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unit	general courses	no. of participants	in-plant courses	no. of participants	special courses	no. of participants
(1)	(2)	(3)	(4)	(5)	(6)	(7)
5. Coimbatore	<p>1. Orientation Course on SQC for Heads of Quality Control Departments of textile factories-duration-34 April to 2 May 1967</p> <p>2. Repeat Course on SQC for Heads of Quality Control Departments of textile factories-duration-15 November to 28 November 1967</p> <p>Sub-total</p>	3	<p>1. In-plant Courses in SQC for Coimbatore Textiles Ltd., Talasipatti, for factory personnel-duration-18 December 1967 to 2 January 1968</p> <p>Sub-total</p>	25	<p>1. Courses on SQC at Coimbatore Textiles Ltd., Talasipatti, for factory and supervisors-duration-19 February to 18 May 1967</p> <p>Sub-total</p>	20
6. Delhi	<p>Sub-total</p>	6	<p>1. In-plant Courses on Total Quality Control at Escorts Ltd. for factory personnel-duration-24 June to 28 July 1967</p> <p>Sub-total</p>	22		
7. Kerala	<p>1. Intensive Course on Inventory Control &amp; Store Reorganisation for middle managers-duration of theoretical training-15 to 24 February 1966</p> <p>Sub-total</p>	22	<p>1. In-plant Course on SQC at Greater Rayana silk Mfg. Co., for technical staff-duration-18 May to 24 November 1967</p> <p>2. In-plant Course on SQC at Indian Rare Earths Ltd. for technical staff-duration-June 1967 to February 1968</p> <p>3. In-plant Course on SQC at Greater Rayana silk Mfg. Co., for technical staff-duration-December 1967 to January 1968</p> <p>4. In-plant Course on SQC at Yagacherry for middle management commenced on 14 March 1968</p> <p>Sub-total</p>	37		

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unit	no. of part- icipants	in-plant courses	no. of part- icipants	special courses	no. of part- icipants
(1)	(2)	(3)	(4)	(5)	(6)
b. Madras					
1. Training Course in OR for middle management staff in production engineering duration-11 to 22 September 1967	18	1. In-plant Course on application of OR to the management of a very large Mill Ltd. for supervisory staff-duration-1 to 28 July 1967	16		
2. One-Year Specialized Certificate Course in SQO and OR for personnel commenced on 25 March 1968	30	2. In-plant Course on BQC at Neyveli Lignite Corpn. for statistical personnel during April 1967	18		
		3. In-plant Course on BQC and OR for personnel of the newly established branch at Neyveli Lignite Corpn.- duration-August to October 1967	11		
		4. In-plant Course on SQO for statistical personnel at Neyveli Lignite Corpn.-duration-April to May 1967	18		
		Sub-total	68		
9. Training and Professional Unit					
				1. Diploma Course in BQC : 1967-68	34
				2. Advance 10 Weeks' Course in SQO for the supervisory staff of the different Ordnance Factories-duration: 18 October to 8 February 1967 and 18 February to 2 March 1968	33
				Sub total :	67
All units : Total no. of participants					88
					686
					137

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Annexure 4 : Sixth Convocation : 12 February 1968

### WELCOME ADDRESS BY SHRI SURJMAL DUTT

Mr. President, with your permission, Sir, I should like to extend on behalf of the Council of the Institute a very warm welcome to our distinguished visitor Sir Harry Campion and other distinguished guests on the occasion, who are present today. The year just passed has been in more than one respect a very eventful year for us. We are very happy that the Honorary Secretary of the Institute, in fact, the life and soul of this Institute, Professor Mahalanobis has been awarded one of the highest honours that are open to an Indian—the Padmavibhushana. We are also happy at the award of Padmabhusana on our very distinguished Director of the Research and Training School who has added glory to the Institute by his association with it—Dr. C. R. Rao. We are particularly happy when his work as a scientist of international repute has been recognised by the Royal Society of London. He is, I believe, one of the youngest Indians who has been admitted to the Fellowship of the Royal Society. This is a great honour for the Indian Statistical Institute.

We are now passing through a rather exciting time, if I may put it that way. A Review Committee has examined the work of the Institute and made certain recommendations. The Government of India are now in the process of considering them in consultation with the Council of the Institute. I am quite sure that out of these discussions will emerge, in many ways, an Institute which will be helped in its work of research and educational progress. It is a matter of particular satisfaction to us that in spite of all these talks and discussions, the work of research in this Institute has not been affected at all. Indeed, it has made a further progress during the year. And last, but not the least, Mr. President, Sir, we feel honoured in having you as the Head of our Institute. This is the first time that a scientist of your reputation has taken over the charge of the Institute as the President. This is also a great honour for us. Thank you gentlemen.

### SPEECH BY PROFESSOR P. C. MAHALANOBIS

Mr. President,

I am glad to have this opportunity of welcoming you, as our President, in a public function. My mind goes back to 1946 and 1947, which were critical years for the Institute in many ways. At that time you came and looked after the affairs of the Institute taking full administrative charge and living here at *Amrapali*, when I was out of India a good deal of the time.

More than twenty years have passed; what was then a secret, need not be treated as secret now. In 1946 I had asked the Government of India for an annual grant of five lakhs of rupees for the Research and Training School. There was continuing debate. In 1947, at an informal discussion in New Delhi, finance officials made an offer of two and half lakhs across the table, and said that orders would issue if I accepted. I shook my head. Then an offer of three lakhs. I took a small piece of paper and wrote on it, briefly, "Five lakhs and not a single paise less," put my signature on it, and went abroad. I offered in a letter to leave the Institute, and gave names of two persons either of whom could take charge of the work. However, the problem was solved at the highest level of Government; and the position of the Institute was stabilized.

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Twenty years later, 1966 and 1967 were again critical years, as our Vice-Chairman has reminded us. The present crisis is concerned not with finance, but with the heart of the problem of science, to which C. R. Rao has referred.

Science is based on the awareness of reality. Before the emergence of science, it was only the name, the incantation, the ritual, which mattered. Mr. President, you were Chairman of a Committee with distinguished members, which was appointed by the University Grants Commission in 1958, to consider whether this Institute should be recognised, 'deemed to be a University', and be given the power of awarding degrees. You are aware that in spite of the unanimous recommendation of your Committee, the U.G.C. could not give recognition to the Institute because it was considered that the range of studies in this Institute was too narrow. It was the name "Statistical" which mattered. Statistics is what clerks and people do in commerce. Therefore, a Statistical Institute could not possibly have the status of a university. The name was important, not reality.

In the Review Committee, set up by the Government in 1966, and to which C. R. Rao has referred, the difficulty was the other way round. The range of subjects of study and research in this Institute was too large, and did not fit into the UNESCO classification of statistics under social sciences; research units in natural sciences must, therefore, be illegitimate! It was with great difficulty that the legitimacy of research in natural sciences was established and accepted by the Review Committee and the Government.

The heart of the negation of science in India is that the name is important, not reality. The name counts, not reality.

Mr. President, I have spoken at some length of matters in which, in 1946 and in 1958, you had tried to help the Institute, in order to acknowledge in public the debt we owe you.

I should now like to say, briefly, how proud I feel that C. R. Rao was elected a Fellow of the Royal Society last year. He came to the Institute in January 1941 to learn statistics. I feel proud that my direct pupil is now in the Royal Society. In India, we have a saying *putra ickhyet parajayam*. One wishes for defeat by his son. I have no children. In India there is also the alternative version : *Sishya ickhyet parajayam*. One wishes for defeat by his pupil. It is my great happiness to admit defeat by my pupil.

I should also like to mention the name of another person, Pitambar Pant, who has been closely associated with me and also with the Institute since April or March 1946, for twenty-one years now, very closely indeed. I am happy and proud that a few months ago he took over my responsibility in the Planning Commission as Member for Perspective Planning. In his case also I can quote the same Sanskrit verse.

It is a great personal pleasure to me that Sir Harry Campion is with us today. I first met him in April 1946, as a fellow member of the nucleus Statistical Commission of the United Nations, in New York. I share with him the record of having attended fifteen sessions of the Statistical Commission. Since 1946, I have had the great privilege of knowing him intimately, and having him as a friend. I am happy that he is here today.

I should like to speak briefly, on this occasion, of the tradition of this Institute, which goes back even before the Institute took formal shape, the tradition which found expression later in our motto 'unity in diversity', to which our distinguished guest has referred. In

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India, 'unity in diversity' is the only possible precept for national existence. This point has emerged, in crisis after crisis, over centuries of the history of our country. Rabindranath Tagore in speaking of India used, again and again, this phrase, unity in diversity, and also did so in our national anthem.

I may briefly refer to the banyan tree which we see in our crest. Ronald Fisher, the greatest statistician of this century, perhaps of all time, was our guest on eight occasions. On one occasion, when he returned to England after visiting some of the branches of the Institute, he sent me a postcard, with one single line: "How is the banyan tree growing!"

The banyan tree has innumerable branches, which are separate and even independent, but which all find their unity in the tree itself. And of course, unity in diversity in statistics itself. Each observation or sample is independent, taken together they make up a unit. Each aspect of statistics is independent, but they are all connected to constitute a unity. Unity in diversity is a motto of which we can be proud.

The motto goes much deeper. For nearly forty years or more we have had the tradition of persons coming from different parts of India, or from different parts of the world, coming and meeting here. I feel proud to recall that in December 1964 we had guests, not casual visitors, from America, England, France and also from U.S.S.R. and other countries, who were staying here, under the same roof, for several months. On the Foundation Day, the Russians, the British, the Americans, the French and others arranged, as a surprise for us, a joint musical performance on this very platform. I also recall that Jawaharlal Nehru came here in 1964, and met our guests from all over the world. In a speech somewhere, may be in Lucknow, he mentioned that this Institute was the only place in India where this could have happened at that time.

There are still the deeper implications of 'unity in diversity', without which India cannot endure; and, if I may venture to say, without which human civilization cannot survive. Therefore, to those who are graduating or having their diplomas at this convocation, and to my colleagues who are working in this Institute, I should like to submit with all humility that it is that spirit—the recognition of 'unity in diversity', at the level intellectual and at the level cultural and social, which alone can sustain us. It means, very definitely, that in our behaviour, in our contacts with persons from India, all over India, and also from other parts of the world, we have to do unto them as we want them to do unto us. Without this spirit of 'unity in diversity', this Institute cannot survive.

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It is worth recording how the Institute crest was adopted. In January 1962, Ronald Fisher was staying at Annapoli, with other guests among whom were P. M. S. Blackett, Academician Tamm and Walter A. Schewhart. One morning I raised the question of selecting a crest for the Institute, and said we would like to have a motto in Sanskrit. I mentioned several Sanskrit phrases, including 'tamaso ma jyotirgamaya' (from darkness unto light), and also 'unity in diversity', but explained that this particular phrase was not a translation of a Sanskrit phrase, but was used by Rabindranath Tagore as the English form of two Bengali words. Fisher slowly repeated 'unity in diversity' two or three times, and said "this as the motto, and the banyan tree, of course". Every one agreed.

In Delhi I then spoke to G. D. Dasgupta, at that time President of the Institute. He also agreed immediately, and started translating 'unity in diversity' into Sanskrit; and after two or three trial phrases, he said *bhimsau caryadarshanam*. He not only gave the Sanskrit translation but, as a competent botanist, immediately made a rough sketch in pencil of a banyan tree and handed it over to me, and said, "it is important to make the different branches quite distinct". We used it in a more finished form.

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I do not know whether I shall have the opportunity to speak at another convocation. It is proper that I should give expression to my deepest convictions.

Our guest scientists, colleagues in the International Statistical Education Centre, I want to remind you that 'unity in diversity' has been the tradition of the Institute. I thank you on my own behalf, and on behalf of my colleagues, for your participation in our common endeavour of intellectual adventure, and for living together in this Institute in amity and goodwill.

Our Vice-Chairman has mentioned that 1966 and 1967 were critical years for the Institute. The situation seems to be improving. I hope it would continue to improve. I think, again, of 'unity in diversity'. If the Institute is internally united, we shall overcome all external difficulties. We have to take a firm stand on grounds of reason, with an awareness of reality; no other way would serve. We must have faith in reason. This is the only way in which science can advance, and without science there is no possibility of either economic or national development.

Mr. President, I have spoken at much greater length, and more emotionally than I had intended. I did not know I would have to speak, but our Director's instructions had to be obeyed. Mr. President, once more I thank you for your association with the work of the Institute and, if I may say so, even in giving shape to the Institute, its formal shape. I thank our Vice-Chairman for his depth of understanding, and if I may use the words, for his open mind, which have been of very great help to us. I thank our friends who are with us today.

#### ANNUAL REVIEW BY DR. C. R. RAO, DIRECTOR, RESEARCH AND TRAINING SCHOOL

Mr. President, Professor Mahalanobis, Sir Harry Campion, Vice-Chairman, Ladies and Gentlemen,

In presenting the annual report of research and training at the Indian Statistical Institute during the year 1967, let me at the outset thank you, Mr. President, for agreeing to be at the helm of affairs when the Institute is passing through a critical phase causing us some anxiety. Your timely counsel and encouragement has sustained us through difficult periods in the past and we hope to pull through the further ordeals ahead of us under your able leadership.

Scientific research is at its lowest ebb in the country today and scientists are suffering from a sense of frustration. The brain-drain to the more advanced countries continues, perhaps at a higher rate than before. It is unfortunate that neither the scientific societies nor the Government are giving any serious thought to the problems faced by individual scientists and to the needs of research organizations. Research is not something which can be procured to order by the Government or imported as a commodity to meet a deficit. It has to be carefully nursed, nourished and encouraged to develop wherever and in whatever form it is possible. All research work should be judged by its quality, and supported if it is original and contributes significantly to our scientific knowledge. To argue that there are clearly defined areas to which a particular research organization must confine its attention is to deny the very basis of modern research which tries to cut across different conventional disciplines and seeks to establish unifying principles.

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In this context, we are surprised that the Committee recently appointed by the Government of India to review the work of the Institute thought that research in some science subjects in the Institute is not within its scope of enquiry, without making an actual "audit of performance or achievement." I may submit that the research set-up we are developing in the Institute, is inter-disciplinary in nature involving the close association of biological and social scientists with mathematicians and statisticians. The future of the Institute, we believe, lies in the success it can achieve in providing an optimal interaction between statistical technology and various branches of the natural and social sciences. For this purpose, it is necessary for the Institute to maintain high level research units in different branches of science. We hope that, despite what has been said in the Review Committee Report, the Government will take a more responsible attitude towards research in general, show appreciation of the initiative taken by the Institute in developing fundamental lines of research, and extend liberal support.

### 1. TRAINING

#### 1.1. New Courses

In my report, last year, I mentioned that the Institute had started specialisation (post-M.A.) courses in a variety of subjects rooted in statistics: Quality Control, Demography, Computer Science, Operations Research, Large-scale Sample Surveys, Econometrics and Planning, and Documentation (Library Science). This year we have introduced a new specialisation course on Quantitative Genetics.

Besides these professional courses, the programme of research courses and seminars has been considerably expanded. The aim of these latter courses is to provide research facilities and guidance to a larger number of scholars than is possible under individual supervision by professors.

There is an urgent need to intensify the specialisation and research courses to turn out technicians with the necessary professional competence to help in our national developmental projects. There is also a great need to instil in the students a spirit of true intellectual enquiry and a passion for quality and excellence, which the educational institutions in India appear to be neglecting today. A pre-requisite for all these is the maintenance of staff in the Institute, high in quality, in adequate numbers and representing different disciplines. This, indeed, is a serious problem, and it is becoming increasingly difficult to retain senior members of the staff who are attracted by the opportunities available in foreign countries. To what extent and by what means this phenomenon can be prevented is a wider question which may have to be taken up at a national level. However, a scheme of sabbatical leave which prevails in foreign universities may help to relieve the situation, provided the necessary financial support is available. I hope the Council of the Institute will give serious attention to this problem.

#### 1.2. NUMBER OF STUDENTS IN DEGREE AND TRAINING COURSES

In the current academic year, we have 458 students pursuing degree and training courses of one academic year or more in duration, 103 students taking short special courses of one academic term or less and 287 students taking short duration in-plant training courses in Quality Control. Thus the total number of students taking some course or other is 848,

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equivalent to about 160 students taking courses of one full academic year (of 9 months' teaching) in terms of work-load on the teaching staff. The distribution of students over the various courses is given in the accompanying Table.

TABLE : NUMBER OF STUDENTS IN THE VARIOUS COURSES DURING THE CURRENT ACADEMIC YEAR, 1967-68

	course	duration	no. of students
1.	<i>Post-graduate</i>		
1.1	Research Assistants	12 months	34
1.2	Project Assistants	"	25
2.	<i>Degree</i>		
2.1	B.Stat. (4 years)	" (each year)	55
2.2	M.Stat. (1st year)	"	23
2.3.	M.Stat. (2nd year) and Post-graduate Diploma		
2.3.1	Mathematical Statistics	"	5
2.3.2	Demography	"	3
2.3.3	Computer Science	"	13
2.3.4	Econometrics and Planning	"	9
2.3.5	Statistical Quality Control	"	34
2.3.6	Automatic Data Processing	"	4
2.3.7	Quantitative Genetics	"	2
2.3.8	Documentation Research and Training	"	5
3.	<i>General Training in Statistics</i>		
3.1	International Statistical Education Centre	10 months	31
3.2	Officers on deputation	9 "	20
3.3	Evening course for statisticians (Bangalore, Bombay, Calcutta, Delhi, Hyderabad, Madras, Trivandrum)	12 "	169
3.4	Evening course for Computers (Calcutta)	12 "	21
4.	<i>Short-term courses</i>		
4.1	Summer School (Advanced)	6 weeks	25
4.2	In-plant training courses in Quality Control	10 "	237
4.3	Advanced short-term courses in Quality Control	10 "	23
4.4	Short-term intensive courses in Quality Control	3 "	37
4.5	Data Processing intensive course for officers on deputation	12 "	18
A.	Sub-total of number of students attending courses of one academic year		463
B.	Sub-total of number of students attending courses of 3 to 12 weeks		103
C.	Sub-total for in-plant training courses of 10 weeks		237
	Total		843



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### 1.3. SUMMER SCHOOL (SEVENTH SESSION)

The Advanced Summer School programme was started seven years ago for the benefit, particularly of university teachers who want to utilise their summer vacation for advanced study and research, and of research workers in general. Its seventh session was conducted last year at Bangalore. The course was attended by 25 teachers and scholars from Universities and research organizations. Besides some senior members of the staff of the Institute, Dr. K. R. Nair, Director, Central Statistical Organization; Dr. R. P. Palakshirajan, Professor of Statistics, Mysore University; and Dr. K. Nagabhushanam, Professor of Statistics, Andhra University, gave lectures on advanced topics in their fields of specialisation.

### 1.4. INTERNATIONAL STATISTICAL EDUCATION CENTRE (TWENTY-FIRST TERM)

The International Statistical Education Centre (ISEC), started in 1960 in collaboration with the International Statistical Institute, held its twenty-first term during the year under review, and was attended by 31 students from 12 different countries. The duration of the course was extended, with effect from the last academic year, from 9 to 10 months to provide more time for specialisation in different fields of applied statistics. The number of foreign students at the ISEC and the fields in which specialisation is sought are increasing year by year. Dr. A. Maitra who has been in charge of this Centre from last year is rendering valuable service in meeting the varied requirements of the foreign trainees, both with respect to their studies and to the physical amenities for their stay in the campus. We are also glad to have with us Dr. Takuji Onoyama from Japan as a Visiting Professor at the ISEC.

While the bulk of teaching in the various courses was undertaken by the staff of the Institute, we are fortunate in having the active collaboration of the Central Statistical Organisation, Government of India, in teaching official statistics in the various degree and training courses. We also wish to express our thanks to the British Council for making available to us the services of Miss Elizabeth Macnicol for teaching English and Miss Jennifer Uden to work on an agricultural project, under the British Volunteer Scheme. The variety of courses given and the large number of working days in the Research and Training School involve a heavy teaching load. The successful organisation of these teaching courses is due to the untiring efforts of the Dean of Studies, Professor Subodh Kumar Roy, and the enthusiastic group of teachers and the research workers at the Institute.

