 Rs. P.	Property & Assets	1964-65 Rs. P.
	Fund :			Current Assets :	
6,52,646.26	As per last account	6,53,925.76		Amount receivable from the Institute on account of em- ployer's contribution for the year 1963-64	6,50,742.98
6,50,742.98	Add : Employer's contribution for the year ...		6,50,742.98	Less: received dur- ing the year ...	3,80,742.98
13,03,389.24	Less: Leave salary paid during the year ...	3,83,176.53	2,70,749.23	Cash in hand ...	2,70,000.00
			3,182.78		740.23
6,53,925.76		2,70,749.23	6,53,925.76		2,70,749.23

In terms of our report of even date

Calcutta,  
18th October, 1965.

LOVELOCK & LEWIS  
Chartered Accountants

### INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31 MARCH 1965.

1963-64 Rs. P.	Expenditure	1964-65 Rs. P.	1963-64 Rs. P.	Income	1964-65 Rs. P.
Nil		Nil	Nil		Nil
Nil		Nil	Nil		Nil

In terms of our report of even date

Calcutta,  
18th October 1965.

LOVELOCK & LEWIS  
Chartered Accountants



INSTITUTE

FUND

AS AT 31 MARCH 1965.

1963-64 Rs. P.	Property & Assets	Ra. P.	Ra. P.	1964-65 Ra. P.
	Current assets :			
	Temporary advances made to :			
	(a) Capital Expenditure Account as per last account ... ..		4,67,000.00	
	(b) Current Expenditure Account as per last account ... ..	3,00,000.00		
7,67,000.00	Less : realised during the year ... ..	5,000.00	2,85,000.00	7,52,000.00
	Amount receivable from the Institute on account of employer's contribution :			
	As per last account for			
	i) year 1959-60 ... ..	1,48,164.00		
	ii) year 1960-61 ... ..	1,73,336.95		
	iii) year 1961-62 ... ..	2,50,270.44		
	iv) year 1962-63 ... ..	2,61,078.69		
	v) year 1963-64 ... ..	2,78,889.85	11,11,742.93	
11,11,742.93	Add : for the year 1964-65 ... ..		3,01,334.22	14,13,077.15
2,728.98	Cash in hand ... ..			2,435.76
<u>18,71,471.91</u>				<u>21,67,512.91</u>

In terms of our report of even date

LOVELOCK & LEWIS  
Chartered Accountants

THE YEAR ENDED 31 MARCH 1965.

1963-64 Rs. P.	Income	1964-65 Ra. P.
Nil		Nil
<u>Nil</u>		<u>Nil</u>

In terms of our report of even date.

LOVELOCK & LEWIS  
Chartered Accountants

INDIAN STATISTICAL INSTITUTE

DEVELOPMENT FUND NO. I

BALANCE SHEET AS AT 31 MARCH 1965

1963-64 Rs. P.	Funds & Liabilities	1964-65 Rs. P.	1963-64 Rs. P.	Property & Assets	Rs. P.	1964-65 Rs. P.
	Fund :			Current Assets :		
1,19,521.94	As per last account..	1,19,521.94		Temporary advances made as per last account to :		
			81,000.00	i) Capital Expenditure account ...	81,000.00	
			27,000.00	ii) Current Expenditure account ...	27,000.00	1,08,000.00
			11,521.94	Cash in hand ...		11,521.94
<u>1,19,521.94</u>		<u>1,19,521.94</u>	<u>1,19,521.94</u>			<u>1,19,521.94</u>

In terms of our report of even date

Calcutta,  
18th October, 1965.

LOVELOCK & LEWIS  
Chartered Accountants

INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31 MARCH 1965.

1963-64 Rs. P.	Expenditure	1964-65 Rs. P.	1963-64 Rs. P.	Income	1964-65 Rs. P.
Nil		Nil	Nil		Nil
<u>Nil</u>		<u>Nil</u>	<u>Nil</u>		<u>Nil</u>

In terms of our report of even date

Calcutta,  
18th October, 1965.