## 2. ALL INDIA CONFERENCE ON QUALITY CONTROL

The Institute organised the Fourth All India Conference on Quality Control at Madras during 7-9 December 1967, which was inaugurated by His Excellency Sirdar Ujjal Singh, Governor of Madras. 'Quality Control for Economic Growth' was the theme of an address by Professor P. C. Mahalanobis at the inaugural function. Key-note addresses were delivered on planning, management and operational aspects of quality control programmes, and training for quality control, by Shri A. Sivasailam, Chief, Amalgamation Group of Industries, and the visiting foreign experts Mr. Frank Nixon, Chairman, National Council for Quality and Reliability, U. K. and Dr. K. Ishikawa, a leader of the quality control movement in Japan. Technical sessions were devoted to (a) operational concepts and the working of quality control, (b) management and organisation, and (c) training for quality control.

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Over 500 delegates attended the conference and about 100 working papers were presented and discussed. The Conference strongly urged the Indian Statistical Institute to organise a large number of training courses for different levels of industrial personnel, including in-plant training courses.

#### 3. VISITING SCIENTISTS

##### 3.1. PROJECTS IN COLLABORATION WITH VISITING SCIENTISTS

Every year the Institute is fortunate in receiving a number of distinguished scientists and scholars from foreign countries. Some come for a short period to give seminars and others for a longer period to initiate and/or to undertake research projects in collaboration with the scientists at the Institute. Among the distinguished scientists who visited the Institute last year, mention may be made of Dr. R. L. Kirk, School of Medical Research, Australian National University, from Australia; Academician Ivan Stefanov, Institute of Economics, from Bulgaria; Dr. R. L. M. Syngé, Nobel Laureate, F.R.S., Rowett Research Institute, Dr. D. J. Finney, F.R.S., Professor of Statistics, University of Edinburgh and Dr. Pamela Robinson, University College, London, from the U. K.; Professor J. L. Doob, Professor of Mathematics, University of Illinois and Member, National Academy of Sciences and Dr. H. L. Shapiro, Chairman, Department of Anthropology, American Museum of Natural History and Member, National Academy of Sciences, from the U.S.A.

Dr. R. L. Kirk visited the Institute for a brief period, on invitation, to advise on some projects in Human Genetics, in which India offers a fertile field of study. He made a report indicating some lines of research and he is expected to make periodical visits to the Institute to develop some research projects in collaboration with the workers of the Institute.

Academician Stefanov gave a series of seminars on economic growth and demography at Calcutta and other branches of the Institute, and had discussions with the economists and demographers in the Institute.

Dr. Syngé visited the Institute for the first time three years ago and showed great interest in the results of experiments conducted by the Rotary Research Unit in mixed cropping. In a long series of experiments, it was found that a mixture of different varieties of rice gives a higher yield than monocultures consisting of one single variety. The same phenomenon was observed with mixtures of two different species such as wheat and gram etc. Dr. Syngé visited the Institute again last year to help it to develop research work on plants and soils for increasing food production. He has also arranged to train some of our technicians abroad for this purpose.

Dr. Finney had several discussions with the teaching and research staff of the Institute at Calcutta and Delhi and made a report on the teaching, research and consultation activities of the Institute. Such reviews of the work of the Institute by scientists of international repute are of great value in planning for future progress.

Dr. Pamela Robinson visited the Institute for the first time in 1967, and since then she has been coming periodically to advise the workers of the Geological Research Studies Unit of the Institute. Dr. Robinson has been primarily responsible for initiating the various research projects and building up the Geological Research Studies Unit as one of the best research centres in vertebrate palaeontology.

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Professor Doob gave an advanced course of 25 lectures on *Potential Theory*, which was attended by the research scholars and staff of the Research and Training School of the Institute.

Dr. Shapiro made his third visit to the Institute last year to assess the progress of a project initiated by him during one of his earlier visits to study the effects of urbanisation on human physiology, as an indication for increased levels of tension in the human system. He has suggested further investigations which are being undertaken by the Anthropological Research Unit of the Institute.

### 3.2. LIST OF VISITING SCIENTISTS

The following is the list of visiting scientists who gave lectures, seminars, and participated in the research work at the Institute, during the period April 1967–February 1968.

1. Dr. L. B. Alayev, Institute of Peoples of Asia, USSR Academy of Sciences.
2. Mr. V. A. Averjanov, U.N. expert on Magnetic Core Memory Devices, from the U.S.S.R.
3. Dr. E. Balalov, Institute of Mathematics, University of Sparten, Denmark.
4. Dr. A. L. Batalov, Institute of Peoples of Asia, USSR Academy of Sciences.
5. Dr. L. L. Cavalli-sforza, Institute of Genetics, University of Pavia, Italy.
6. Dr. Violet Cane, University of Cambridge, U.K.
7. Dr. D. M. Chibisov, Steklov Mathematical Institute, USSR Academy of Sciences.
8. Professor J. L. Doob, University of Illinois, U.S.A.; Member, National Academy of Sciences, U.S.A.
9. Dr. D. J. Finney, F.R.S., Department of Statistics, University of Edinburgh, U.K.
10. Mr. Fudin Arkadidi Fedotovich, Peoples' Friendship-University, Moscow.
11. Madam Galenko Zhanna Georgievna, Peoples' Friendship University, Moscow.
12. Professor Max Hamilton, Nuffield Professor of Psychiatry, University of Leeds.
13. Dr. N. Kaldor, University of Cambridge, U.K.
14. Dr. R. L. Kirk, Australian National University, Australia.
15. Mr. Nikolai Egorovich Kucherenko, Peoples' Friendship University, Moscow.
16. Dr. S. A. Kuzmin, Central Economic Mathematical Institute, USSR Academy of Sciences.
17. Dr. T. Onoyama, Tsuda College, Tokyo.
18. Dr. T. S. Pokataeva, Institute of World Economics and International Relations, USSR Academy of Sciences.
19. Dr. P. L. Robinson, University College London.
20. Dr. V. V. Sazonov, Steklov Mathematical Institute, USSR Academy of Sciences.
21. Dr. H. L. Shapiro, Chairman, Department of Anthropology, American Museum of Natural History; Member, National Academy of Sciences, USA.
22. Academician I. Stefanov, Institute of Economics, Bulgarian Academy of Sciences.
23. Professor R. L. M. Synge, Nobel Laureate, F.R.S., Rowett Research Institute, U.K.
24. Dr. D. Thorner, Ecole Pratique des Hautes Etudes, France.

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25. Mrs. Alice Thorne, Ecole Pratique des Hautes Etudes, France.
26. Professor Y. Washio, Faculty of Engineering, Keio University, Japan.
27. Dr. E. Weber, Faculty of Agriculture, University of Kiel, West Germany.
28. Dr. T. Weiskopf, Harvard University, USA.

4. RESEARCH

The research work of the Institute during the last year is embodied in 188 papers sent for publication in various journals. A selected list from the wide variety of subjects covered in these papers is given below.

1. *Mathematical Statistics and probability*: Research work was conducted in a variety of fields: Introduction of a new class of probability distributions called Generalized Stable laws; Characterizations of Normal, Gamma and Generalized Stable laws through constant regression of one linear statistic on another; Characterization of the multi-variate normal law through non-uniqueness of its linear structure in terms of independent factors; Invariant estimators of the location parameter; existence of minimal sufficient statistic for arbitrary families of discrete probability measures; sequential procedures in non-parametric inference; optimal policies in dynamic programming; linear programming and optimal routing problems; sampling inspection plans; optimum sampling strategies and estimators in large scale sample surveys etc.

2. *Mathematics*: Extremal problems and perfect graphs in graph theory, normal operators on quaternionic Hilbert spaces, weakly stable families of transformations, and generalised inverses of singular matrices are some of the subjects in which contributions have been made.

3. *Particle Physics*: A major programme of work aimed at discussing polarization phenomena in nucleon deuteron collisions was started. The interesting question of the role of nuclear spin in elementary particle interactions on nuclei was examined on the basis of the 'superposition' model and salient features illustrated by considering the example of photo-production of neutral pions on  ${}^7\text{Li}$ .

A new model of elementary particles has been proposed to throw light on the symmetries of particles, isospin strangeness and baryon number of particles.

4. *Computer Science and Electronics*. Work on speech and pattern recognition was continued. Theoretical and experimental models for speech analysis have been developed and the use of statistical decision theory has been suggested.

Some basic theoretical work has been done on the structure of Kirchhoff (electrical) network. It is shown that an active electrical network can be looked upon as a superposition of simpler networks driven by current generators, which concept is useful in computer technology.

To speed up the computational routine, new types of algorithms which are faster and more economical have been proposed for division, range-transformation and elementary function evaluation.

The distribution of significant digits in certain functions has been studied with a view to understand the error propagation over a long series of computations.

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To study robustness of some statistical test procedures, approximations to the distribution of the corresponding test statistics have been obtained and their accuracy tested numerically on electronic computers.

5. *Planning and Econometrics* : Long term changes in the national income of India since 1871, intertemporal comparisons of consumer prices and levels of living by the method of Mahalanobis fractile graphical analysis, industrial productivity and unutilized industrial capacity are some of the problems investigated.

6. *Agricultural Science* : Experiments were conducted in mixed cropping using different varieties of rice, wheat and gram etc. It was found that the total yield under mixed cropping is considerably more than under monoculture.

Experiments were also conducted on the relationship between yield and characteristics of a plant such as clockwise and counter clockwise twining, or right and left-handed foliar spiral on the stem. It is found that clockwise moving plants yield 30% more than those moving counter clockwise. In the case of the foliar spiral, the association between yield and left- or right-handedness was found to be positive in some species and negative in some others.

7. *Embryology* : Further light has been shed on problems of embryonic information transfer in the pond snail by studying  $p^{32}$ -incorporation pattern, action of actinomycin and the profiles of sucrose density gradient of RNA. The results suggest two interesting possibilities. First, that an early messenger is responsible for final development and hatching; second, transcription (at the DNA-mRNA level) of major organs takes place in an outburst of 10-12S RNA which is translated much later, thereby indicating that the key problem of differentiation does not at all lie at the transcription level.

8. *Biometry* : The utilisation of health services according to age, sex and diagnosis has been examined by multiple discriminant analysis.

It has been found that a number of blood chemistry and haematological measurements change significantly with age, some in a linear and others in a curvilinear manner. The ages at which the measurements with age reach their maximum or minimum values have also been identified. By age, they are : thirty calcium; forty, amylase activity, uric acid, leukocytes; fifty, calcium, cholesterol, total protein; sixty, neutrophils and eosinophils.

For the first time, amylase components in human blood have been investigated by agar electrophoresis in a large number of subjects sampled according to age group.

The hypothesis that tissue amylase is solely determined by heredity has been rejected in an experiment on postembryonic Indian carp during the first two weeks of life.

9. *Geology* : The integrated programme of research was continued on pre-Gondwana, Gondwana and post-Gondwana rocks and associated fauna and flora in the Pranhita-Godavari valley.

10. *Demography* : Problems of growth of urban population, estimation of birth and death rates and pressure of population with special reference to West Bengal have been considered.

11. *Psychometry* : Contributions were made to the methodology for measuring the psycho-logical meaning of nouns and adjectives, which is of interest in cross-cultural research, mass communications, and clinical and social psychology.

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Further progress has been made in the development of educational tests. Chatterji's Non-language Preference Record, developed at the Institute, is being widely used by research workers and vocational guidance bureaus in India and abroad.

12. *Sociology* : A critical study was made of the diachronic and synchronic aspects of social change. A pilot study was undertaken of tenant-families in Calcutta.

13. *Documentation Research* : Work was continued on the structure and development of universe of subjects, classification and cataloguing.

ADDRESSES BY SIR HARRY CAMPION, Kt. C.B., C.B.E.

#### PATTERNS OF DEVELOPMENT OF ECONOMIC AND SOCIAL STATISTICS

I should like first—if you will allow me—to thank Professor Mahalanobis and Dr. Rao and the officials of the Institute for inviting me here and for giving me the pleasure of speaking to you. This is the first opportunity I have had of seeing on the spot the work of the Institute. Like many others, I have followed from afar with admiration the growth of the activities of the Institute over the years and the contributions it has made to the development of statistical techniques. As an immediate past President of the International Statistical Institute until a few months ago, I can ascribe to the status and to the deep respect with which the Indian Statistical Institute is regarded throughout the world. Because of this, it gives me the more pleasure in being present at this Convocation which marks for many of you, who have taken courses here, an important stage in your careers.

The crest of your Institute bears the words "Unity in Diversity"—that the same corpus of statistical methods and techniques can be used in so many diverse fields. This does not mean that all the range of techniques are equally important in their application to different forms of enquiry. Taking a census of populations raises some problems not faced in measuring variations in crop yields on an experimental farm and vice versa. The essential unity however of the corpus of statistical methods has been of immense benefit to the development of economic and social statistics about which I will later speak more fully and to the fact that those concerned with them benefit from the techniques which have already proved useful in genetics, agriculture and other fields.

But this unity is not something which will occur henceforward automatically and without conscious effort to ensure it. Now that the range of statistical applications is widening so fast in so many countries and in so many subject fields—in all there must be now thousands of persons engaged in statistical work—deliberate action to exchange statistical experience between different subject fields and between different countries needs to be encouraged. In this task your Institute plays an important role for India in the same way as the Royal Statistical Society does in London and the International Statistical Institute does collectively for statisticians throughout the world. It is against this background that I should like to speak about the development of economic and social statistics.

Some economic statistics have a long history in many countries since figures of population, industrial and agricultural output, employment, wholesale and retail prices, imports and exports, have become indispensable to those responsible for conducting the economic affairs of their countries. The United Nations, and particularly the Conference of Asian Statisticians, have attempted to build up such a consolidated list of basic economic statistics

## INDIAN STATISTICAL INSTITUTE

which developing countries ought to have and the United Nations and the Specialised Agencies have supplemented this by technical manuals on accepted methods of compiling these statistics.

But in many countries the pattern of development of their economic statistics has gone beyond such a basic list. It is true that in compiling the basic series there are difficult technical problems still to be tackled (the choice of fixed or moving weights and corrections for quality changes in price index numbers, use of sampling and computer techniques in compiling important and export statistics, use of spectral analysis in making seasonal adjustments to time series). Once, however, the most essential items in the list are started, then it becomes obvious that some series are more important in one country than another and that development of a statistical system of a country must be influenced by the nature of the domestic economy and also by the kind of economic policies the country is, or is intending to, follow. It is only to be expected that Malaysia has good statistics about rubber, Mauritius about sugar and Switzerland about hotels.

The kind of economic system being operated in a country might appear to exert a powerful influence on the statistics collected and the frequency they are obtained. In detail it does, but in the main, the differences in the range of statistics between countries are not so great as might be expected. Where the size of the public sector is large and more is controlled directly by the State, say in a Soviet type of system, the Government Statistical Services have to collect and analyse data in great detail. But in an opposite type of system, where the public sector is small, many of the same kind of detailed statistics are collected by firms in private industry themselves and summaries provided to the Governments. The net total of statistics collected between countries with different systems is not so divergent. The differences are in the organisational structure for collecting the statistics.

A significant change in the pattern of economic statistics came perhaps about 25 years ago with the recognition that this piecemeal development of different kinds of statistics was unsatisfactory and there was a need, irrespective of the size of the public and private sectors, for an integrated and interlocking system for the collection of economic statistics which would make them easier to fit together to show changes in the size of a country's national income and its components. This need was the counterpart of the thinking of economists and Governments that in considering the schemes or plans for economic and social development they should continually have before them analyses of how the economy of the country was progressing year by year and of measurements of the flow and use of resources. The traditional analyses of economic statistics (output, prices and trade) needed to be re-examined to see how far they could be fitted together into an articulated system. The efforts to work out what such a system might be was reflected in writings in many countries in the 1940s and 1950s on "social accounting," "macro-economics," "material balances," all using the so-called national income approach. The first international model for a system of national accounts was issued, by the United Nations, in 1954.

Although the concept of a national income approach is simple and is still simple, in practice the system of national accounts can be pulled out into quite elaborate models which are too sophisticated for all purposes in one country and too complex to be useful equally for advanced and for developing countries. On the whole, the first international system of national accounts has stood up well in use but in retrospect it can now be seen to be influenced too much by the economic conditions prevailing the years following the Second World War and the system has now to be extended in three major directions.

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The first extension arose from the experience of users of the national income approach in considering plans for economic and social development of different countries. The use of the first national income and expenditure tables had been expository—to show the magnitudes of various factors affecting national income (capital formation, personal consumption, balance of payments) and to assess the current performance of the economy. The national income approach has now been used in simulating models for future economic development and this use in turn meant some recasting of individual tables into more useful designs.

The second extension arose from the need to make use of the work on input/output studies which had been developing separately and to incorporate them into the pattern of national income accounting.

Thirdly, most of the discussion about the form of national income tables took place in the nineteen forties when perhaps more emphasis was placed on the uses of physical material resources than on the financial flows needed to make these resources available. Work on the size and directions of these financial flows has gathered pace since then and there is now general agreement on standard forms both for flow of funds tables, as well as on input/output studies. During the last five years, statisticians in Asia, Africa, America and Europe have been holding meetings to exchange ideas in how the three systems—national income and expenditure accounts, input/output studies and flow of funds tables—can be brought together into a single system and an international scheme to do this has now been prepared.

All these designs for a new framework for the development of economic statistics exert a powerful unifying influence in the pattern of the collection and analysis of economic statistics but let me give a warning. These designs rest on the assumption that the basic data are collected and are there to be fitted together. It is unfortunately easier to produce apparently consistent estimates of national income and expenditure when there are still serious gaps in the basic statistics and the estimates prepared only paper over these deficiencies.

What the designs do however is to point out where the deficiencies are and to lead to a reappraisal of existing methods of collection and analyses—common base periods for index numbers, industrial and economic classifications, definitions of units (establishments and farms). For example, indices of wholesale prices must be looked at to see whether the industrial sectors for which these are prepared are suitable for input/output studies. Is an industrial classification used in a census population suitable also for a census of industry and for preparing analyses of profits and capital expenditure? Information on each subject, say industrial output to be obtained from short period returns from industry, must be considered together and steps taken to ensure they are comparable in scope and definition.

So far I have spoken mainly of economic statistics rather than those for social statistics. A similar kind of framework as proposed for economic statistics is not easy to create for social statistics. Some key social statistics can be obtained from the working of social security schemes but in many countries there are few State schemes for social security and in any case the statistics derived from these schemes are particularly affected in scope and definition by the form of the social security schemes in operation.

The same initial kind of approach, therefore, has been suggested for social statistics as for economic statistics, namely to attempt to build up a basic list of social statistics which a country might seek to have. For items for inclusion in this list, an examination has to be made of those indicators which might be regarded as being the more important in measuring



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the changes in the standard of living (mortality rates, literacy, education, health, food expenditure) and to seek to obtain data for compiling these indicators. Sample surveys have proved successful in collecting data on some of these characteristics from households and such surveys have the advantage of getting data which can immediately be related with each other, something which has not been possible hitherto with data obtained from institutional sources.

There is now a move in many countries to improve the scope of social statistics which are perhaps in the same stage of development as economic statistics were 20 or 30 years ago. Two promising directions to make progress have been urged. The first is to start more so-called "cohort studies" and "longitudinal studies" by which the social experience of the same groups of individuals are kept under review from year to year. (Essentially this is somewhat similar to the "generation techniques" used in measuring improvements in mortality and morbidity experience of successive generations). It will be readily realised that difficult sampling and other technical problems are involved in undertaking these kind of studies. The second direction is to try and remedy the weakness of data obtained from institutional sources such as social security schemes, by using computer techniques to transfer data for the same persons from different sources into one data bank whence comparable data for the same persons can be drawn for analyses. This again raises problems of confidentiality of records, choice and criteria for common numbering systems, and of techniques of automatic editing and computation.

These kinds of developments in social statistics as those I mentioned earlier for economic statistics cannot be achieved without there being organisations and trained staff to carry them through. They raise important considerations for statisticians themselves—

- (a) the first is perhaps obvious, namely that the character of statistical work is becoming more technical and it must be done by persons familiar with the latest technical techniques. The days in this field are over for the gifted amateur and are now passed to the gifted professional.
- (b) since by now many statistics are obtained, not as a by-product of administration over which the statistician had little control but from statistical investigations planned as such from beginning to end, then the practical job of an economic or social statistician is not only to give mathematical advice say on sampling but to be able to conduct and supervise the statistical investigations from the start right up to the tabulation of final results. The statistician has become both an engineer and an architect.
- (c) the third and perhaps the most significant change arises from the fact that the kind of statistics now being dealt with are more sophisticated in content and the techniques employed are more elaborate. The statistician who supervises the collection of the data is the person most aware of the limitations to be placed on the results. He must be prepared, therefore, to do more than interpreting the results obtained and to counsel those who use his findings.

But there is one other change in the pattern of development which is taking place and many eventually affect profoundly the work of the statistician in economic and social statistics. The emphasis so far in many countries as I have mentioned, has been in analysing how the economy is progressing and in assessing the range of possibilities of suggested changes in economic and social policies. When this stage has been reached, the emphasis is moving now to using statistical techniques in the managerial and executive functions in putting

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such policies into effect. Just as Professor Mahalanobis has spoken of statistics as the new technology, so ideas are put forward of statistics forming a new and powerful arm of the Government service. Their aim is to bring into the service of the Government—no less than in private industry and trade—the full range of statistical techniques which have been developed—sampling, operational research, econometrics, computer techniques, cost effectiveness and systems analysis.

This is appropriately the point for me to end this address for it has brought me back to what I stressed in my opening remarks about the relationship between economic and social statistics and work in other branches of statistics. I hope the new and stimulating developments taking place in economic and social statistics will in their turn feed back methods and techniques which will be of value in other fields of statistical enquiry. In some countries the banyan tree, which is also on the crest of your Institute, does not grow so well as in India.

#### ADDRESS BY NATIONAL PROFESSOR S. N. BOSE, F.R.S.

Sir Harry Campion, Professor Mahalanobis, Mr. Dutt, Ladies and Gentlemen :

Professor Mahalanobis in his speech has referred to my early association with the Institute, this has thrown me into a reminiscent mood. In 1946, the Institute was really a tiny affair, and one could hope, even without experience, one would be able to manage the affairs of the Institute, as it was then. After twenty years, here in this Convocation, I see how wide has become its activities; how the smiling little child out of the brains of Professor Mahalanobis has grown; and how the young sapling has become verily a big banyan tree.

In one sense, birds of all feathers do come and find their nest here. I am not sure if we are able to provide them with all they need in this present age; the fruits of the banyan tree are almost microscopic. However, this is what India can offer.

I do not know whether one can prove that there is an eternal order of things. The order changes. Whether statistics can give us results which would make us wise enough to steer the boat clear of the rocks, is also a problem. We have problem of indeterminism in physics; if you want to get a measurement very accurately, then you have to take a very long time to do it, by which time much change has taken place. If statistics is required for a sudden crucial problem which faces the nation, we may be ready with our results only after crisis has been over. Therefore, statistics may be excellent as a science, but may not be a helpmate of the statesman, in the sense of someone whom the statesman wants to be by his side, who will be able to see clearly and help in steering the ship of state through rough seas, and who will foresee the dawn even at the dead of night.

Sir Harry Campion has mentioned such things when speaking about the implications of statistics, and its various applications to problems in social sciences. He also referred to the electronic computer. This computer is something really wonderful, which may, perhaps, help in saving humanity from utter destruction. I have recently read that it may make all the difference, if one can know five or ten minutes earlier, whether the enemy is coming with the atom bomb, and whether one can take counter-measures in the nick of time. Whether statistics, in the same way, can be used in certain vital problems of our country, yet remains to

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\*Professor S. N. Bose, who is a former Vice Chancellor of Visva Bharati, the University founded by Rabindranath Tagore, probably had in his mind the motto of Visva Bharati : "yatra viavam bhavatyeknidam". A free translation would be : "where the whole world comes together in one single nest". The Sanskrit verse is from Atharva-veda, and was given in reply to a question, "Where is the location of civilisation ?"

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be seen; whether, instead of total enumeration, a sample survey would help the State to make rapid decisions, also still remains a kind of open question.

However, the very real progress that we have made encourages the Institute to think that to be always striving and not to remain at rest, to be always thinking on new problems and new solutions, is a very desirable and most pursuit for the industry of men although, whether a particular nation would endure and continue to progress may be doubtful. Even a sample study would show that the enduring survival of a nation has not so far happened in history; all great nations have disappeared; even the super-giants of yesterday are now reduced to pygmies.

Also, I do not know whether out of this flux and out of the rise and fall of empires, anything would arise which would be a mark of continuing progress, like the arrow of time, or whether humanity, in spite of the vanishing of empires and of different ways of life and philosophies would, from day to day, acquire some kind of a better vision into deeper realities. I do not mean deeper realities which lie beyond the curtain; I mean the deeper realities in which we as mortals have to move, and with which we have to deal and live. Unfortunately, we still do not seem to have the ability to see deep enough. Often we only see the window-dressings, and have to judge from the magnificent facades of our own makings.

However, here at this Convocation, looking at the young men that marched past me, I feel that at least we have been striving to do something worth while in Asia in bringing together men who had long lost touch with one another. This Statistical Institute has, at any rate, brought people together, not only from different states of India, or from different countries of Asia, but also Africa and other countries. If, in future, the Indian Statistical Institute can continue its activities in the same way as it has done for the last twenty years, it would attract, in larger numbers, people of different denominations, nationalities and cultures; and when these people go back to their own fields, and to their own country, they would remember this Institute as a place where they had worked out, at least for the time being, a real exercise in comradeship and goodwill.

Scientists, philosophers and men of many professions, and statesmen; also Russians, Americans, and men of many nationalities, have come to this Institute, and have seen and marvelled how could India have such vitality to produce this Indian Statistical Institute? Well, of course, they know the answer, that Professor Mahalanobis has been not only at the centre of the Institute but, like the orbiting electron, he is always moving round and collecting information and experience, and also gathering scientists, experts and advisers from all over the world. In the nucleus itself we lie, huddled together, and we benefit.

In this way this Institute has grown, which Sir Harry, you have seen and you must have also realised that we still have very much more to do. First of all, we have to convince Government that what we have been doing by way of research has not been waste of resources. Although such research may not produce immediately five blades of grass instead of one, but it will produce, in the long run, a rich harvest of results which millions of people in the world would consider to be of great value. We are taking good care to publish papers of high quality. We are also helping Government, whenever Government ask for our help which is wise, because we know that advice given unasked are very often unheeded.

In this Institute, at the Sixth Convocation, we have met today, and we have very good, very real reasons to be proud. Our buildings are coming up where there was wilderness, and students are coming here in large numbers. We have been able to impress on them

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that to understand one another is good; the policy of 'give and take' is of value; and when after a time they depart from the Institute, they go back wiser and with their vision much wider and deeper about reality.

Surely, this Institute will continue to grow in spite of recent criticisms and, between the Institute's Council and the Government, a way will be found to convince the Government that we are really doing worthwhile work not only for the Government but for science and for mankind.

#### VOTE OF THANKS BY PROFESSOR S. K. ROY

National Professor Satyendra Nath Bose, Sir Harry Campion, Professor Mahalanobis, Honoured Guests, Colleagues and Students :

It is my special privilege, a pleasant task and an honoured duty today to propose a vote of thanks.

First of all I would like, on behalf of the Indian Statistical Institute, to extend our most sincere thanks to you, Sir Harry, for your interesting and stimulating speech. We have been greatly honoured by your presence and highly inspired by your speech.

We are indeed very happy to have our President, National Professor Satyendra Nath Bose, as the President of the Sixth Annual Convocation. We are very grateful to you, Sir, for conducting the Convocation function and for your inspiring address.

I would like to express our gratitude to Professor Mahalanobis. Professor, your address will act as a source of stimulation to all the candidates who received their degrees, diplomas and certificates and as a source of guidance to the workers of the Institute.

I have the responsibility to extend our sincere thanks to our Vice-Chairman, Shri S. Dutt, for readily agreeing to welcome our guests. I thank you, Sir, for your spontaneous response and help.

I should like to extend our most sincere thanks to the Director, Research and Training School, Professor C. R. Rao, for his guidance in organising this Convocation and for presenting the Annual Review of Research and Training.

I should like to extend our sincere thanks to Mrs. Mahalanobis for her help in decorating the Convocation site by personal supervision, in spite of her ill health. This charming decoration is the result of efforts and imagination of Mrs. Mahalanobis. I thank you, Madam, for your help.

Contributions of many workers which are responsible for the success in organising such a ceremony like the present Convocation generally remain unknown. I should like to extend our most sincere thanks to the staff members of the Research and Training School, the Estate Office, the volunteers, the research scholars and our students for their untiring work, active help and spontaneous cooperation in making this Sixth Annual Convocation a success.

In the traffic situation prevailing at present in Calcutta it is not always comfortable or pleasant to move. In spite of that our guests have come here from different parts of the city—near and far—to encourage us by their presence sacrificing their own commitments of a working day. To our guests I, therefore, extend our most sincere thanks and express our deep appreciation.

I thank you all, Ladies and Gentlemen, once again.

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List of Candidates awarded Degrees, Diplomas and Certificates at the  
Sixth Annual Convocation, 12 February, 1968

I. DOCTOR OF PHILOSOPHY

(The subject of the thesis is mentioned after the name of each candidate)

1. Ram Prakash Gupta, M.Sc. (Statistics, Agra) : *Studies in the theory of graphs.*
2. Thirymbakam Krishnan, M.A. (Mathematics, Madras), M. Stat. (ISI) : *Threshold order of a switching function and stochastic dependence of inputs.*
3. Thirukkannamangai Echambadi Srinivasa Raghavan, M. Sc. (Statistics, Madras) : *Extension of the theory of positive operators and their relationship to minimax games.*
4. Chilakamarri Ramanujacharyulu, M.Sc. (Statistics, Ormanja) : *Solution of some balanced doubly balanced and partially balanced designs.*

II. MASTER OF STATISTICS

M.Stat. by Examination : 1964-66

(i) *Subject of Specialisation : Statistical Quality Control and Allied Techniques*

1. Madan Lal Mittal, B.Stat. (ISI)

1965-66

(i) *Subject of Specialisation : Computer Science*

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|---|--|
| 1. Yash Paul Aneja, B.Stat. (ISI)               | 6. Kripasindhu Sikdar, B.Stat. (ISI)           |
| 2. Puvvala Ravindra Kumar, B.Sc. (Andhra)       | 7. Kunchithapatham Thisgarran, B.Sc. (Madras). |
| 3. Gopal Krishnan, B.A. (Delhi)                 | 8. Ramachandra Venkataraman, B.A. (Delli)      |
| 4. Kumbakanam Srinivasa Narayanan B.Stat. (ISI) | 9. Narsimhadevatra Vijayaditya, B.Stat (ISI)   |
| 5. Kamalash Sharma, B.Stat. (ISI)               |  |

(ii) *Subject of Specialisation : Demography*

1. Gogulapati Ramakrishna, B.Stat. (ISI)

(iii) *Subject of Specialisation : Econometrics and Planning*

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| 1. Ganesh Chandra Das, B.A. (Calcutta)   | 4. Vinod Kumar Jain, B.Stat (ISI)      |
| 2. Prabhat Prasad Ghosh, B.Stat. (ISI)   | 5. Ramesh Chander Kumar, B.Stat. (ISI) |
| 3. Subhash Chander Gulati, B.Stat. (ISI) | 6. Samir Kumar Majumdar, B.Stat. (ISI) |

(iv) *Subject of Specialisation : Mathematical Statistics and Advanced Probability*

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|----------------------------------|------------------------------------|
| 1. Arumod Kumar, B.Sc. (Lucknow) | 2. Sukhamay Kundu, B.Sc. (Burdwan) |
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(v) *Subject of Specialisation : Operations Research*

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|---|--|
| 1. Nerasimha Ranganatha Aohuthan,<br>B.A. (Delhi) | 2. Tirukkattoppelli Subramanian<br>Arthanari, B.Sc. (Madras) |
| 3. Himansu Chandra Kar, B.Sc. (Utkal)             |  |

(vi) *Subject of Specialisation : Statistical Quality Control and Allied Techniques*

- |   |  |
|---|--|
| 1. Asit Kumar Banerjee, B.Stat. (ISI)                     | 8. Mohammed Hamid Moosa, B.Stat. (ISI)                 |
| 2. Pranab Kumar Basu, B. Stat. (ISI)                      | 9. Raja Nagarajan, B.Sc. (Madras)                      |
| 3. Basudev Ghosh, B.Stat. (ISI)                           | 10. Appa Rao, B.Stat. (ISI)                            |
| 4. Nirmaleudu Goswami, B.Stat. (ISI)                      | 11. Komaravolu Surya Prakasa Rao<br>B.A. (Andhra)      |
| 5. Jeshav Chander Gupta, B.Stat. (ISI)                    | 12. Sukalyan Sengupta, B.Stat (ISI)                    |
| 6. Jagdish Chandra Guria, B.Stat. (ISI)                   | 13. Subramanian Sankara Subramanian,<br>B.Sc. (Madras) |
| 7. Palamadai Rajagopalan<br>Lakshminathan, B.Sc. (Madras) |  |

*M.Stat. by Thesis : 1968-67*

*(The subject of the thesis is mentioned after the name of each candidate)*

1. Raghunath Shankar Abhyankar, B.Sc. (Poona); Statistician's Diploma, (ISI) : *Size distribution of firms and business concentration.*
2. Samir Guha Roy, M.Sc. (Mathematics, Calcutta); Statistician's Diploma, ISI : *A Statistical study of the desert locust — a pest of economic importance.*
3. Titus Jacob, B.Sc. (Kerala); Statistician's Diploma (ISI) : *Study of response functions in milk production and economics of feeding dairy cattle.*
4. Krishnamurthi Rameshchandra, B.Sc. (Madras); 3-year ISI training : *Some aspects of the planning and analysis of retrospective studies of disease etiology.*

III. BACHELOR OF STATISTICS : 1966-67

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|-----------------------------------|--------------------------------------|
| 1. Dhirendra Nath Basak           | 11. Gurdarshan Singh Grewal          |
| 2. Pochiraju Bhimesankaram        | 12. Shyam Sunder Handa               |
| 3. Gurupada Chakraborty           | 13. Raj Kumar Jain                   |
| 4. Rajajit Chakraborty            | 14. Anil Kumar Manchanda             |
| 5. Arun Kumar Chaudhuri           | 15. Tapan Krishna Mukhopadhyay       |
| 6. Bedri Narayan Das              | 16. Tapan Kumar Pachal               |
| 7. Sabyasachi Dasgupta            | 17. Dabeeru Chandrasekhara Rao       |
| 8. Harshadray Bhavanishankar Dave | 18. Mullapudi Surya Venkateswara Rao |
| 9. Yogesh Laxman Deshpande        | 19. Sailendra Kumar Saha             |
| 10. Ramesh Chander Goel           | 20. Gopal Chandra Shome              |

21. Ramanathan Subramanian

IV DIPLOMA IN APPLIED STATISTICS

A. *Diploma in Computer Science : 1968-67*

1. Anand Kumar Jain, -M.A. (Delhi)
2. Satish Prakash Katyaj, M.A. (Delhi)
3. Polamreddy Naragopal Reddy, M.A. (Andhra)

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B. *Diploma in Demography* : 1966-67

1. Shofali Chakraborty, M.Sc. (Patna)
2. Inderjit Kundra, M.A. (Punjab)
3. Ved Parkash Rustagi, M.A. (Delhi)
4. Anirudha Sengupta, M.Sc. (Calcutta)

C. *Diploma in Econometrics and Planning* : 1966-67

1. Boggareem Vankata Vani Hanumant Bhujaaga Prasad Rao, M.A. (Andhra)
2. Dodia Sai Prasad Rao, M.A. (Andhra)

D. *Diploma in Statistical Quality Control* : 1966-67

1. Dilip Kumar Adhikari, A.M.I.E. (Mech., Institution of Engineers)
2. Siddappa Hansamantappa Dambal, B.E. (Mech., Karnatak)
3. Pravinchandra Koochavial Ganatra, M.Sc. (Stat., Bombay)
4. Ratan Kumar Ganguly, B.M.E. (Jadavpur)
5. Badri Narayan Ghosh, A.M.I.E. (Mech., Institution of Engineers)
6. Krishna Prasad Ghosh, B.M.E. (Jadavpur)
7. Ram Gopal Gupta, M.A. (OR, Delhi)
8. Ravendra Swarup Jaubari, A.M.I.E. (Mech., Institution of Engineers)
9. Bathigopal Madangopal, M.Sc. (Stat., Annamalai)
10. M. John Mathai, B.Sc. (Engg., Mech., Kerala)
11. Siddangouda Ayyanagouda Biradar Patil, B.E. (Mech., Karnatak)
12. Shiva Kumar Rai, M.Sc. (Patna) & M.A. (B.H.U.)
13. Yeramilli Surya Prakasa Rao, B.E. (Mech., Andhra)
14. Sanat Kumar Roy, A.M.I.I.M. (Indian Institute of Metals)
15. Bhupal Chandra Sen Sharma, A.M.I.E. (Institution of Engineers)
16. Subhash Chandra Talukdar, B.M.E. (Jadavpur)
17. Sobrahmanyam Venkataraman, B.E. (Elect., Osmania)

V. ASSOCIATESHIP IN DOCUMENTATION RESEARCH AND TRAINING : 1965-66

1. Meghashyam Govind Bhide
2. Ajit Kumar Chakraborti
3. Soma Chithranganea Goonetilleke
4. Subhas Chandra Mukherjee
5. Varikolil Karashma Gopinathan Nair
6. Kundur Nadigere Vasudeva Rao
7. Pallavur Viswanatha Sivarama Subramanian
8. Raj Pal Wasan

VI. STATISTICIAN'S DIPLOMA AND PUNCHED CARD DATA PROCESSING DIPLOMA

A. *Statistician's Diploma* : 1967

1. Shankar Kumar Roy, B.Sc. (Calcutta)
2. Shyamal Kumar Sen, B.Sc. (Calcutta)
3. Narendra Nath Singh

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B. Punched Card Data Processing Diploma : 1987

1. Tirunelveli Sankugasundaram Veliah, B.Sc. (Madras)

VII. CERTIFICATES TO TRAINEES AT THE INTERNATIONAL STATISTICAL EDUCATION  
CENTRE, TWENTYFIRST TERM : 1987-88

*Afghanistan*

1. Abdul Latif Nabizada, *Ministry of Commerce, Kabul.*
2. Najaf Ali Borhan, *Ministry of Commerce, Kabul.*

*Ceylon*

3. Cyril Edmund Sastreakalinghe, *Department of Census and Statistics, Colombo.*
4. Kanapathipillai Chinniah Nagalingam, *Department of Census and Statistics, Colombo.*
5. Lobukankana Edwin Ariyasena Peiris, *Department of Census and Statistics, Colombo.*
6. Samuel Thursalingham Raasanayagam, *Department of Census and Statistics, Colombo*
7. Karunagarar Kandiah Mahalingam, *Department of Census and Statistics, Colombo,*

*Hongkong*

8. Chung Ting Bin, *Department of Census and Statistics, Hongkong.*

*India*

9. Mandayam Anandampillai Srinivasan, *Ministry of Defence, Indian Air Force, New Delhi.*
10. Omkar Nath Bhargava, *Ministry of Defence, Indian Air Force, New Delhi.*