LOVELOCK & LEWIS  
Chartered Accountants

# INDIAN STATISTICAL INSTITUTE

## DEVELOPMENT FUND NO. II

BALANCE SHEET AS AT 31. MARCH 1965

1963-64 Rs. P.	Funds & Liabilities	1964-65 Rs. P.	1963-64 Rs. P.	Property & Assets	Rs. P.	1964-65 Rs. P.
	<b>1. Fund:</b>			<b>1. Fixed Assets:</b>		
10,04,873.90	As per last account	12,75,052.53		<b>1 Land and Land developments:</b>		
			2,67,685.41	As per last account ..	2,67,685.41	
				Add : during the year ..	27,134.00	2,94,799.41
	<b>2. Grant received during the year ..</b>	Nil		<b>2 Buildings:</b>		
2,50,000.00				As per last account ..	1,39,210.88	
				Less : depreciation during the year @ 2.5% ..	3,480.28	
			1,39,210.88	Add : during the year ..	1,35,729.82	1,41,071.18
					5,341.36	
	<b>3. Excess of income over expenditure for the year ..</b>	4,813.42		<b>3 Sheds &amp; Structures:</b>		
20,178.63				As per last account ..	1,76,216.91	
			1,76,216.91	Less : depreciation during the year @ 7.5% ..	13,216.27	
				Add : during the year ..	1,63,000.64	1,87,261.72
					24,261.08	
				<b>4 Electrical equipment and installation:</b>		
				Internal telephone system		
			6,510.80	As per last account ..	6,510.80	
				Less : depreciation @ 10% ..	651.08	5,859.64
				<b>5 Motor cars &amp; vehicles:</b>		
			13,915.99	As per last account ..	13,915.99	
				Less : depreciation @ 20% ..	2,783.20	11,132.79
				<b>2. Capitalised rental of telephone under O.Y.T Scheme:</b>		
			8,875.00	As per last account ..	8,875.00	
				Less : depreciation @ 5% ..	443.75	8,431.25
				<b>3. Investment : G.P. Notes at cost (face value Rs. 50,000/-)</b>		
			45,533.75	As per last account ..		45,533.75
				(pledged with the State Bank of India, Shambazar, for securing an overdraft of the Institute)		
				<b>4. Current Assets:</b>		
				<b>1 Stock of building materials</b>		
				As per last account ..		2,47,451.43
				<b>2 Temporary advances to:</b>		
				a) Capital Expenditure Account		
				As per last account ..	2,09,000.00	
				Less : received during the year ..	29,000.00	
					1,80,000.00	
				b) Current Expenditure Account:		
			6,11,451.43	As per last account ..	1,55,000.00	3,35,000.00
			5,673.39			8,324.88
				<b>3 Cash in hand ..</b>		
						12,70,865.05
<u>12,75,052.53</u>		<u>12,79,865.95</u>	<u>12,75,052.53</u>			

In terms of our report of even date.

Calcutta,  
18th October, 1965.

LOVELOCK & LEWIS  
Chartered Accountants

**INDIAN STATISTICAL INSTITUTE**

**DEVELOPMENT FUND NO. II**

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31 MARCH 1965

1963-64 Rs. P.	Expenditure	Rs. P.	1964-65 Rs. P.	1963-64 Rs. P.	Income	1964-65 Rs. P.
37,651.99	To Excess of income over expenditure ..		25,387.96	36,155.99	By Rent ..	23,891.96
				1,496.00	.. Interest on G.P. Notes (net)	1,496.00
<hr/>			<hr/>	<hr/>		<hr/>
37,651.99			25,387.96	37,651.99		25,387.96
	To Depreciation :			37,651.99	By balance of income over expenditure ..	25,387.96
2,111.64	a) on Buildings ..	3,480.26				
10,459.32	b) on Sheds and Structures	13,216.27				
3,479.00	c) on Motor Car ..	2,783.20				
700.00	d) on O. Y. T. Telephones	443.75				
723.40	e) on Internal Telephones	651.06	20,574.54			
20,178.63	To Net excess of income over expenditure ..		4,813.42			
<hr/>			<hr/>	<hr/>		<hr/>
37,651.99			25,387.96	37,651.99		25,387.96

Calcutta,  
18th October, 1965.