*Indonesia*

11. Mohamad Sirodjuddin Jusuf, *Central Bureau of Statistics, Djakarta.*
12. Toto Sugito Nitipawiro, *Central Bureau of Statistics, Djakarta.*
13. Nasam Basuki, *Central Bureau of Statistics, Djakarta.*
14. Sampurno Prodjowardojo, *Central Bureau of Statistics, Djakarta.*
15. Nursalim Sudjati Sujatnoto, *Central Bureau of Statistics, Djakarta.*
16. Sahibul Pasaribu, *Central Bureau of Statistics, Djakarta.*

*Japan*

17. Toshikazu, Kato, *Customs Bureau, Ministry of Finance, Japan.*

*Kenya*

18. Eldad Kyobe Gotto, *East African Common Services Organisation, Statistical Section, Nairobi.*

*Nepal*

19. Dibya Ratna Tamrakar, *Ministry of Education, Kathmandu.*
20. Mandira Pradhan, *Ministry of Education, Kathmandu.*

*Nigeria*

21. Bassey Anwanadong Ukob, *Federal Office of Statistics, Lagos.*



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### Philippines

22. Silverio Camanga Dayyo, *Bureau of Agricultural Economics, Department of Agriculture and Natural Resources, Quezon City.*
23. Amador Funtilla, *National Economic Council, Manila.*
24. Carolina Navarette Bayani, *Joint Legislative Executive Tax Commission, Intramuros, Manila.*

### Thailand

25. Wicharn Karnjanapukdekl, *National Statistical Office, Bangkok.*
26. Paiboon Kasanyuwong, *National Statistical Office, Bangkok.*
27. Suree Krishnachuta, *Meteorological Department, Bangkok.*

### Vietnam

28. Bui Van Bay, *Ministry of Veterans Affairs, Saigon.*
29. Tran Anh Minh, *Department of Agricultural Economics and Statistics Services, Ministry of Agriculture, Saigon.*
30. Le Van Nang, *Department of Agricultural Economics and Statistics Services, Ministry of Agriculture, Saigon.*

## Annexure 5 : List of Scientific Papers

### 5.1. PAPERS PUBLISHED

#### A. Statistics

- P1. ADHIKARI, A. K. (1967) : Simulation of queuing problems, *Operarch*, 4, 49-60.
- P2. BASU, D. (1967) : Problems relating to existence of maximal and minimal elements in some families of statistics (sub-fields), *Proc. 5th Berkeley Symp.*
- P3. KRISHNAMURTHY, E. V. (with Nandi, S. K.) (1967) : A simple technique for digital division, *Comm. ACM.*, 10, 5, 299-301.
- P4. ——— (with Nandi, S. K.) (1967) : On the normalization requirement to divisor in divide and correct methods, *Comm. ACM.*, 10, 12, 809-813.
- P5. KRISHNAN, M. (1967) : The noncentral bivariate chi distribution, *SIAM Review*. 9, 708-714.
- P6. ——— (1967) : The moments of a doubly non-central *t*-distribution, *J. A. Stat. Assn.*, 62, 278-287.
- P7. MAHALANOBIS, P. C. (1967) : Quality control for economic growth, *Sankhyā*, sr.B, 29, 191-200.
- P8. MITRA, S. K. (1968) : On a generalised inverse of a matrix with applications, *Sankhyā*, sr.A, 30, 107-114.
- P9. MURPHY, M. N. (1968) : A note on the estimation of variance components in multistage sampling based on interpenetrating sub-samples, *Metrika*, 13, 98-103.
- (P2) NANDI, S. K. (with Krishnamurthy, E. V.) (1967) : A simple technique for digital division, *Com. ACM.*, 10, 5, 229-301.
- (P4) ——— (with Krishnamurthy, E. V.) (1967) : On the normalization requirement to divisor in divide and correct methods, *Comm. ACM.*, 10, 12, 809-813.

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- P10. NATARAJAN, S. (with Raghavan T. E. S., and Viswanath, K.) (1967) : On stochastic matrices and kernels. *Teoriya Veroyat i ee primen*, 12, 337-342.
- P11. ——— (with Viswanath, K.) (1967) : Quaternionic representation of compact metric groups. *Jour. Math. Phys.*, 8, 582-589.
- P12. ——— (with Viswanath, K.) (1967) : On weakly stable transformation, *Sankhyā, sr.A*, 245-258.
- P13. PATHAK, P. K. (with Rao, T. J.) (1967) : Inadmissibility of customary estimators in sampling over two occasions, *Sankhyā, sr.A*, 29, 49-54.
- P14. ——— (1967) : A asymptotic efficiency of Des Raj's strategy-I, *Sankhyā, sr. A*, 29, 283-293.
- P15. ——— (1967) : Asymptotic efficiency of the symmetrized Des Raj's strategy-II, *Sankhyā, sr. A*, 29, 299-304.
- P16. Paul, E. M. (1967) : Some properties of additive arithmetical functions, *Sankhyā, sr. A*, 29, 279-282.
- (P10) RAGHAVAN, T. E. S. (with Natarajan, S. and Viswanath, K.) (1967) : On stochastic matrices and kernels. *Teoriya Veroyat i ee primen*, 12, 337-342.
- P17. RAO, C. R. (1967) : Calculus of generalized inverses of matrices : Part I—general theory, *Sankhyā, sr. A*, 29, 317-350.
- P18. ——— (1967) : Least squares theory using an estimated dispersion matrix and its application to measurement of signals, *Proc. Fifth Berkeley Symp. Math. Statisti. Prob.* (1965), Part I, 365-372, University of California Press.
- P19. ——— (1967) : Covariance adjustment and related problems in multivariate analysis. *Multivariate Analysis*, 87-103, Ed. Krishnaiah, P. R. Academic Press, Inc., New York.
- P20. ——— (1967) : Discrimination among groups and assigning new individuals. *The Role of Methodology of Classification in Psychiatry and Psychopathology*, 229-240, U. S. Department of Health, Education and Welfare, Public Health Service.
- P21. RAO, T. J. (1968) : On the allocation of sample size in stratified sampling, *Ann. Inst. Stat. Math.*, 20, 159-166.
- P22. ——— (1967) : On the choice of a strategy for the ratio method of estimation, *Jour. Roy. Stat. Stat. Soc.*, sr. B, 29, 2, 392-397.
- (P13) RAO, T. J. (with Pathak, P. K.) (1967) : Inadmissibility of customary estimators in sampling over two occasions, *Sankhyā, sr. A*, 29, 49-54.
- P23. SNAH, K. R. (1967) : Uniformly better combined estimators in factorial arrangements with confounding, *Jour. Amer. Stat. Assn.*, 62, 318, 638-642.
- P24. SINGH, M. P. (1967) ; The relative efficiency of some two-phase sampling schemes; *Ann. Math. Stat.*, 38, 3, 937-940.
- P25. ——— (1967) : Ratio cum product method of estimation; *Metrika*, 12, 34-42.
- P26. ——— (1967) ; Multi-variate product method of estimation for finite populations; *Jour. Ind. Soc. Agr. Stat.* 19, 2, 1-10.
- (P10) VISWANATH, K. (with Natarajan, S and Raghavan, T. E. S.) (1967) : On stochastic matrices and kernels, *Teoriya Veroyat i ee primen*, 12, 337-342.

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- (P11) VISWANATH, K. (with Natarajan, S.) (1967): Quaternionic representation of compact metric groups, *Jour. Math. Phys.*, 8, 582-589.
- (P12) ——— (with Natarajan, S.) (1967): On weakly stable transformation, *Sankhyā*, A, 29, 245-268.

B. Anthropometry

- P27. CHAKRAVARTI, M. R. (1967): A statistical appraisal on the relationship between non-ABO blood group system and various diseases, *Humangenetik*, 6, I, 1-17.
- P28. ——— (1967): ABO blood groups and small-pox in a rural population of West Bengal (India), *Act-Crim. Japan*, 33(3), 112-116
- P29. ——— (with Vogel, F.) (1967): Relation between incidence of small-pox and the OAB system of blood groups. *Jour. Indian. Anthropol. Soc.* 1, 119-128.
- P30. MUKHERJEE, B. (with Chaudhuri, S., Ghosh, J., and Roychowdhury, A. K.) (1967): Blood groups of the Chinese in Calcutta, *Nature*, 213, 5082, 1245
- P31. ——— (with Chaudhuri, S., Ghosh, J. and Roychowdhury, A. K.) (1967): Study of blood groups and haemoglobin variants among the Santal Tribes in Midnapore District of West Bengal, *India Am. J. Phys. Anthropol.*, 26, 3, 307-322.
- P32. MUKHERJEE, B. (with Chaudhuri, S., Roychowdhury, A. K. and Ghosh, J.) (1967): Study of blood groups and haemoglobin variants of the Sikhs in Calcutta. *Jour. Heredity*, 38, 213-214.
- P33. PARRAST, K. (1967): Occupation, class, migration and family structure among the refugees of West Bengal, 1947-48, *Men in India (Ranchi)*, 47, 3, 200-213.
- P34. ——— (1967): On certain social issues relevant to family planning in India. *Bull. Cultural Research Institute (Calcutta)*, 6, 1 and 2, 78-85.
- P35. ——— (with Malakar, C. R.) (1967): The relationship between family type and fertility. *The Milbank Memorial Fund Quarterly (New York)*, XLV, 4, 451-460.

C. Biometry

- P36. DAS, B. C. (1967): Effects of micro-nutrients on the survival and growth of Indian carp fry. *Proc. FAO World Symposium on Warm-water Pond Fish Culture. FAO Fisheries Reports*, 3, 44, 241-256.
- P37. ——— (1967): Linear and curvilinear functional relationships of human blood components with age. *Gerontologia*, 13, 227-245.

D. Crop Science

- P38. DAVIS, T. A. (1967): Stamen-number and pollen-size in some levo- and dextro-rotatory flowers of Bombacaceae. *Rev. Palaeobotan. Palynol.* 3, 133-139.
- P39. ——— (1968): The spirality of main stem and its relationship to that of off-shoots in *Euphorbia antillarum* Linn. *Jour. Bombay Nat. Hist. Sec.*, 65, 262-266.
- P40. ——— (1968): Biology in the tropics, *Haldane and Modern Biology*, The Johns Hopkins Press, 327-333.

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E. Demography

- P41. CHAKRABORTY, B. (1967) : A sixteen-year trend of the regional mortality in India, 1947-63 : Calcutta City, *Indian Journal of Public Health*, 11, 2.
- P42. GUPTA, P. B. (1967) : Fertility and economic growth, *Indian Population Bulletin*, 3, 15-28.
- P43. ——— (1967) : The estimation of birth and death rates of a quasi-stable population by the use of some actuarial functions. *Contributed Papers to the IUSSEP Conference*, Sydney, 923-928.
- P44. ——— (1967) : The problem of fertility control in India, *Proc. World P Population Conference*, Belgrade, 1965, 2, 174-175.
- P45. RAMAN, M. V. (1968) : A study of some aspects of mortality and medical facilities in India. *Indian Journal of Public Health*, 12, 1, 1-16.
- P46. ——— (1967) : Levels and trends of fertility and associated factors in ECAFE countries. *Contributed Papers to the IUSSEP Conference*, Sydney, 277-288.
- P47. ——— (1967) : Attitudes toward family size and fertility control in India : An assessment. *Proc. World Population Conference*, Belgrade, 1965, 2, 164-167.
- P48. ——— (1967) : An examination of data on age at death obtained from two sources. *Indian Journal of Public Health*, 11, 4, 1-16.

F. Documentation and Library Science

- P49. BRATTACHARYYA, G. (1967) : Feed-back between the scientists and the documentalists, *33rd FID Congress on Documentation*, (Tokyo).
- P50. ——— (1967) : Library Cataloguing : Depth Classification, *DRTO Seminar* (5), *Volume of Papers*, Paper F.
- P51. ——— (1967) : ISA and the Chemist, *Seventh IASLIC Conference*.
- P52. ——— (with Neelameghan, A.) (1967) : Content of course in documentation with special reference to the course in DRTC, *Proc. International Conference on Education in Scientific Information Work*, London. 133-140.
- P53. ——— (with Neelameghan, A.) (1967) : Class index entries for a micro document: A case study, *DRTC Seminar* (5). *Volume of Papers*, Paper V.
- P54. ——— (with Ranganathan, S. R.) (1967) : Names of the places of a periodical conference, *Lib. Sc. 4*, Paper J.
- P55. GOVINDATH, M. A. (1967) : Classification Research : Trend Report (India), 1966-67, *FIDJOR Report* 6.
- P56. ——— (1967) : Library profession and its evolution, *Lib. Sc. 4*, Paper M.
- P57. ——— (1967) : DRTC Research Cell : A report for 1967, *DRTC Seminar* (5). *Volume of Papers*. Paper W.
- P58. ——— (with Neelameghan, A.) (1967) : Grouping of matter (Property) isolates, *DRTC Seminar* (5), *Volume of Papers*, Paper D.
- P59. ——— (with Neelameghan, A.) (1967) : Research in library classification, *Lib. Sc. 4*, Paper R.

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- P60. ——— (with Neelameghan, A. and Denton, P. H.) (1967): Motor vehicle production: Depth Classification: A Demonstration, *Lib. Sc.* 4, Paper H.
- P61. GUPTA, A. K. (with Neelmeghan, A. and Ranganathan, S. R.) (1968): Free book service for all: An international survey. Asia Publishing House.
- P62. NEELAMEGHAN, A. (1967): Glass production technology: Depth classification. *Lib. Sc.* 4, Paper L.
- P63. ——— (1967): Research on the structure and development of the universe of subjects. *Lib. Sc.* 4, Paper Q.
- P64. ——— (1968): Books and articles: Guiding principles for presentation of text. *Lib. Sc.* 5, Paper B.
- P65. ——— (1967): Classificationist and the study of the structure and development of the universe of subjects, *FID/CR Report* 5.
- P66. ——— (1967): "Universe of Subjects: Its structure and development" in the curriculum, 33rd *FID Congress and International Conference on Documentation* (Tokyo), Paper II, 5.
- P67. ——— (1967): Bridges of understanding: *Rajasthan Library Association, Reading Habit Week* (7-12 Aug), 35-36.
- P68. ——— (1967): Research in Library Science: The Why and the How. *Herald Lib. Sc.* 6, 113-120.
- P69. ——— (1967): Typographical quality and legibility of print and comfort of reading: A review, *Library Herald*, 9, 271-291.
- P70. ——— (1968): A note on the study of 'Scatter' and 'Seepage' of subjects, *Information Usage Newsletter*, N1, 5-7.
- (P62) ——— (with Bhattacharyya, G.) (1967): Content of the course in documentation with special reference to the course in DRTO, *Proc., International Conference on Education in Scientific Information Work, London*, 133-140.
- (P63) ——— (with Bhattacharyya, G.) (1967): Class index entries for a micro document: A case study, *DRTO Seminar* (5), *Volume of Papers*, Paper V.
- (P68) ——— (with Gopinath, M. A.) (1967): Grouping of Matter (Property) isolates, *DRTO Seminar* (5), *Volume of Papers*, Paper D.
- (P69) NEELMEGHAN, A. (with Gopinath, M. A.) (1967): Research in library classification, *Lib. Sc.* 4, Paper R.
- (P60) ——— (with Gopinath, M. A. and Denton, P. H.) (1967): Motor vehicle production: Depth classification: A demonstration, *Lib. Sc.* 4, Paper H.
- (P61) ——— (with Ranganathan, S. R. and Gupta, A. K.) (1968): Free book service for all: An international survey, Asia Publishing House.
- P71. RANGANATHAN, S. R. (1967): Special library versus specialist library, *Lib. Sc.* 4, Paper N.
- P72. ——— (1967): Documentation, computer, and classification, *Lib. Sc.* 4, Paper K.
- P73. ——— (1967): Areas for research in library science. *Lib. Sc.* 4, Paper P.
- P74. ——— (1967): Kinds of bonds between two subjects, including fusion bond. *DRTO Seminar* (5), *Volume of Papers*, Paper B.

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- P76. ——— (1967) : Library personnel and their problems, *UP Library Conference* (Roorkee).
- P76. (1967) : Three crises in documentation, *33rd FID-Congress on Documentation* (Tokyo), Paper III, a.4.
- P77. ——— (1967) : Madras' experiment in fostering reading habit, *Rajasthan Library Association, Reading Week Souvenir*. (7-12 August), 9-11.
- P78. ——— (1967) : Benefits of school library work, *Punjab State Book Festival* (Patiala).
- P79. ——— (1967) : Effective use of library. *Conference of Headmasters of Secondary School, Madras*.
- P80. ——— (1967) : Teaching to be centred on students. *42nd All-India Educational Conference, Madras*.
- P81. RANGAMATHAN, S. R. (1967) : Emergence of library profession, *Library Herald*, 9, 265-270.
- P82. ——— (1967) : Education and research in library science. *Cultural Forum, Libraries Special Number*, 9, 8-12.
- P83. ——— (1967) : Blue-print for national education, *Education Quarterly*, 18, 3-5; 11.
- P84. ——— (1967) : Library service : A social dynamo, *Indore Divisional Library Quarterly*.
- P85. ——— (1967) : Library is the heart of college. *Seminar of College Librarians in Rajasthan, (Papers and Proceedings)*, Jaipur, 8-10.
- P86. ——— (1967) : Social pressure, human resources and library, *Amaravati Wachasalaya, Amaravati Centenary Celebrations*.
- P87. ——— (1968) : Choice of scheme for classification, *Lib. Sc. 5, Paper A*.
- (P54) ——— (with Bhattacharyya, G.) (1967) : Names of the places of a periodical conference, *Lib. Sc. 4, Paper J*.
- (P61) ——— (with Neelameghan, A. and Gupta, A. K. ) (1968) : Free book service for all : An international survey, (Asia Publishing House).

G. Educational Psychology

- P88. CHATTERJI, S. (with Mukherjee, M.) (1967) : Development of a non-language test of verbal intelligence, *Jour. Psychological Researches*, 11, 2, 58-68.
- P89. ——— (with Mukherjee, M.) (1967) : Predictive ability of an aptitude test battery used for differential prediction. *Journ. Vocational and Educational Guidance*, 13, 1, 25-36.
- P90. CHATTERJI, S. (with Mukherjee, M.) (1968) : Factor study of an aptitude test battery used to differential prediction. *Psychol. Studies*, 13, 1, 1-7.
- P91. DAS, RHEMA, S. (1967) : Prediction of individual performance in production and management 253-273 Ed. Srivastava, S. *Behaviorial Sciences in Management, Asia, Calcutta*.
- P92. ——— (1967) : Some models for assessment of intelligence and scholastic attainment. *Jour. Psychological Researches*, 11, 77-90.

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- P93. ——— (1967) : The application of statistical sampling theory to educational evaluation. *Indian Psychological Review*, 4, 1-17.
- (P98) MUKHERJEE, M. (with Chatterji, S.) (1967) : Development of a non-language test of verbal intelligence. *Jour. Psychological Researches*, 11, 2, 58-66.
- (P99) ——— (with Chatterji, S.) (1967) : Predictive ability of an aptitude test battery used for differential prediction. *Jour. Vocational and Educational Guidance*, 13, 1, 25-36.
- (P90) ——— (with Chatterji, S.) (1968) : Factor study of an aptitude test battery used to differential prediction. *Psychol. Studies*, 13, 1, 1-7.

### H. Embryology

- P94. BRAHMACHARY, R. L. (1967) : Physiological Clocks, *International Review of Cytology*, Academic Press.
- P95. ——— (with Banerji, K. P.) (1967) : Information transfer in molluscan embryos. *Nature*, 214, 172.

### I. Family Planning

- P96. SENGUPTA, A. (1967) : A study on the promotion of knowledge of contraception by education programmes in family planning. *The Indian Journal of Social Work*, XXVIII, 4, JANUARY, 427-452.