In terms of our report of even date

LOVELOCK & LEWIS  
Chartered Accountants

**INDIAN STATISTICAL INSTITUTE**  
**SUPERVISION FEE FUND**  
**BALANCE SHEET AS AT 31 MARCH 1965**

1963-64 Rs. P.	Funds & Liabilities	1964-65 Rs. P.	1963-64 Rs. P.	Property & Assets	Rs. P.	Rs. P.	1964-65 Rs. P.
	<b>Funds :</b>			<b>Assets :</b>			
2,16,304.87	As per last account	2,16,304.87		<b>Land :</b>			
			1,12,218.11	As per last account			1,12,218.11
				<b>Loans and advances :</b>			
				Temporary advances made as per last account to :			
				a) Current Expendi- ture account ...		60,000.00	
				b) ISI Small Scale Industries Experi- mental Units ...		17,658.25	
			77,658.25	<b>Add : Advance made during the year ...</b>	<b>4,969.97</b>	<b>22,628.22</b>	<b>82,628.22</b>
			26,428.61	Cash in hand ...			21,458.64
<hr/>		<hr/>	<hr/>				<hr/>
2,16,304.87		2,16,304.87	2,16,304.87				21,6,304.87

In terms of our report of even date

Calcutta,  
18th October, 1965.

LOVELOCK & LEWIS  
Chartered Accountants

**INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31 MARCH 1965.**

1963-64 Rs. P.	Expenditure	1964-65 Rs. P.	1963-64 Rs. P.	Income	1964-65 Rs. P.
	Nil	Nil	Nil		Nil
<hr/>		<hr/>	<hr/>		<hr/>
Nil		Nil	Nil		Nil

In terms of our report of even date.

Calcutta,  
18th October, 1965.

LOVELOCK & LEWIS  
Chartered Accountants



INDIAN STATISTICAL  
INDIAN STATISTICAL INSTITUTE

BALANCE SHEET

1963-64 Rs. P.	Funds & Liabilities	Rs. P.	Rs. P.	1964-65 Rs. P.
	Members' own subscription :			
	As per last account .. .. .		26,96,738.64	
	Add : during the year .. .. .		5,02,223.70	
			30,98,962.34	
25,96,738.64	Less : i) refunded during the year .. .. .	1,08,674.82		
	ii) refunded of excess realisation .. .. .	32.28	1,08,607.10	29,90,355.24
	Employer's contribution :			
	As per last account .. .. .		25,96,738.64	
	Add : during the year .. .. .		5,02,223.70	
			30,98,962.34	
	Less : i) refunded during the year .. .. .	91,613.98		
	ii) amount excess contributed in previous .. .. .		32.28	
25,96,738.64	years .. .. .	17,060.84	1,08,607.10	29,90,355.24
	iii) amount forfeited .. .. .			
	Members' voluntary subscription :			
	As per last account .. .. .		1,40,837.25	
	Add : during the year .. .. .		30,860.26	
			1,77,697.51	
1,46,837.25	Less : refund during the year .. .. .		16,864.17	1,60,833.34
	Interest payable :			
	a) On members' own subscription :			
	As per last account .. .. .		4,44,474.89	
	Add : during the year .. .. .		1,54,409.84	
			5,98,884.73	
4,44,474.89	Less : paid during the year .. .. .		18,497.75	5,80,386.98
	b) On employer's contribution :			
	As per last account .. .. .		3,91,103.97	
	Add : during the year .. .. .		1,40,180.23	
			5,31,284.20	
3,91,103.97	Less : i) paid during the year .. .. .	15,562.63		
	ii) amount forfeited .. .. .	920.39	16,483.02	5,14,801.18
	c) On members' voluntary subscription :			
	As per last account .. .. .		21,105.84	
	Add : during the year .. .. .		7,938.81	
			29,044.65	
21,105.84	Less : paid during the year .. .. .		2,689.48	26,355.17
	Surplus including forfeiture :			
	As per last account .. .. .		1,54,987.40	
	Add : i) excess of income over expenditure for the .. .. .		54,875.34	
1,64,987.40	year .. .. .		17,981.23	2,27,843.97
	ii) forfeiture for the year .. .. .			
63,61,988.63				74,90,731.12

We have examined the Balance Sheet of the Indian Statistical Institute General Provident Fund as at 31st March, 1965, and the Income and Expenditure Account for the year ended on that date and found them to be in accordance therewith. In our opinion the following are not in accordance with the Rules of the Fund :—

(a) The Investments are held in the name of the Indian Statistical Institute.

Calcutta,  
18th October, 1965.

INSTITUTE

GENERAL PROVIDENT FUND

AS AT 31 MARCH 1985.

1983-84 Ra. P.	Property & Assets	Ra. P.	Ra. P.	1984-85 Ra. P.
	Investments : At cost			
	a) G. P. Notes at cost			
	As per last account :			
	3% Conversion Loan of 1946/86 for Ra. 9,05,000/-			
	(face value) .. .. .	7,20,829.60		
	3% 1st Development Loan of 1970-75 for			
	Ra. 13,05,000/- (face value) .. .. .	11,46,154.89		
	4 1/2% loan of 1985 for Ra. 13,00,000 (face value)	13,00,000.00		
	(G. P. Notes of the face value of Ra. 22,06,000/-			
	pledged with the State Bank of India, Shambastar for securing an overdraft of the Institute).	31,74,784.29		
	Add : during the year 3% Conversion Loan			
	of 1946 for Ra. 0,00,000/- (face value)	5,71,140.00	37,45,924.29	
32,74,784.29	b) National Savings Certificate for Ra. 1,00,000/-		1,00,000.00	38,45,924.20
	Loan to members outstanding :			
	As per last account .. .. .		6,64,227.08	
	Add : loan paid during the year .. .. .		11,01,640.00	
			18,25,873.08	
6,64,227.08	Less : loan realised during the year .. .. .		9,73,895.93	8,51,987.15
	Current Assets :			
	Interest accrued on G.P. Notes :			
	As per last account .. .. .	14,438.75		
	Less : Interest realised during the year .. .. .	14,438.75		
		Nil		
	Add : Interest accrued during the year .. .. .	64,860.00	64,860.00	
	Amount receivable from Public Debt Office on			
	account of income-tax wrongly deducted from			
	interest on G.P. Notes :			
	As per last account .. .. .		8,774.70	
	Amount due from the Institute :			
	As per last account .. .. .	4,64,816.42		
	Less : amount realised during the year .. .. .	4,64,816.42	Nil	
	Add : employer's contribution for 1984-85 .. .. .		5,02,223.70	
	Temporary advance to Institute's Current			
	Expenditure Account :			
	As per last account .. .. .	6,50,000.00		
	Less : repaid during the year .. .. .	6,50,000.00		
		Nil		
	Add : during the year .. .. .	4,50,000.00	4,50,000.00	
	Cash & Bank balances :			
	At Bank .. .. .		16,88,028.06*	
24,12,975.26	In hand .. .. .		98,943.22	27,92,819.68
83,51,986.63				74,90,731.12

\*Ra. 10,00,000/- has since been invested in Fixed Deposit @ 7% per annum with State Bank of India, Shambastar.

(b) The following securities are pledged with the State Bank of India for securing an overdraft of the Institute with the Bank.

Particulars	Face Value	Cost
3% Conversion Loan of 1946/86 .. .. .	Ra. 9,05,000/-	Ra. 7,20,829.60
3% 1st Development Loan of 1970/75 .. .. .	Ra. 13,05,000/-	Ra. 11,46,154.89
4 1/2% Loan of 1985 .. .. .	Ra. 25,000/-	Ra. 25,000.00

(c) The Bank balance is held in the name of the Institute.  
 (d) Advance is made to Institute's Current Expenditure Account.