### J. Geology

- P97. BASUMALLICK, S. (1967) : Problems of Purana stratigraphy of the Godavari Valley with special reference to the type area in Warangal District, Andhra Pradesh, India. *Quart. Jour. Geol. Min. Met. Soc.*, India, 30, 2, 116-127.
- P98. CHATTERJEE, S. (1967) : New and associated phytosaur material from the Upper Triassic Maleri Formation. *Bull. Geol. Soc.*, India, 4, 4, 108-110.
- P99. JAIN, S. L. (1968) : Vomerine teeth of *Ceratodus* from the Maleri formation (Upper Triassic, Deccan, India) *Jour. Paleontology*, Washington, D.C. 42, No. 1, 96-99, 3 text figures.
- P100. JOHNSON, P. R. (1967) : The geological significance of two Pre-Gondwana inliers in the middle Godavari Valley. *Quart. Jour. Geol. Min. Met. Soc.*, India, 30, 2, 105-114.
- P101. ROBINSON, P. L. (1967) : Triassic vertebrates from lowland and upland. *Science and Culture*, 33, 168-173.
- P102. SENGUPTA, SUPRIYA (1967) : Grain-size frequency distribution as indicator or depositional environment in some Gondwana rocks, 7th Intl. Sedimentological Congress, Gt. Britain.

### K. Planning, Economic Statistics and Econometrics

- P103. Bhat, L. S. (with Mathur, R. B.) (1967) : Cement Industry : A case study in National and Regional Perspectives, 1976, supplement to the *Bombay Geographical Magazine*, 75, 1-74.
- P104. BHATTACHARYYA, N. (with Mahalanobis, B.) (1967) : Regional disparities in household consumption in India. *Jour. Am. Stat. Assn.*, 62, 143-161.

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- P105. ——— (1967) : Consumer behaviour in India : An application of the linear expenditure systems, *Economic and Political Weekly*, December 2, 2093-2098.
- P106. Bose S. S. (with Mukherjee, M.) (1968) : On the goal of development for poor nations, *Economic Affairs*, 13, 1-2, 41-48.
- P107. CHATTERJEE, G. S. (1967) : Review of 'Asian studies in income and wealth', Asia Publishing House, *Sankhya*, 29, sr. B, 183-186.
- P108. ——— (with Mukherjee, M.) (1967) : Trends in distribution of national income, 1950-51 to 1965-66. *Economic and Political Weekly*, 2, 28, 1259-1268.
- P109. DATTA CHAUDHURI, M. (1967) : Optimum allocation of investment and transportation in a two-region economy. *The Theory of Optimum Economic Growth*, 129-149, Ed. Shell K., M.I.T. Press.
- P110. DATTA CHAUDHURI, M. (1967) : Regional specialisation in metallurgical and machine building industries in India in the framework of a planning model for optimum use of material resources. *Indian Economic Review*, II (New Series) 2, 219-270.
- P111. DEY, B. (1967) : Small scale tailoring industry : A type study. *Economic and Political Weekly*, 2, 29, 1296-1300.
- P112. DUTTA-MAZUMDAR, DEBKUMAR (1967) : Relative merits of estimating Engel Elasticity from Specific Concentration Curves and Regression Method. *Econometrica*, 35, 5, 36.
- P113. ——— (1968) : Demand of cereals in India during Fourth and Fifth Five Year Plans. *Proc. 55th Session, Indian Science Congress, Part III*. 48.
- P114. LAHRI, R. K. (1967) : Agricultural development in five developing countries—A comparative study, *Indian Journal of Agricultural Economics*, 22, 4, 6-11.
- (P104) MAHALANOBIS, B. (with Bhattacharyya, N.) (1967) : Regional disparities in household consumption in India. *Journal of American Statistical Association*, 62, 143-161.
- (P103) MATHUR, R. B. (with Bhat, L. S.) (1967) : Cement Industry : A case study in National and Regional Perspective, 1978, supplement to the *Bombay Geographical Magazine*, 76, 1-74.
- (P108) MUKHERJEE, M. (with Chatterjee, G. S.) (1967) : Trends in distribution of national income, 1950-51 to 1965-66. *Economic and Political Weekly*, 2, 28, 1259-1268.
- P115. MUKHERJEE, M. On the construction and use of inter-industry transactions tables in India. *Arihavijana*, 9, 3-4, 297-308. Also in *Economic Analysis in Input Output Framework*. Ed. Mathur, P. N. and Bharadwaj, R., Input Output Research Association, 15-26.
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- P119. ——— (1967): The role of transaction in kind in developing economies. *Review of Income and Wealth*, 13, 4, 335-351.
- P120. PAL, M. N. (1967): Regional demand projection for different commodities in India, 1970-71 and 1975-76, *Indian Economic Journal*, 14, 4, 454-466.
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#### L. Sociology

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#### M. Statistical Quality Control

- P126. BANERJEE, K. K. (with Narasimhan, R. G. and Pal, B. K.) (1967): Economic control of weight of jute fabric. *Textile Digest*, XXVIII, 3, July-September, 177-184.
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- P128. MITTAL, M. L. (1967): Optimal sequencing of multistage flow-shop operations by M. L. Mittal, *Operations Research Bulletin*, 121-130.
- P129. NARASIMHAN, R. G. (1967): Statistical quality control techniques in chemical process analysis, improvements and control, *OTA bulletin*, June-September, 9-11.
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#### N. Theoretical Physics and Electronics

- P130. RAMACHANDRAN, G. (1967): Recoil polarization and structure of the deuteron, *Nuclear Physics*, B2, 465-580.

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5.3. PAPERS SUBMITTED FOR PUBLICATION

(The journal to which the paper has been submitted for publication is mentioned within brackets and the number following a paper indicates the RTS Technical Report Number)

A. Statistics

81. AGUTAN, N. R. : A note on linear programming (*Op. Res. Qr.*). 39/67.
82. ADHIKARI, A. K. (with Sarkar, B. P.) : Distribution of most significant digits in certain functions, whose arguments are random variables (*Sankhyā*). 12/67.
83. ABTHAMARI, T. S. : Optimal spatial allocation of advertising expenditure over M-campaigns (*Op. Res. Qr.*). 23/67.
84. BASU, D. (with Ghosh, J. K.) : Invariant sets for translation-parameter families of measures (*Ann. Math. Stat.*). 34/67.
85. ——— (with Khatri, C. G.) : On some characterizations of statistics (*Sankhyā*). 23/67.
86. DAS, REHA S. : Some statistical models of individual performance on semantic differential measures of affective meaning (*Proc. 2nd. International Conference on Cross-Cultural Generality of Affective Meaning Systems, Tehran, Iran*). 26/67.
87. DAS GUPTA, P. : An approximation to the distribution of a sample correlation coefficient when population is not normal (*Sankhyā*).
88. ——— : Two approximations for the distribution of double non-central Beta (*Sankhyā*). 8/67.
89. DAS GUPTA, SOMESH : Some aspects of discrimination function coefficients (*Sankhyā*). 6/67.
810. DUTTA-MAJUMDER, DEBKUMAR : Problem of estimation for truncated strata (*Jour. Amer. Stat. Assn.*)
- (84) GHOSH, J. K. (with Basu, D.) : Invariant sets for translation-parameter families of measures (*Ann. Math. Stat.*). 34/67.
811. IYER, M. R. : Identities involving generalized Fibonacci numbers. (*Fibonacci Quarterly Journal*). 10/67.
812. IYER, M. R. : Some results on Fibonacci Quaternions (*Fibonacci Quarterly Journal*). 17/67.
813. ——— : More identities involving Fibonacci Numbers (*Journal of London Mathematical Society*). 3/68.
814. KHATRI, C. G. : A note on an inequality for normal distribution (*Sankhyā*). 18/67.
- (85) ——— (with Basu, D.) : On some characterizations of statistics (*Sankhyā*). 23/67.
815. ——— (with Mitra, S. K.) : Some identities and approximations concerning positive and negative multinomial distributions (*2nd Multivariate Symposium, Dayton, USA*). 1/68.
816. ——— (with Rao, C. R.) : Some characterizations of the gamma distribution (*Sankhyā*). 23/67.
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- S18. KRISHNAMURTHY, E. V. (with Sarkar, B. P.): Algorithm of multiple-precision range transformations (*Sankhyā*), (Combined version of 19/67 and 20/67).
- S19. ——— (with Nandi, S. K.): Variable precision division in signed-digit number systems (*Sankhyā*).
- S20. KUNDU, S.: Topologies with restriction on the class of all continuous functions (*Amer. Math. Monthly*). 35/67.
- S21. ———: Absolute square graphs and line graphs (*Jour. Comb. Theory*). 37/67.
- S22. ———: On higher powers of a graph (*Sankhyā*), 4/68.
- S23. LAKSHI, D. B.: On the Unique Sample, the surveyed one (*Symposium on the Foundations of Survey Sampling, North Carolina University, Department of Statistics, U.S.A.*)
- S24. ———: The Indian National Sample Survey—the strategy for analytical studies, design aspect (*Bull. Int. Stat. Inst.*)
- S25. LAKSHI, D. B.: Some congruences for the elementary divisor functions (*Amer. Math. Monthly*).
- S26. ———: Some restricted partition functions, Congruence Modulo 5 (*Jour. Australian Math. Soc.*)
- S27. ———: Identities connecting the partition divisor and Ramanujan's functions (*Proc. National Institute of Science, India*).
- S28. MAITRA, A. (with Parthasarathy, T.): Dynamic programming approach to stochastic games with countable state space (*Sankhyā*). 1/67.
- S29. ———: A note on positive dynamic programming (*Ann. Math. Stat.*). 2/68.
- S30. ———: Discounted dynamic programming on compact metric spaces (*Sankhyā*). 43/67.
- S31. MITRA, S. K. (with Subramanya, M. T.): A robust property of the OC of binomial and Poisson sampling inspection plans (*Sankhyā*). 36/67.
- (S15) ——— (with Khatri, C. G.): Some identities and approximations concerning positive and negative multinomial distributions (2nd *Multivariate Symposium*, Dayton, USA), 1/68.
- S32. ———: A new class of  $g$ -inverse of square matrices (*Sankhyā*). 9/68.
- S33. ——— (with Rao, C. R.): Simultaneous reduction of a pair of quadratic forms (*Sankhyā*). 6/68.
- S34. MITTAL, M. L.: A labelling-type algorithm for the travelling-salesman problem (*Op. Res. Qr.*). 3/68.
- S35. ———: Optimal sequencing of multistage flow-shop operations (*Op. Res. Society of India, Calcutta*). 11/67.
- (S19) NANDI, S. K. (with Krishnamurthy, E. V.): Variable precision division in signed-digit number systems (*Sankhyā*).
- S36. NATARAJAN, S.: Weekly stable families of transformations (*Sankhyā*). 25/67.
- S37. ———: Invariant measures for families of transformations (*Z. Wahrscheinlichkeitstheorie Verw. Geb.*). 6/68.
- (S28) PARTHASARATHY, T. (with Maitra, A.): Dynamic programming approach to stochastic games with countable state space (*Sankhyā*). 1/67.

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838. RAMACHANDRAN, B. (with Rao, C. R.): Some results on characteristic functions and characterizations of the normal and generalised stable laws (*Sankhyā*). 40/67.
839. RAMANUJACHARYULU, C.: On linear independence on finite projective spaces (*Canadian Jour. Math.*). 7/67.
840. ———: Role of the theory of graphs in operations research (*Op- Research Society of India*). 18/67.
841. ——— (with Rao, A. R.): Some theorems on perfect graphs (*Journ. Comb. Theory*). 39/67.
842. RAO, A. R.: An extremal problem in graph theory (*Israel Journ. Math.*). 9/67.
843. ——— (with Rao, S. B.): On the power sequence of a graph (*Journ. of Comb. Theory*). 31/67.
844. ——— (with Rao, S. B.): A theorem on Hasse diagrams (*Journ. Comb. Theory*). 45/67.
- (841) ——— (with Ramanujacharyulu, C.): Some theorems on perfect graphs (*Journ. Comb. Theory*). 39/67.
845. RAO, C. R.: On vector variables with a linear structure and a characterization of the multivariate normal distribution (*International Statistical Institute*). 13/67.
846. ———: A decomposition theorem for vector variables with a linear structure (*Amer. Math. Stat.*). 15/67.
847. ———: A note on a previous lemma in the theory of least squares and some further results (*Sankhyā*). 7/68.
- (816) ——— (with Khatri, C. G.): Some characterizations of the gamma distribution (*Sankhyā*). 23/67.
- (817) ——— (with Khatri, C. G.): Solutions to some functional equations and their applications to characterization of probability distributions (*Sankhyā*). 33/67.
- (833) ——— (with Mitra, S. K.): Simultaneous reduction of a pair of quadratic forms (*Sankhyā*). 6/68.
- (838) ——— (with Ramachandran, B.): Some results on characteristic functions and characterizations of the normal and generalised stable laws (*Sankhyā*). 40/67.
848. RAO, M. V.: A note on generalised Wallman compactifications (*Amer. Journ. Math.*). 32/67.
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- (82) SARKAR, B. P. (with Adhikari, A. K.): Distribution of most significant digits in certain functions, whose arguments are random variables (*Sankhyā*). 12/67.
- (818) ——— (with Krishnamurthy, E. V.): Algorithm of multiple-precision range transformations (*Sankhyā*), (Combined version of 18/67 and 20/67).
857. SETHURAMAN, J.: Stopping time of a rank-order-sequential probability ratio test based on Lehmann alternatives-II (*Ann. Math. Stat.*). 4/67.
- (831) SUBRAMANYA, M. T. (with Mitra, S. K.): A robust property of the QC of binomial and Poisson sampling inspection plans (*Sankhyā*), 38/67.
858. VIJAYADITYA, N.: On a class of extremal graphs (*Journ. Comb. Theory*). 44/67.
859. VISWANATH, K.: Normal operators on quaternionic Hilbert spaces (*Trans. Amer. Math. Soc.*). 22/67.

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861. ———: Hair Pinnae in India Populations (*Act. Genet. Basel*).
862. ———: Consanguinity in India (*Zeitschr. Morph. u. Anthrop.*).
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864. ———: Family organization in rural Bengal (1946-47), in the volume on Tribe, Caste and Peasantry (*Ethnographic and Folk Culture Society, Lucknow*).

C. Biometry

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D. Crop Science

866. DAVIS, T. A. (with Ramanujacharyulu, C.): Statistical analysis of bilateral symmetry in plant organs (*Sankhyā*) Nat/3/68.
867. ——— (with Basu, S. K.): Two cases of bulbil-bearing *Borassus flabellifer* Linn. (*Journ. India. Botanical Soc.*) Nat/4/68.
868. GHOSH, S. S.: Variation in the Spike-number of star grass (*Doctyloctenium aegyptium* Linn. Beauv). (*Journ. Science and Technology*) Nat/6/68.

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E. Demography

869. CHAKRABORTY, B. : A broad view of the social class mortality pattern in Calcutta City (*Brochure on the Seminar on Problems Relating to Demography*).
870. ——— : A sixteen-year trend of the regional mortality in India, 1947-63, Bombay City (*Indian Medical Gazette*).
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873. ——— : Trend in Urbanisation in India and projection for the future (*Brochure on seminar on problems relating to Public Health in India*).
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876. MURTHY, M. N. : Some aspects of post-census and post-survey checks (*Indian Population Journal*).
877. ——— : Some aspects of use of sampling methods in demographic censuses and surveys (*Indian Population Journal*).
878. SINOH, M. P. : Estimating a general parametric function of a finite population (*Sankhyā*).
879. ——— : Comparison of some ratio-cum-product estimators (*Sankhyā*).

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880. BHATTACHARYYA, G. : Principle of unity of idea in a catalogue code (*Lib. Sc.*, 5 Paper F).
881. ——— : SDI and Five Laws (*Souvenir, Department of Library Science, Calcutta University*).
882. ——— (with Neelameghan, A.) : Chain procedure and micro subjects (*Lib. Sc.*, 5, Paper E.)
- (882) NEELAMEGHAN, A. (with Bhattacharyya, G.) : Chain procedure and micro subjects (*Lib. Sc.*, 5, Paper E.).
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884. SAHA, J. : Trend in information handling activities in the United States, The Rutgers—the State University, New Brunswick, USA.
885. ——— : Special libraries and documentation activities in India, The Rutgers —The State University, New Brunswick, USA.

G. Educational Psychology

886. CHATTERJI, S (with Mukherjee, M.) : Utilization of aptitude test scores in combination with school examination marks for improving the allocation process at the end of class VII—a validity study (*Journ. Psychological Research*).

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887. ——— (with Mukherjee, M.): A note on the confidence interval of the true score (*Indian J. of Psychology*)
888. ——— (with Mukherjee, M.): Construction and development of a non-language test of verbal intelligence (*Educ. Psy. Measurement*).
889. DAS, RERA, S.: Hospital utilization as a function of age, sex and diagnosis (*Gerontologic Clinics*).
890. ———: Selected Papers, (*Behavioural Sciences in Personnel Management*, Ed. S. Srivastava and De, M. R., Calcutta, Asia).
891. ——— (with Mahalanobis, P. O.): Some observations on educational evaluation by sampling universes of questions (*Sankhyā*).
- (891) MAHALANOBIS, P. C. (with Das, Rera, S.): Some observations on educational evaluation by sampling universes of questions (*Sankhyā*).
- (896) MUKHERJEE, M. (with Chatterjee, S.): Utilization of aptitude test scores in combination with school examination marks for improving the allocation process at the end of class VIII—a validity study (*Journ. Psychological Research*).
- (887) ——— (with Chatterjee, S.): A note on the confidence interval of the true score (*Indian Journ. of Psychology*).
- (888) ——— (with Chatterjee, S.): Construction and development of a non-language test of verbal intelligence (*Educ. Psy. Measurement*).

### H. Embryology

892. BRAHMACHARY, R. L.: Embryonic information transfer (*Progress in Biophysics and Molecular Biology*, Pergamon Press).
893. ——— (with Banerji, K. P. and Basu, T. K.): Transcription in *Limnaea* embryos (*Experimental Cell Research*).
894. ——— (with Sengupta, A.): A note on the feeding habits of Cormorants (*Bombay Natural History Society Magazine*).

### I. Geology

885. JAIN, S. L. (with De Cunha, F. L. S.): An inexpensive technique for sketching biological and paleontological specimens quickly (*Curator*).
896. ROY CHOWDHURY, T. K.: Trisatic vertebrates from the Gondwanas of India (*Collected Papers, Gondwana Volume*).
897. SENGUPTA, SUFALYA (with Venetra, H. J.): On sieving and settling techniques for sand analysis (*Sedimentology, Elsevier, Amsterdam*).

### J. Network Theory

898. MITRA, S. K. (with Roy, T.): Consequences of generalised Kirchoff's laws and proof of Thomson and Norton's Theorems (*Indian Journ. of Physics*).

### K. Numerical Mathematics

899. MITRA, S. K. (with Banerjee, S. N.): A statistical method for detecting the presence of truncation error of algorithms for numerical solution of differential equations (*Joint Conference of Am., F.I.P.S. 1968 Spring*).

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L. Planning, Economic Statistics and Econometrics

- S100. BHATTACHARYA, D. : Socio-economic trends in India, 1871-1961 (*Transactions, Indian Institute of Advanced Study*).
- S101. ——— : Concentration of economic power in manufacturing sector (*Transactions, Indian Institute of Advanced Study*).
- S102. ——— : An introduction to a select bibliography in socio-economic conditions in India, 1871-1961 (*Transactions, Indian Institute of Advanced Study*).
- S103. CHAKRAVARTI, A. K. : Characteristics of foreign trade of Turkey and prospects of Indo-Turkish trade (*Foreign Trades Review*).
- S104. CHATTERJEE, G. S. (with Mukherjee, M) : Deflation of private consumption expenditures (*Tenth General Conference of the International Association for Research in Income and Wealth*, Maynooth, Ireland).
- S105. ——— (with Mukherjee, M) : Post-independence growth of the Indian economy in the light of national income statistics (*Sixth Conference on Research in National Income Wealth (IARNIW)*, Bangalore).
- S106. CHOWDHURY, H. B. : Some estimates of adult equivalent scales for cereals consumption in rural India (*Volume on Seventh Indian Econometric Conference 1967; and Sankhya*).
- S107. DEY, B. : Economics of coal mining industry in India (*Economic Affairs*).
- S108. DUTTA-MAJUMDER, DEBKUMAR : Choice of regressor in Engel curve analysis (*Volume on Seventh Indian Econometric Conference, 1967*).
- S109. ——— : Productivity of labour and capital in Indian manufacturing industries during 1961 to 1961 (*Seminar Volume of Indian Institute of Advanced Study, 1967*).
- S110. ——— : Projected demand of cereals in India during the Fourth and Fifth Five Year Plans (*Bulletin of Socio-Economic Institute, Calcutta, 1968*).
- S111. ——— : Growth of Indian Industries during first two-plan period (*Symposium Volume on Statistical Assessment of Plan Achievements, 55th session of Indian Science Congress, 1968*).
- S112. ——— : Relative merits of estimating Engel elasticity from specific concentration curves and regression methods (*Econometric Annual, 1968*).
- S113. GANGULI, M. (with Sanyal, S. K.) : A method of fixing graded compensation rate for loss of real incomes based on income elasticity. (*Economic and Political Weekly and Volume on Seventh Indian Econometric Conference, 1967*).
- S114. GHOSH, N. C. : Some aspects of the growth of Indian economy during first three plans (*Volume on Sixth Indian Conference on Research in National Income, 1968*).
- S115. LAHIRI, D. B. (with Mukherjee, H. and Mukherjee, M) : On the clustering of states based on the pattern and structures of consumption (*Journal of Regional Science, 1968*).
- S116. MOTTA, PRITOSH : Changes in occupational pattern and industrialisation in India (1901-1961). (*Seminar Volume, Indian Institute of Advanced Study, 1967*).
- (S115). MUKHERJEE, H. (with Mukherjee, M. and Lahiri, D. B.) : On the clustering of states based on the pattern and structures of consumption (*Journal of Regional Science, 1968*).



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- S117. MUKHERJEE, M.: Long-term changes in the national income of India since 1871 (*Transactions, Seminar on Trends in Socio-Economic Change in India, 1871-1961*, Indian Institute of Advanced Study).
- (S104) ——— (with Chatterjee, G. S.): Deflation of private consumption expenditure (*Tenth General Conference of the International Association for Research in Income and Wealth*, Maynooth, Ireland).
- (S105) ——— (with Chatterjee, G. S.): Post-independence growth of the Indian economy in the light of national income statistics (*Sixth Conference on Research in National Income and Wealth (I.A.R.N.I.W.)*, Bangalore).
- (S115) MUKHERJEE, M. (with Mukherjee, H. and Lahiri, D. B.): On the clustering of states based on the pattern and structure of consumption (*Journal of Regional Science*, 1968).
- S118. NAQVI, S. (with Pillai, S. B. and Saha, R. P.): Why discontinue the NSS crop survey ? (*Economic and Political Weekly*, 1968).
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- (S118) PILLAI, S. B. (with Naqvi, S. and Saha, R. P.): Why discontinue the NSS crop survey ? (*Economic and Political Weekly*, 1968).
- S120. PRASAD, C. R. K.: Sprinkler irrigation (*Indian Farming, I.C.A.R., New Delhi*).
- S121. ———: Establishing irrigation programme (*Technical Bulletin, I.C.A.R., New Delhi*).
- S122. ———: The effects of different levels of nitrogen and phosphorus on growth and yield of linseed (*Journ. Science and Industry*).
- S123. ROY, B.: A review of estimates of capital formation in India (*Paper on National Income and Allied Topics, Vol. IV*).
- S124. ———: A study of possible effects of wage-incentives in sugar and jute industries in India (*Economic Affairs*).
- (S118) SAHA, R. P. (with Naqvi, S. and Pillai, S. B.): Why discontinue the NSS crop survey ? (*Economic and Political Weekly*, 1968).
- S125. SALUJA, M. A.: Structure of Indian Economy: Inter-industry flows and pattern of final demands, 1964-65 (*Sankhyā*).
- S126. SANJAL, S. K.: Some topics related to land tenure problems in India (*Economic Affairs*).
- (S113) ——— (with Ganguli, M.): A method of fixing graded compensation rate for loss of real income based on income elasticity ? (*Economic and Political Weekly and Seventh Econometric Conference*, 1967).
- S127. ———: On Houthaker's relation between Pareto distribution and Cobb-Douglas Production function with special reference to jute industry in India (*Volume on Seventh Indian Econometric Conference*, 1967).

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M. Theoretical Physics, Electronics and Cybernetics

- S128. BANERJEE, PRATUL : Some remarks on possible weak interaction of photons (*Nuovo Cimento*).
- S129. ——— : Gauge invariance photon mass and weak interaction of photons (*Nuovo Cimento*).
- S130. ——— : Possible weak interaction of photons and emission of neutrinos from stars (*Physical Review*).
- S131. DUTTA MAJUMDAR, D. (with Dutta, A. K.) : Some studies on automatic speech coding and recognition procedure (*India: Journal of Physics*).
- S132. ——— : (with Dutta, A. K.) : An analyser-ocoder for machine recognition of human speech (*Electronic Engineering*).
- S133. RAMACHANDRAN, C. : Tensor polarisation of deuterons following elastic scattering of protons (II). (*Physics Letters*). *Phys*1/67.
- S134. ——— : Polarization to nucleons elastically scattered on deuterons. (*Physics Letters*). *Phys*2/67.
- S135. ——— (with Prabhakar, N. D., and Rej, A. K.) : Photo production of neutral pions on  ${}^7\text{Li}$  (*Nuclear Physics*), *Phys*3/67.
- S136. ——— : Sum rule for particle reactions on nuclei (*Physical Review*), *Phys*1/68.
- S137. ——— : Charge exchange reaction of elementary particles on  $\text{H}_2$  and  $\text{H}_2^+$  (*Physics Letters*). *Phys*2/68.
- S138. ——— : Polarization phenomena in deuteron-nucleon scattering (*Proc. Nuclear Physics and Solid State Physics Symposium, Madras, 27 February-1 March 1968*).

Annexure 6 : List of National Sample Survey Reports

6.1. PRINTED REPORTS\*

sr. no.	report no.	title
1.	113	Tables with Notes of Agricultural Holdings in Rural India (16th round July 1960—June 1961)
2.	114	Tables with Notes on Employment and Unemployment in Rural Areas (16th round : July 1960—June 1961)
3.	116	Tables with Notes on Family Planning : (16th round : July 1960—June 1961)

6.2. DRAFT REPORTS SUBMITTED TO THE GOVERNMENT OF INDIA

(The date of submission is given in brackets)

sr. no.	draft no.	title
1.	164	Tables with Notes on Urban Labour Force : 18th round, February 1963—January 1964. Schedule 10 (12 April 1967).
2.	166	Table with Notes on Consumer Expenditure (Preliminary) 18th round, February 1963—January 1964, Schedule 1.0 (13 April 1967).

\* N. S. S. Report No. 116 is in the Press.

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srl. no.	draft no.	title
3.	167	Tables with Notes on Consumer Expenditure (some selected items): 18th round; Gap period, February 1963—January 1964 (7 April 1967).
4.	168	Tables with Notes on Income of Scheduled Tribe Households: 18th round, February 1963—January 1964 (12 April 1967).
5.	169	Tables with Notes on Urban Employment and Unemployment: 15th round, July 1959—June 1960 (19 April 1967).
6.	170	Tables with Notes on Some Aspects of Agriculture in India: 11th round, August 1958—February 1967 (27 April 1967).
7.	171	Tables with Notes on Household Consumption of Fuel and Light: 18th round, February 1963—January 1964. (3 May 1967).
8.	172	Tables with Notes on Some Aspects of Landholding in Rural India: 16th round: July 1960—June 1961 (18 May 1967).
9.	173	Report on Pilot on non-Household Enterprises: 19th round, February 1965—June 1965 (31 May 1967).
10.	174	Tables with Notes on Housing Condition, 15th round, July 1959—June 1960 (17 June 1967).
11.	175	Tables with Notes on Couple Fertility, P-2 tables: 17th round, September 1961—July 1962 (14 June 1967).
12.	176	Tables with Notes on Some Features of Land Holdings in Rural Areas—P-2 tables: 17th round, September 1961—July 1962 (24 July 1967).
13.	177	Tables with Notes on Tenancy in Rural India: 16th and 17th rounds: July 1960—June 1962 (26 August 1967).
14.	178	Type-Study on the End Uses of Vanaspati: 17th round, September 1961—June 1962 (31 October 1967).
15.	179	Tables with Notes on Annual Survey of Industries, 1962—Sample Sector, Detailed Results (25 January 1968)
16.	180	Table with Notes on the Annual Survey of Industries 1965—Sample Sector, Summary Results (5 March 1968).
17.	181	Tables with Notes on Urban Labour Force: 18th round, July 1964—June 1965.
18.	182	Some Results of the Land Utilisation Survey and Crop-cutting Experiments: 21st round, July 1966—June 1967 (26 March 1968).
19.	183	Table with Notes on Some Aspects of Land holdings in Urban Areas: 17th round, September 1961—July 1962 (26 March 1968).
20.	184	Tables with Notes on the Fertility and Mortality Rates in Urban Areas of India: 16th round, July 1960—August 1961 (30 March 1968).

**Annexure 7 : Statement of Accounts, Auditors' Report and Audited  
Statement of Accounts—1967-68.**

**AUDITORS' REPORT**

We report that we have audited the Balance Sheets as on 31st March 1968, signed by us under reference to this report, of

- (a) The Indian Statistical Institute, and
- (b) The "Other Funds" (Items 9.1 to 9.6 of the Property and Assets side of the Balance Sheet of the Institute)

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

The remarks referred to above are :

- (1) Value of fixed assets acquired on dates prior to 31st March 1962 were taken from those appearing in the Inventories prepared as on that date.
- (2) We understand that the title deeds in respect of landed properties at Delhi, Madras, and 102, Barrackpore Trunk Road, Calcutta (total book value Rs. 7,52,176.50) have not yet been executed.
- (3) A part of values of certain books and journals and value of calculating equipment amounting to Rs. 79,807.77 and Rs. 1,903.00 respectively [vide Schedule I (Column 7.1) annexed to the Institute's above stated Balance Sheet], although charged to the Institute's Income and Expenditure Account for the year, have been capitalised by crediting General Fund Account.
- (4) Stock of Building Materials (Rs. 5,43,598.03 as shown in the Balance Sheet of the Institute and Rs. 1,61,711.39 shown in Development Fund No. II Account Balance Sheet) is exclusive of adjustments arising out of physical count of Building Materials in hand by the officials of the Institute during the year ended 31st March 1968 and soon

## INDIAN STATISTICAL INSTITUTE

thereafter. The extent of adjustments which may be necessary as a result of stock-differences and deterioration of conditions, where applicable, are still being ascertained and are expected to be incorporated in the accounts for the year ending 31st March 1969 of the Institute.

(5) Rs. 28,25,184.59 being amount already claimed/to be claimed from the Government of India (item 5 of the Property and Assets side of the Institute's Balance Sheet) is considered good and recoverable by the Institute's officials at this stage. It has not, however, been possible for us to form an opinion in this regard from the information and explanations made available to us.

(6) Included in advances to suppliers and contractors Rs. 63,965.32 and in Suspense and Other Advances Rs. 3,40,698.80 (items 8.3 and 8.4 of the Property and Assets side of the Balance Sheet) are certain "on account" advances made to the suppliers/employees/others, which have not been accounted for by them even after lapse of considerable time. Accordingly, necessary adjustments in respect of expenses, etc., against such advances have not been incorporated in these accounts and/or in the accounts for the appropriate years. A part of these advances may not eventually be recovered.

(7) Hospitality and Housing Committee Rs. 1,01,764.67 (item 8.1 of the Funds and Liabilities side of the Balance Sheet) and Canteen Imprest Rs. 19,791.19 (after writing off Rs. 15,543.43 to Workers' Welfare and Amenities Account in the Income and Expenditure Account of the Institute) included in Departmental Imprest (item 8.1 of the Property and Assets side of the Balance Sheet) respectively represent :—

- (a) net amount due to the Committee in respect of services rendered to the Guests and Officials of the Institute,
- (b) net advances to the Canteen which, we are informed, will be written off in the subsequent years.

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

(8) Furthermore, in accordance with the consistent practice, transactions in respect of the ISI Small Scale Industries Experimental Unit have not been included in the Institute's Accounts. In the Balance Sheet as at 31st March 1968 of the Supervision Fee Fund, a sum of Rs. 4,578.85 being net amount payable by the Fund to the Unit upto that date, however, has been shown as "Amount due to ISI Small Scale Industries Experimental Unit".

THIRTY-SIXTH ANNUAL REPORT : 1967-68

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

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

Calcutta,  
25th November, 1968.

PRICE WATERHOUSE FRAT & Co.  
*Chartered Accountants*

**INDIAN STATISTICAL INSTITUTE**

**BALANCE SHEET**

1957 Ra. P.	Fund and Liabilities	Ra. P.	Ra. P.
	<b>1. GENERAL FUND :</b>		
1,31,07,096.56	As per Schedule VIII enclosed .. .. .		1,34,37,458.84
	<b>2. OTHER FUNDS : (excluding Director's (Trust) Fund and Indian Statistical Institute General Provident Fund) As per separate Balance Sheets enclosed as per contra :</b>		
	.1 Visiting Professors and Fellows Fund .. .. .	113.13	
	.2 Leave Salary Fund .. .. .	3,269.89	
	.3 Gratuity Fund .. .. .	37,62,899.68	
	.4 Development Fund I .. .. .	1,19,521.94	
	.5 Development Fund II .. .. .	11,34,171.39	
43,37,062.14	.6 Supervision Fee Fund .. .. .	2,16,204.87	42,16,157.80
	<b>3. LOANS FROM OTHER FUNDS :</b>		
37,35,000.00	As per Schedule IX enclosed .. .. .		36,06,343.59
	<b>4. CASH CREDIT ADVANCE FROM STATE BANK OF INDIA, SHAMBAZAR (GUARANTEED BY GOVERNMENT OF INDIA) .. .. .</b>		5,00,000.00
16,00,000.00	<b>5. ADVANCE FROM GOVERNMENT OF INDIA FOR NSS WORK .. .. .</b>		—
	<b>6. AMOUNT REFUNDABLE TO GOVERNMENT OF INDIA IN RESPECT OF BANGALORE LAND REQUISITIONED BACK BY GOVERNMENT OF MYSORE .. .. .</b>	1,59,918.02	
	<i>Less</i> : AMOUNT RECOVERABLE FROM GOVERNMENT OF MYSORE IN RESPECT OF THE ABOVE LAND .. .. .	29,325.80	1,30,592.12
	<b>7. ROCKEFELLER FOUNDATION GRANT</b>		
	As per contra :		
	As per last account .. .. .	3,189.79	
2,189.79	<i>Less</i> : expenditure during the year .. .. .	897.60	1,322.29
	<b>8. DEPOSITS AND OTHER LIABILITIES :</b>		
	.1 Hospitality and Housing Committee .. .. .	1,01,764.87	
	.2 Staff income-tax and annuity deposits .. .. .	31,419.94	
	.3 Library and other deposits .. .. .	31,662.62	
	.4 Staff insurance, Co-operative Society, S.W. Housing Scheme etc. .. .. .	41,417.39	
	.5 Director of Health Services for purchasing Census Report through UNESCO .. .. .	8,128.00	
15,10,702.71	.6 Other liabilities (see note 8 on Income and Expenditure Account) .. .. .	9,54,576.36	11,78,866.78
	<b>9. EXCESS OF RECEIPTS OVER EXPENDITURE IN RESPECT OF MISCELLANEOUS PROJECTS AND ACTIVITIES ON BEHALF OF THE GOVERNMENT OF INDIA</b>		
19,562.38	As per Schedule X enclosed .. .. .		1,880.54
2,47,03,309.53	Carried Over: .. .. .	2,20,67,410.27	

THIRTY-SIXTH ANNUAL REPORT: 1967-68

AS AT 31st MARCH 1968

1967	Property and Assets	1967	1967
Rs. P.		Rs. P.	Rs. P.
	<b>1. FIXED ASSETS:</b>		
1,23,16,096.58	As per Schedule I enclosed .. .. .		1,23,40,460.85
	<b>2. RENTAL OF TELEPHONE UNDER OYT SCHEME:</b> (INCLUDING INSTALLATION CHARGES)		
	Capital Grant Account:		
	As per last account .. .. .	24,584.43	
	Less: written off during the year @ 5% .. .. .	1,219.23	
		<u>23,365.20</u>	
24,384.43	Add: payments during the year .. .. .	5,753.00	29,917.20
	<b>3. ADVANCE ON ACCOUNT OF ISLJU EXPENDITURE</b> <b>ON JOINT PROJECT FOR THE CONSTRUCTION OF</b> <b>ELECTRONIC COMPUTERS IN PROGRESS (EX-</b> <b>CLUDING VALUE OF FURNITURE, EQUIPMENT</b> <b>ETC. LOANED TO ISLJU WHICH ARE INCLUDED</b> <b>IN SCHEDULE I)</b>		
5,13,762.53	As per last account .. .. .	5,12,762.83	
	Add: during the year .. .. .	1,99,540.00	7,12,302.83
	<b>4. RECOVERABLE CAPITAL OUTLAY: DOUBTFUL</b>		
	As per last account .. .. .	16,232.38	
16,232.38	Less: recovered during the year .. .. .	1,096.80	15,135.58
	<b>5. AMOUNT CLAIMED/TO BE CLAIMED FROM GOV-</b> <b>ERNMENT OF INDIA: (EXCLUDING Rs. 1,83,684.63</b> <b>INCLUDED IN ITEM 6 BELOW):</b>		
	1. Amount already claimed but pending acceptance:		
	As per Schedule II enclosed .. .. .	23,00,414.43	
	2. Amount to be claimed as per Schedule III enclosed ..	72,223.53	
	3. Amount claimed and rejected (but under correspondence)		
	As per Schedule IV enclosed .. .. .	5,52,547.53	
49,54,917.59	4. Amount not at all claimed .. .. .	—	28,25,184.59
	<b>6. EXCESS OF EXPENDITURE OVER RECEIPTS IN</b> <b>RESPECT OF MISCELLANEOUS PROJECTS AND</b> <b>ACTIVITIES ON BEHALF OF THE GOVERNMENT</b> <b>OF INDIA AND OTHER BODIES PENDING ADJUST-</b> <b>MENTS ON SETTLEMENT OF CLAIMS MADE/TO</b> <b>BE MADE</b>		
2,77,906.60	As per Schedule V .. .. .		1,96,701.42
5,90,868.27	<b>7. STORES (BUILDING MATERIALS ETC.) AT COST ..</b>		5,43,598.03
	<b>8. LOANS AND ADVANCES:</b>		
	1. Departmental imprest .. .. .	25,962.13	
	2. Festival advance to workers .. .. .	2,217.11	
	3. Advances to Suppliers and Contractors .. .. .	63,965.32	
	4. Response and other advances .. .. .	2,40,898.60	
	5. Educational, relief and other loans .. .. .	85,741.52	
	6. Security Deposit .. .. .	23,750.30	
	7. Sundry debtors (partly irrecoverable) .. .. .	1,20,811.56	
7,66,712.90	8. Advances for purchase of land .. .. .	61,332.41	
	9. Charges prepaid .. .. .	4,800.00	7,30,278.85
1,94,02,081.82	Carried over: .. .. .		1,83,85,579.44



**INDIAN STATISTICAL INSTITUTE**

**BALANCE SHEET**

1967 Rs. P.	Fund and Liabilities	Rs. P.	Rs. P.
2,47,02,303.83	Brought Forward .. .. .		2,29,67,616.97
	<b>10. AMOUNT DUE TO ELECTRONIC DATA PROCESSING AND COMPUTATION UNIT ON LOAN ACCOUNT :</b>		
	As per separate Balance Sheet of the Unit enclosed .. .. .		12,00,850.43
8,82,191.33			

2,55,84,396.86

2,41,67,866.99

- NOTES :** (a) In accordance with the terms and conditions of the Grants for Capital Expenditure received from the Government of India, the Institute shall not sell or otherwise dispose of or mortgage any property acquired by it with such grants without prior approval of the Government. Most of the assets have been acquired out of the Government grants, total written down values of which, however, are not readily ascertainable.
- (b) Cash balances in hand include balance with International House of Japan, Translation Unit in TOKYO amounting to Rs. 8,299.17, being Japanese Yens 8,22,829 converted at pre-devaluation rate of exchange (Rs. 100 = Yen 7500 approximately).
- (c) Transactions in respect of Electronic Data Processing and Computation Unit of the Institute have not been incorporated in these accounts. These are set out in the separate Balance Sheet as at 31st March 1968 and the Income and Expenditure Account of the Unit annexed herewith.
- (d) These accounts do not include loans received from Government of India on account of Honeywell H-400 Computer and the utilisation thereof, the details of which have been set out in a separate Balance Sheet as at 31st March 1968 and the relative Income and Expenditure Account annexed herewith.
- (e) The Institute has guaranteed that in the event of the recognition of the Indian Statistical Institute General Provident Fund by the Commissioner of Income Tax, West Bengal, is not given, the Institute will be responsible for any additional income tax which may be payable in this regard.