LOVELOCK & LEWIS  
Chartered Accountants

**INDIAN STATISTICAL  
INDIAN STATISTICAL INSTITUTE  
INCOME & EXPENDITURE ACCOUNT**

1963-64 Rs. P.	Expenditure		Rs. P.	1964-65 Rs. P.
	To Interest :			
—	i) On G. P. Notes purchased	... ..	1,869.96	
1,02,338.86	ii) On members' own subscription	... ..	1,54,409.84	
93,447.15	iii) On employer's contribution	... ..	1,40,180.23	
5,632.23	iv) On members' voluntary subscription...	... ..	7,938.81	3,04,398.83
81,304.15	Excess of income over expenditure	... ..		54,675.34

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2,81,720.39

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3,50,074.17

**INSTITUTE**

**GENERAL PROVIDENT FUND**

**FOR THE YEAR ENDED 31 MARCH 1965.**

1963-64 Rs. P.	Income	Rs. P.	1964-65 Rs. P.
	By Interest :		
1,40,743.75	i) On G.P. Notes (nat) ... ..	1,53,283.00	
—	ii) On National Savings Certificates .. ..	37,850.00	
21,756.55	iii) On employer's contribution for the previous year	23,240.81	
31,270.25	vi) Overriding interest for utilising G.P. Notes by the Institute ... ..	31,441.50	
40,000.00	v) On loan given to the Institute and Bank balance utilised by the Institute .. ..	57,500.00	
47,949.84	vi) On loan given to the members ... ..	55,758.98	3,59,074.17
2,81,720.39			3,59,074.17

In terms of our report of even date

LOWLOOK & LEWIS  
Chartered Accountants

INDIAN STATISTICAL INSTITUTE

1401 EDPM SYSTEM FUND

BALANCE SHEET AS AT 31 MARCH 1965

1963-64 Rs. P.	Funds and liabilities	1964-65 Rs. P.	1963-64 Rs. P.	Property and Assets	Rs. P.	1964-65 Rs. P.
Nil	1. Sundry Creditors	6,94,087.22	Nil	1. Magnetic tape ...	80,388.00	
				<i>Less</i> : Depreciation @ 20% for 8 months ...	8,038.00	72,350.00
				2. Importation charges ...	4,56,041.47	
				<i>Less</i> : amount charged to Income & Expendi- ture account ...	65,141.47	3,90,900.00
				3. Sundry debtors ...		68,718.75
				4. Amount due from the Institute ...		1,13,718.37
				5. Excess of expenditure over income ...		48,400.10
<hr/> Nil <hr/>		<hr/> 6,94,087.22 <hr/>	<hr/> Nil <hr/>			<hr/> 6,94,087.22 <hr/>

In terms of our report of even date

Calcutta,  
18th October, 1965.

LOVELOCK & LEWIS  
Chartered Accountants

INCOME AND EXPENDITURE ACCOUNT FOR THE PERIOD FROM 1 JULY, 1964 TO 31 MARCH 1965.

1963-64 Rs. P.	Expenditure	1964-65 Rs. P.	1963-64 Rs. P.	Income	1964-65 Rs. P.
Nil	1. To Machine Tabulation expenses :		Nil	1. By Service charges ...	3,42,557.75
.1	.. Hire and maintenance ...	3,02,100.73		2. .. Excess of expenditure over income ...	48,400.10
.2	.. Importation charges ...	65,141.47			
.3	.. Electricity, stationery, cards etc. ...	15,133.06			
.4	.. Remuneration ...	544.00			
2.	.. Depreciation charge : Magnetic tape ...	8,038.00			
<hr/> Nil <hr/>		<hr/> 3,90,667.85 <hr/>	<hr/> Nil <hr/>		<hr/> 3,90,667.85 <hr/>

In terms of our report of even date

Calcutta,  
18th October, 1965.

LOVELOCK & LEWIS  
Chartered Accountants