Calcutta,  
29th November, 1968.

S. P. Mukherjee  
Chief Accounts Officer

P. Ray  
Joint Secretary

THIRTY-SIXTH ANNUAL REPORT : 1967-68

AS AT 31st MARCH 1968—Contd.

1967 Rs. P.	Property and Assets	Rs. P.	Rs. P.
2,04,81,081.83	Brought forward: .. .. .		1,83,86,679.44
	9. NET ASSETS OF OTHER FUNDS: [EXCLUDING DIRECTOR'S (TRUST) FUND AND INDIAN STATISTICAL INSTITUTE GENERAL PROVIDENT FUND]		
	As per separate Balance Sheets enclosed .. .. .		
	As per contra:		
	.1 Visiting Professors and Fellows Fund .. .. .	113.13	
	.2 Leave Salary Fund .. .. .	3,366.89	
	.3 Gratuity Fund .. .. .	77,52,889.53	
	.4 Development Fund I .. .. .	1,19,651.94	
	.5 Development Fund II .. .. .	11,34,171.89	
42,57,032.14	.6 Supervision Fee Fund .. .. .	<u>2,18,304.87</u>	42,16,187.60
	10. CASH BALANCES:		
	.1 In hand:		
	As per Schedule VI enclosed .. .. .		12,175.23
	.2 At Banks: On Current Accounts:		
	i) With American Express Co. Inc., Calcutta for Rockefeller Foundation Grant—		
	As per contra .. .. .	1,322.29	
86,62,61.90	ii) With other Banks as per Schedule VII enclosed .. .. .	<u>15,51,626.14</u>	<u>15,52,948.43</u>
<u>2,55,54,395.86</u>			<u>2,41,87,860.99</u>

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

PRICE WATERHOUSE FRAY & Co.  
*Chartered Accountants*

INDIAN STATISTICAL INSTITUTE

INCOME AND EXPENDITURE ACCOUNTS

1967		Expenditure	1967	
Plan Rs. P.	Non-Plan Rs. P.		Plan Rs. P.	Non-Plan Rs. P.
2,64,523.83	55,07,681.40	1. To Salary and remuneration to teachers etc. (See note 7 below) .. .. .	2,32,962.87	55,23,209.41
7,594.45	21,48,256.55	.1 " Dearness allowance .. .. .	16,282.95	24,75,686.51
2,922.28	7,56,144.57	.2 " House rent allowance .. .. .	7,754.25	7,59,932.50
2,301.41	4,31,661.97	.3 " City compensatory allowance .. .. .	4,280.76	4,34,979.17
	5,15,000.87	4 " Employer's contribution to Workers' Provident Fund .. .. .		5,17,226.78
	4,19,873.08	.5 " Reimbursement of medical expenses .. .. .		5,05,666.27
5,943.45	4,40,270.83	2 " Travelling expenses .. .. .	20,554.23	5,06,186.26
	2,79,218.48	3 " Overtime allowance .. .. .		2,91,871.92
	34,721.48	4 " Payment for leave vacancies .. .. .		47,873.22
17,247.29	1,29,497.25	5 " Visiting Professors, foreign scientists, fellows and experts .. .. .	70,774.26	1,55,097.53
9,944.23	2,22,674.54	6 " Scholarships, stipends and other assistance to trainees .. .. .	22,542.55	2,27,927.72
	5,014.00	7 " Prizes to workers for initiative .. .. .		500.00
	2,09,502.41	8 " Contribution to Gratuity Fund .. .. .		2,10,266.47
		9 " Machine Tabulation expenses :		
		.1 " Hire and maintenance of tabulating equipment, punches and verifying machines etc. including service charges and freight, customs and other charges for new machineries (see note 1 below) .. .. .	2,22,122.12	16,59,422.79
1,82,941.26	15,21,297.86	.2 " Cost of cards and cabinets, wires and stationeries etc. .. .. .		1,90,747.77
	2,500.00	.3 " Payment to Army Statistical Organisation .. .. .		—
881.28	74,422.99	10 " Printing and publication .. .. .	2,110.00	81,268.45
1,007.07	50,000.44	.11.1 " Society type activities (entertainment and conference expenses etc.) .. .. .	9,799.40	17,482.77
	27,242.99	.2 " Examination expenses .. .. .		22,142.02
1,442.22	1,85,206.47	12.1 " Books and journals (including cost of binding etc.) .. .. .	22.12	22,949.29
	10,281.16	.3 " Microfilm, photo and radiography expenses .. .. .	22.26	10,266.29
	742.40	12.2 " Expenses on Translation Unit in Japan .. .. .		262.72
128.00	1,45,462.72	14 " Repairs, replacement and maintenance of office equipment, furniture and accessories .. .. .	22.21	70,222.12
4,97,274.27	1,45,01,247.42	Carried over .. .. .	7,26,792.42	1,42,27,279.20

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FOR THE YEAR ENDED 31st MARCH 1968

1967		Income			
Plan	Non-Plan			Plan	Non-Plan
Ra. P.	Ra. P.			Ra. P.	Ra. P.
		1. By Grants-in-aid from Government of India for Non-project sectors :			
		1. " Research and Training School including Computing Machines and Electronic Laboratory	2,50,000.00	38,30,000.00	
2,05,000.00		2. " Planning Division .. .. .	1,50,000.00	13,97,000.00	
		3. " Statistical Quality Control .. .. .	70,000.00	8,77,000.00	
		4. " International Statistical Education Centre ..	90,000.00	3,30,000.00	
		5. " Utilisation and maintenance of Soviet equipment (UNTAAs) .. . . .		—	
		2. " Grants-in-aid from Government of India for NRS Project Sector (after adjustment of Ra. 3,500.00 paid in excess last year on account of Army Statistical Organisation)	2,00,000.00	96,31,000.00	
2,10,000.00	91,16,323.00	3. " Receipts from Non-Governmental Sources :			
		1. " In respect of BQO :			
		Membership fees, training fees, service charges etc. .. .. .	5,52,707.15	5,28,923.45	
		2. " In respect of RTS :			
		a) " Membership subscription .. .. .	5,253.58	5,290.30	
		b) " Fees for training course and sale proceeds of syllabus etc. .. .. .	25,194.84	23,568.51	
		c) " Examination fees and other receipts ..	16,036.61	12,482.34	
		d) " Receipts from produce at Girdih Experimental Farm etc. .. .. .	5,277.67	7,275.87	
		e) " Service charges for work done by Psychometric Unit etc. .. .. .	8,136.00	20,610.23	
		3. " In respect of UNTAA : (including Development Workshop) :	94,266.13	—	
		Service charges .. .. .			
		4. " Grants for Miscellaneous projects :			
		1. " From Director of Health Services, Government of India for Family Planning Survey	1,36,800.00	1,01,400.00	
		2. " From Director of Health Services, Government of India for Demographic Research Centre .. .. .		1,11,280.00	
		3. " From Tata Institute of Social Sciences for Sociology of Education Research Project ..		1,600.00	
		4. " From Asia Foundation for International Conference on comparative Research in Social change and Regional Disparities ..	23,730.00	—	
		5. " Miscellaneous receipts :			
		1. " Library .. .. .	391.50	2,879.54	
		2. " Rental charges for machines, tools and other equipments used by the Garden Reach Workshop Ltd. .. .. .		10,686.50	
4,75,000.00	1,58,91,743.88	Carried over .. .. .	8,00,000.00	1,87,94,843.48	

INDIAN STATISTICAL INSTITUTE

INCOME AND EXPENDITURE ACCOUNTS

1967		Expenditure		Income and Expenditure Accounts	
Plan	Non-Plan			Plan	Non-Plan
Rs. P.	Rs. P.			Rs. P.	Rs. P.
4,67,274.57	1,45,01,247.42		Brought forward .. ..	7,69,766.43	1,52,37,670.60
6,643.52	1,22,748.72	15.1	To Stationeries and consumable stores .. ..	22,865.29	2,03,828.14
		2	.. Other miscellaneous expenses viz., advertisement, insurance premium, law charges, coolies, cartage, conveyance and other petty expenses like hot weather contingencies etc. (including Advance to Bankhya Yantra Pvt. Ltd., in liquidation) Rs. 10,424.00 written off .. ..	3,825.92	1,36,284.92
596.10	1,28,942.99	16.	.. Other non-salary contingencies :		
		.. 1	.. Postal and M.O. charges, air and railway freight, electricity and telephone charges .. ..	331.70	3,60,770.57
889.22	3,94,027.66	.. 2	.. Audit fees and expenses .. 26,000.00		
	9,460.00	.. 3	.. See : written back (previous year's provision) .. 515.65		24,494.25
	1,64,048.25	.. 4	.. Bank charges and interest (including Rs. 50,000/- in respect of Leave Salary Fund) .. ..		1,42,650.20
	2,81,166.04	17.1	.. Rent, rates and taxes (including those of field, camps and outstation offices) .. ..	1,800.58	2,59,077.63
126.75	2,75,860.64	.. 2	.. Repairs and/or maintenance of buildings, land etc. and petty construction (including wages Rs. 57,925.54) .. ..	800.00	2,62,970.98
	1,06,880.62	18.	.. Transport .. ..	1,342.57	92,011.18
	78,044.28	19.	.. Workers' welfare and amenities (excluding reimbursement of medical expenses) .. ..	64.08	63,371.63
	70,000.00	20.	.. Provision for Director's discretionary expenses .. ..		2,000.00
	60,839.56	21.1	.. Laboratory stores, tools and minor accessories etc. .. ..		60,686.49
	9,139.90	.. 2	.. Material and other charges for experimental farming and rice research scheme .. ..		15,297.77
		22.	.. Additional rent compensation for Gopueta Nivasa paid to the land acquisition collector (See note 6 below) .. ..		47,626.19
4,75,630.16	1,61,42,215.98			8,00,117.57	1,69,07,468.76

NOTES : 1. As stated in the Balance Sheet, this account does not include transactions in respect of Electronic Data Processing and Computation Unit and Honeywell H-400 Computer Unit of the Institute, separate sets of accounts in respect of which are annexed [See notes (c) and (d) on Balance Sheet].

Included under the head "Hire and Maintenance of Tabulating Equipment, Punches and Verifying machines, etc." is an amount of Rs. 7,68,215.90 charged by the Electronic Data Processing and Computation Unit of the Institute at its usual rates for work done by it.

2. This account does not include the transactions in respect of International Statistical Education Centre Colombo Plan Fellowship, net effect of which has been given in the Balance Sheet (vide Schedule V enclosed). An amount of Rs. 6,27,855.25 being depreciation on fixed assets and O.Y.T. telephone has been adjusted in General Fund.

3. In accordance with consistent practice, the cost of cards, cabinets, stationeries and stores etc., have been written off in this account and any stocks in hand as on 31st March 1968 have not been treated as assets in the Balance Sheet.

4. In accordance with the previous practice, certain transactions have been included in these accounts on a cash basis.

5. Additional rent compensation for Gopueta Nivasa (item 22 in "Expenditure" side) consists of rent Rs. 23,155.22 for the period 24th November 1965 to 28th February 1967 and interest Rs. 18,438.27 for the period 24th May 1965 to 23rd May 1967, as awarded by arbitrator. The liability, if any for the subsequent period is not yet known.

6. Salary and remuneration to teachers etc. under the head "Plan" expenditure includes additional payments to certain employees for extra work done.

Calcutta,  
29th November, 1968

S. P. Mukherjee  
Chief Accounts Officer

P. Ray  
Joint Secretary

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FOR THE YEAR ENDING 31st MARCH 1968—Contd.

1967		Income	1968	
Plan Rs. P.	Non-Plan Rs. P.		Plan Rs. P.	Non-Plan Rs. P.
4,78,000.00	1,58,61,748.88	Brought forward .. ..	8,00,000.00	1,87,94,848.49
		8. By Grant-in-aid received from Government of India towards reimbursement of additional rent compensation for Cooptu Niwas .. ..		47,585.19
830.18	3,50,478.10	" Excess of expenditure over incomes allocated to sectors as per Schedule XI enclosed .. ..	117.57	86,889.06
<u>4,78,830.18</u>	<u>1,61,42,216.98</u>		<u>8,00,117.57</u>	<u>1,89,07,458.76</u>

PRICE WATERHOUSE PEARL & Co.  
Chartered Accountants

INDIAN STATISTICAL INSTITUTE

SCHEDULE I

PARTICULARS OF FUND AMBES

particulars	written down	deletions/	value after
	value as on 31st March 1967	adjustments made during the year	deletion/ adjustments (column 2-3)
(1)	(2)	(3)	(4)
	Rs. P.	Rs. P.	Rs. P.
<b>A. LAND AND LAND DEVELOPMENT :</b>			
1. Calcutta :			
.1 At 153 Gopal Lal Tagore Road (adjoining to 303 Barrack_pore Trunk Road) .. .. .	65,545.90	—	65,545.90
.2 Development of above land .. .. .	40,534.78	—	40,534.78
.3 At 205 Barrackpore Trunk Road (including cost of develop ment) .. .. .	4,33,686.27	—	4,33,686.27
.4 At 154, 160, 165, 166/1 Gopal Lal Tagore Road .. .. .	96,663.71	—	96,663.71
.5 Development of above land .. .. .	6,618.51	—	6,618.51
.6 At 102 Barrackpore Trunk Road (Title not yet vested in the Institute) .. .. .	3,30,564.00	—	3,30,564.00
.7 At 206 Barrackpore Trunk Road .. .. .	13,23,274.41	—	13,23,274.41
.8 At 302 Barrackpore Trunk Road .. .. .	5,70,911.87	—	5,70,911.87
2. Giridih :			
.1 Farm land [Note (a) below] .. .. .	9,514.51	—	9,514.51
.2 Development and fencing etc. .. .. .	29,689.55	—	29,689.55
.3 Farming development .. .. .	10,682.00	—	10,682.00
.4 Irrigation and water supply .. .. .	25,610.00	—	25,610.00
.5 In village 'Makaspur', Giridih .. .. .	1,30,067.90(s)	—	1,30,067.90
.6 Purchased from Sh. Prakriti Devi Geogopadhyaya .. .. .	14,000.00	—	14,000.00
3. Delhi (lease hold) : .. .. .	4,00,000.00	—	4,00,000.00
4. Baroda .. .. .	27,811.22	—	27,811.22
5. Bangalore .. .. .	1,23,918.92	-1,23,918.92(s)	—
6. Madras .. .. .	21,612.50	—	21,612.50
7. Hyderabad .. .. .	1,14,385.00	—	1,14,385.00
Sub-total (A1-7) : .. .. .	38,09,901.13	-1,23,918.92	36,50,982.51
<b>B. BUILDINGS :</b>			
1. Calcutta :			
.1 Partly at 302 Barrackpore Trunk Road and partly at 153 Gopal Lal Tagore Road (main building) [Note (a) below] .. .. .	8,90,271.60	—	8,90,271.60
.2 At 153 Gopal Lal Tagore Road .. .. .	11,56,655.24	—	11,56,655.24
.3 At 205 Barrackpore Trunk Road .. .. .	15,34,916.09	—	15,34,916.09
.4 At 206 Barrackpore Trunk Road .. .. .	1,21,244.30	—	1,21,244.30
.5 At 302 Barrackpore Trunk Road .. .. .	65,076.20	—	65,076.20
Sub-total (B 1.1-1.6) : .. .. .	40,27,068.33	—	40,27,068.33

THIRTY-SIXTH ANNUAL REPORT : 1967-68

SCHEDULE I

as on 31st March 1968

depreciation for the year		net value (columns 4-5.1)	additions during the year				written down value as on 31st March 1968 (columns 6-7.3)
rate	amount		out of Capital Expenditure grant	out of Current Expenditure grant	total (columns 7.0+7.1)		
(5.0)	(5.1)	(6)	(7.0)	(7.1)	(7.2)	(8)	
	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	
—	—	65,645.90	—	—	—	65,645.90	
—	—	40,624.75	—	—	—	40,624.75	
—	—	4,33,686.37	—	—	—	4,33,686.37	
—	—	96,663.71	—	—	—	96,663.71	
—	—	6,818.51	—	—	—	6,818.51	
—	—	3,30,664.00	—	—	—	3,30,664.00	
—	—	13,23,274.41	—	—	—	13,23,274.41	
—	—	6,70,811.87	8,199.88	—	8,199.88	6,79,104.75	
—	—	9,514.51	—	—	—	9,514.51	
—	—	29,689.55	—	—	—	29,689.55	
—	—	10,882.00	—	—	—	10,882.00	
—	—	25,510.00	—	—	—	25,510.00	
—	—	1,30,087.90	—	—	—	1,30,087.90	
—	—	14,000.00	—	—	—	14,000.00	
—	—	4,00,000.00	—	—	—	4,00,000.00	
—	—	27,811.23	—	—	—	27,811.23	
—	—	—	23,500.00(a)	—	23,500.00	23,500.00	
—	—	21,812.50	—	—	—	21,812.50	
—	—	1,14,385.00	—	—	—	1,14,385.00	
—	—	36,50,982.21	30,892.88	—	30,892.88	36,21,675.09	
2.5%	23,269.79	8,68,014.81	—	—	—	8,68,014.81	
2.5%	29,866.38	11,36,568.86	—	—	—	11,36,568.86	
2.5%	46,623.77	17,79,338.23	—	—	—	17,79,338.23	
2.5%	9,033.81	1,18,810.69	—	—	—	1,18,810.69	
2.5%	1,128.91	43,949.29	—	—	—	43,949.29	
—	1,00,928.46	39,36,131.87	—	—	—	39,36,131.87	

(Contd.)



INDIAN STATISTICAL INSTITUTE

SCHEDULE

PARTICULARS OF FIXED ASSETS

particulars	writing down	deletions/	value after
	value as on 31st March 1967	adjustments made during the year	deletions/ adjustments (column 2-3)
(1)	(2)	(3)	(4)
	Rs. P.	Rs. P.	Rs. P.
<b>C. BLENDS &amp; STRUCTURES :</b>			
1. Calcutta :			
.1 At 203 Barrackpore Trunk Road and 153 Gopal Lal Tagore Road (Note (e) below) .. .. .	99,125.23	—	99,125.23
.2 At 206 Barrackpore Trunk Road .. .. .	92,204.10	—	92,204.10
.3 At 154, 180, 195 & 166/7 Gopal Lal Tagore Road .. .. .	69,264.09	—	69,264.09
.4 At 206 Barrackpore Trunk Road .. .. .	11,150.87	—	11,150.87
.5 At 202 Barrackpore Trunk Road .. .. .	3,16,528.08	—	3,16,528.08
.6 At 5 Rabindranath Tagore Road (for UNTAA Workshop—situated on rented premises) .. .. .	3,48,266.19	—	3,48,266.19
2. Delhi :			
.1 Partitions, structures etc. at Delhi .. .. .	1,909.20	—	1,909.20
.2 Erection of a Nissen hut .. .. .	1,497.13	—	1,497.13
Sub-total (C1.1-2.2) .. .. .	9,30,045.53	—	9,30,045.53
<b>D. MACHINERY &amp; EQUIPMENT :</b>			
1. Calculating, punching & other tabulating equipment .. .. .	5,50,880.61	—	5,50,880.61
2. Office machinery & equipment .. .. .	2,28,702.59	—	2,28,702.59
3. Workshop equipment .. .. .	86,639.14	-943.37(f)	87,599.27
4. Photo & optical equipment .. .. .	9,043.72	-256.12(g)	8,865.66
5. Laboratory equipment .. .. .	5,78,978.88	—	5,78,978.88
6. Printing press, monotype accessories etc. .. .. .	6,827.85	—	6,827.85
7. Construction equipment .. .. .	21,211.21	—	21,211.21
8. UNTAA Workshop machinery & equipment .. .. .	70,717.72	—	70,717.72
9. Electronic Computer (HEC 2M) & other tabulating equipment .. .. .	86,879.68	—	86,879.68
Sub-total (D1-9) .. .. .	16,26,880.47	-1,209.00	16,25,581.47
<b>E. PASSENGER LEFT</b> .. .. .	13,875.10	—	13,875.10
<b>F. ELECTRICAL EQUIPMENT AND INSTALLATION :</b>			
1. High tension electricity .. .. .	45,816.47	—	45,816.47
2. Electrical equipment and fittings .. .. .	3,29,237.08	+5,157.06(h)	3,29,345.68
3. High tension electricity for UNTAA Workshop .. .. .	71,740.27	—	71,740.27
Sub-total (F1-3) .. .. .	4,46,804.67	+5,157.06	4,55,148.62

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as on 31st March 1968

depreciation for the year		net value (columns 4-5.1)	additions during the year				written down value as on 31st March 1968 (columns 6-7.2)	
rate	amount		out of Capital Expenditure grant		out of Current Expenditure grant		total (columns 7.0+7.1)	
(6.0)	(5.1)	(6)	(7.0)	(7.1)	(7.2)	(8)		
	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	
7.5%	7,434.39	91,690.83	—	—	—	91,690.83		
7.5%	8,915.31	85,288.79	—	—	—	85,288.79		
7.5%	4,462.35	54,912.34	—	—	—	54,912.34		
7.5%	836.23	10,314.55	—	—	—	10,314.55		
7.5%	22,729.68	2,92,799.85	9,815.40	—	9,815.40	3,02,604.75		
7.5%	25,119.89	3,22,146.30	—	—	—	3,22,146.30		
7.5%	143.20	1,766.10	—	—	—	1,766.10		
7.5%	112.23	1,384.85	—	—	—	1,384.85		
	66,753.42	8,90,792.11	9,815.40	—	9,815.40	8,70,107.61		
10%	82,832.14	4,98,246.47	2,61,166.00	1,903.00	2,63,069.00	7,31,246.47		
10%	35,806.36	2,02,397.23	24,310.24	—	24,310.24	2,27,107.47		
10%	10,154.47	87,541.80	—	—	—	87,541.80		
15%	1,202.00	7,383.65	3,498.20	—	3,498.20	10,881.85		
10%	96,096.78	4,87,882.10	23,479.00	—	23,479.00	5,11,361.10		
10%	1,024.18	5,803.87	—	—	—	5,803.87		
10%	3,181.68	18,029.53	—	—	—	18,029.53		
10%	10,807.68	60,110.05	—	—	—	60,110.05		
10%	18,091.95	73,877.72	—	—	—	73,877.72		
	2,43,807.24	13,81,574.22	3,12,362.44	1,903.00	3,14,265.44	16,96,859.87		
10%	1,267.51	12,217.69	—	—	—	12,217.69		
10%	4,861.65	43,994.82	89,888.12	—	89,888.12	83,709.94		
10%	23,454.69	3,01,091.22	90,126.00	—	90,126.00	3,31,218.38		
10%	7,178.82	64,602.25	—	—	—	64,602.25		
	46,614.25	4,09,622.96	69,990.21	—	69,990.21	4,79,618.87		

(Contd.)

INDIAN STATISTICAL INSTITUTE

SCHEDULE

PARTICULARS OF FIXED ASSETS

particulars	(1)	written down	deletions/	value after
		value as on 31st March 1967	adjustments made during the year	deletion/ adjustments (columns 2-3)
		Rs.	P.	Rs.
				P.
G. FURNITURE AND FITTINGS .. .. .		7,15,214.83	—	7,15,214.83
H. BOOKS AND JOURNALS .. .. .		16,13,209.33	—	16,13,209.33
I. MOTOR CARS AND VEHICLES .. .. .		91,924.04	—	91,924.04
J. LIBRARY EQUIPMENT (INCLUDING EQUIPMENT PRO- CURED THROUGH FORD FOUNDATION GRANT AND ROCKEFELLER FOUNDATION GRANT) .. .. .		26,305.88	—	26,305.88
K. CONSTRUCTION OF OVERBRIDGE .. .. .		10,197.27	—	10,197.27
GRAND TOTAL : .. .. .		1,23,16,096.58	-1,49,059.97	1,21,67,036.61

- NOTES : (a) Excluding Rs. 14,661.16 paid out of Supervision Fee Fund and included in the accounts of that Fund. [Note (b) in Supervision Fee Fund Balance Sheet].
- (b) Including Rs. 88,894.19 being additional amount paid under protest. An appeal lodged with the Patna High Court by the Institute in this respect is pending.
- (c) Value of land requisitioned back by Government of Mysore during the year deleted.
- (d) Excluding Rs. 19,425/- being value of trees grown on the land, payable to Government of Mysore not provided for in these accounts.
- (e) Situated partly on land, the value of which amounting to Rs. 97,556.96 has been included in Supervision Fee Fund. [Note (c) in Supervision Fee Fund Balance Sheet].
- (f) Written down value of a washing machine wrongly treated as the Institute's property, in a previous year now deleted.
- (g) Written down value of one camera lost during the year deleted.
- (h) Cost of air-conditioner wrongly charged to Income and Expenditure account during previous year now capitalised by crediting General Fund.

S. P. Mukherjee  
Chief Accounts Officer

THIRTY-SIXTH ANNUAL REPORT : 1967-68

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as on 31st March 1968

depreciation for the year		net value (column 4-5.1)		additions during the year			written down value as on 31st March 1968 (column 6-7.2)
rate	amount			out of Capital Expenditure grant	out of Current Expenditure grant	total (column 7.0+7.1)	
(5.0)	(5.1)	(6)		(7.0)	(7.1)	(7.2)	(8)
	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.
10%	71,321.48	6,41,893.35	49,785.55	—	—	49,785.55	6,91,678.90
5%	80,860.47	15,22,548.86	1,97,668.92	79,807.77	—	2,77,476.69	18,10,025.55
20%	18,284.61	78,599.43	57,804.20	—	—	57,804.20	1,31,543.53
10%	3,945.88	22,360.00	—	—	—	—	22,360.00
7.5%	764.80	9,423.47	—	—	—	—	9,423.47
	6,94,436.13	1,35,30,900.48	7,29,149.80	81,710.77	—	8,09,860.37	1,33,40,480.85

P. Ray  
Joint Secretary

# INDIAN STATISTICAL INSTITUTE

## SCHEDULE II

AMOUNT ALREADY CLAIMED FROM GOVERNMENT OF INDIA BUT PENDING ACCEPTANCE AS ON 31st MARCH 1968

particulars	Rs. P.	Rs. P.	Rs. P.
<b>1. On account of Capital Expenditure :</b>			
<b>Excess of expenditure over receipt of grant :</b>			
<b>1 1961-62 and 1962-63</b>			
As per last account .. .. .	2,90,857.01		
Less : amount received from Government during the year ..	<u>2,90,857.01</u>	—	
<b>3 1963-64</b>			
As per last account .. .. .	1,40,699.46		
Less : amount received from Government during the year ..	<u>1,40,699.46</u>	—	
<b>3 1964-65</b>			
As per last account .. .. .	80,072.18		
Less : amount received from Government during the year ..	<u>80,072.18</u>	—	
<b>4 1966-67</b>			
As per last account .. .. .		2,04,881.82	
<b>5 In respect of 202 Barrackpore Trunk Road for repairs, renovation etc.</b>			
As per last account .. .. .		<u>2,17,703.07</u>	4,24,584.89
<b>2. On account of non-Project Sectors :</b>			
<b>Excess of expenditure over income :</b>			
<b>1 Upto 1959-60</b>			
As per last account .. .. .		8,25,727.00	
<b>2 1960-61</b>			
As per last account .. .. .		1,84,517.00	
<b>3 1962-63 (including UNTAA Sector)</b>			
As per last account .. .. .	3,81,144.00		
Less : D.R.T.C. expenses written off against Development Fund II ..	<u>36,069.00</u>	3,46,075.00	7,56,219.00
<b>3. On account of NSS Project Sector :</b>			
<b>Excess of expenditure over income :</b>			
<b>1 Upto 1959-59</b>			
As per last account .. .. .		5,44,011.00	
<b>2 1963-64</b>			
As per last account .. .. .	13,12,968.00		
Less : amount adjusted against advance of Rs. 15,00,000/- received from Government in 1962-63 .. .. .	<u>10,04,804.54</u>	3,08,163.46	
<b>3 1964-65</b>			
As per last account .. .. .	1,806.46		
Less : amount adjusted against advance of Rs. 18,00,000/- received from Government in 1962-63 .. .. .	<u>1,308.46</u>	—	
		<u>8,52,112.46</u>	<u>11,80,873.89</u>

(Contd.)



## INDIAN STATISTICAL INSTITUTE

### SCHEDULE III

AMOUNT TO BE CLAIMED FROM GOVERNMENT OF INDIA AS ON 31st MARCH 1966

particulars	Rs.	P.	Rs.	P.	Rs.	P.
1. On account of Revenue (Current) Expenditure (excluding Miscellaneous Projects) :						
Excess of expenditure over income for 1967-68 (Schedule XI attached) ..			60,993.			
2. On account of Plan Revenue Expenditure as per Income and Expenditure Account .. .. .				117.		
3. On account of Capital Expenditure for 1967-68 .. .. .	9,84,441.					
<b>Less : amount of grant received during the year .. .. .</b>	<b>9,13,000.00</b>		<b>21,441.60</b>		<b>73,323.63</b>	

S. P. Mukherjee  
Chief Accounts Officer

P. Ray  
Joint Secretary

### SCHEDULE IV

AMOUNT CLAIMED FROM GOVERNMENT OF INDIA AND REJECTED (BUT UNDER CORRESPONDENCE) AS ON 31st MARCH 1968

particulars	Rs.	P.	Rs.	P.	Rs.	P.
1. On account of Non-Project Sectors :						
Excess of expenditure over income :						
.1 1963-64 :						
As per last account .. .. .	1,43,523.					
Less : D.R.T.C. expenses written off against Development Fund II ..	68,360.00		85,373.			
.2 1964-65 :						
As per last account .. .. .	3,31,081.					
Less : D.R.T.C. expenses written off against Development Fund II ..	88,808.00		2,87,373.			
2. On account of NBS Project Sector :						
.1 Amount recoverable against delivery of and-results :						
As per last account .. .. .			2,00,000.00		5,52,547.53	

S. P. Mukharjee  
Chief Accounts Officer

P. Ray  
Joint Secretary

THIRTY-SIXTH ANNUAL REPORT : 1967-68

SCHEDULE V

EXCESS OF EXPENDITURE OVER RECEIPTS IN RESPECT OF MISCELLANEOUS PROJECTS AND ACTIVITIES ON BEHALF OF THE GOVERNMENT OF INDIA AND OTHER BODIES AS OF 31st MARCH 1968

Projects and activities	Net excess of expenditure(+)/ receipts (-)		Upto March 1968
	Upto 31st March 1967	For the year	
	Rs. P.	Rs. P.	Rs. P.
<b>1. On behalf of Government of India</b>			
1. Research and Planning Committee of the Planning Commission for Sociological Studies (Note (a)) ..	+22,755.14	—	22,755.14
<b>2. ISEC Colombo Plan Fellowship</b>			
As per last account .. .. .	1,06,311.20		
Less : amount received during the year .. ..	66,302.41	+10,008.88	
Expenditure during the year .. .. .	1,79,619.94		
Less : amount received during the year .. ..	31,207.74	+1,48,412.20	
Sub-total : (1.2) .. .. .	+10,008.88	+1,48,412.20	1,58,421.08
<b>3. Director of Health Services for Family Planning Survey :</b>			
As per last account .. .. .	-11,877.11		
Expenditure during the year .. .. .	1,14,485.53		
Less : amount received during the year .. ..	1,01,400.00	+13,085.53	
Sub-total : (1.3) .. .. .	-11,877.11	+13,085.53(a)	1,908.41
Sub-total : (1.1 to 1.3) .. .. .	+22,186.91	+1,61,497.73(b)	1,83,684.63
<b>2. On behalf of other bodies :</b>			
1. International Social Science Council for International Conference on Comparative Research in Social Change and Regional Disparities .. .. .	+12,759.59	+2,222.25(c)	15,981.84
2. Asia Foundation for above Conference .. .. .	-4,856.80	+4,893.47(a)	34.67
3. Tata Institute of Social Sciences for Sociology of Education Project .. .. .	-3,226.43	+3,226.60(c)	0.18
Sub-total : (2.1 to 2.3) .. .. .	+6,776.37	+10,242.42	16,018.79
Total : .. .. .	+27,961.28	+1,71,740.14	1,99,701.42

NOTES : (a) Of this amount, claim in respect of Rs. 18,033.84 has been withdrawn by the Institute. The balance amount has already been claimed from Government of India but is pending acceptance.

(b) To be claimed from Government of India.

(c) The items are vide Schedule XI attached.

S. P. Mukharjee  
Chief Accounts Officer

P. Ray  
Joint Secretary



## INDIAN STATISTICAL INSTITUTE

### SCHEDULE VI

DETAILS OF CASH IN HAND AS ON 31ST MARCH 1958

At the Central Office and other offices of the Institute :

	Ra.	P.	Ra.	P.
<b>At Calcutta :</b>				
Central Office .. .. .	54,564.30			
City Office .. .. .	930.88			
Field Branch .. .. .	1,494.88		56,789.44	
<hr/>				
At Delhi .. .. .			2,727.60	
At Giridih .. .. .			2,982.46	
<b>At Bangalore :</b>				
SQC .. .. .	1,515.17			
DRTC .. .. .	119.18			
RTS .. .. .	39.47		1,673.80	
<hr/>				
At Ernakulam (Kerala) .. .. .			9,408.80	
<b>At Madras :</b>				
RTS .. .. .	249.68			
SQC .. .. .	10,268.97		10,518.65	
<hr/>				
<b>At Bombay :</b>				
SQC .. .. .	3,435.11			
NBS .. .. .	—		3,435.11	
<hr/>				
At Baroda .. .. .			2,647.39	
At Coimbatore .. .. .			724.17	
At Tokyo, Japan [Note (b) on Balance Sheet]			8,290.17	
				99,206.59

The above amount Ra. 99,206.59 has been shown in the following

Balance Sheets of the Institute and its various Funds, as below :				
The Institute .. .. .			12,175.22	
<b>Other Funds :</b>				
Director's (Trust) Fund .. .. .	93,401.88			
ISI General Provident Fund .. .. .	3,829.39		97,031.87	
				99,206.59

S. P. Mukherjee  
Chief Accounts Officer

P. Ray  
Joint Secretary

### SCHEDULE VII

DETAILS OF BANK BALANCES (EXCEPT AMERICAN EXPRESS CO. INC., CALCUTTA)  
AS ON 31ST MARCH 1958

	Ra.	P.
State Bank of India, Shamshazar—Account 'B' .. .. .	27,32,494.50	
State Bank of India, Delhi—Account 'A' .. .. .	1,673.23	
State Bank of India, Delhi—Account 'B' .. .. .	689.10	
United Bank of India Ltd., Baranagar .. .. .	25,293.31	
United Bank of India Ltd., Delhi .. .. .	3,61,004.89	
United Bank of India Ltd., Giridih .. .. .	39,688.00	
United Commercial Bank Ltd., Giridih .. .. .	1,353.27	
State Bank of India, Bangalore .. .. .	4,905.22	
State Bank of Travancore, Ernakulam .. .. .	12,582.77	
State Bank of India, Madras .. .. .	7,973.83	
Bank of Baroda Ltd., Bangalore .. .. .	5,173.11	
Bank of Baroda Ltd., Bangalore (In the name of officials of the Institute) .. .. .	165.51	
Nath Bank Ltd., Calcutta (in liquidation) doubtful .. .. .	4,143.27	
		31,97,604.61

The above amount of Ra. 31,97,604.61 has been shown in the following Balance Sheets of the Institute and its various Funds as below :

The Institute .. .. .	15,51,026.14	
ISI General Provident Fund .. .. .	1,42,423.41	
Honeywell H-400 Computer Unit .. .. .	15,03,154.06	
		31,97,604.61

S. P. Mukherjee  
Chief Accounts Officer

P. Ray  
Joint Secretary

THIRTY-SIXTH ANNUAL REPORT : 1967-68

SCHEDULE VIII

GENERAL FUND AS ON 31st MARCH 1968

particulars	Rs. P.	Rs. P.	Rs. P.
1. Opening Balance .. .. .			1,32,07,686.56
2. Add : assets added during the year :			
1. Capital Expenditure Grant Account :			
As per statement of account of grant received and expenditure for the year .. .. .		9,34,441.60	
2. Current Expenditure Grant Account :			
As per Schedule I (Column 7.1) annexed to the Balance Sheet ..		81,710.77	
3. Cost of one air-conditioner purchased by Delhi Office through Current Expenditure Account during 1966-67 now capitalised ..		5,175.85	[Note (A) in Schedule I]
4. Grant-in-aid from Government of India in reimbursement of excess expenditure in Capital Expenditure Account for 1965-66 written off in previous year .. .. .		36.40	
5. Profit on sale of one camera .. .. .		443.87	
6. Sundry adjustments in respect of building materials (net) ..		2,426.37	10,24,218.96
			1,42,31,915.52
3. Less :			
1. Amount previously credited to this Fund, being profit on sale of Car during 1965-66 deducted by Government out of current year's Capital Grant, now reversed .. .. .		2,940.08	
2. Value of land at Bangalore requisitioned by Government of Mysore .. .. .		1,52,918.92	[Note (c) in Schedule I]
3. Value of an item of asset wrongly shown in previous years as property of the Institute now reversed .. .. .		942.87	[Note (f) in Schedule I]
4. Depreciation written off during the year :			
a) On fixed assets as per Schedule I .. .. .	6,86,436.13		
b) On O.Y.T. telephone as per Balance Sheet .. .. .	1,219.22	6,37,655.35	7,94,467.17

S. P. Mukherjee  
Chief Accounts Officer

P. Ray  
Joint Secretary.

**INDIAN STATISTICAL INSTITUTE**

**SCHEDULE IX**

**LOANS FROM OTHER FUNDS AS OF 31st MARCH 1968**

Funds	Ra.	P.
<i>As per Balance Sheet of :</i>		
1. Visiting Professor and Fellows Fund .. .. .	118.18	
2. Leave Salary Fund .. .. .	8,356.09	
3. Gratuity Fund .. .. .	27,52,899.88	
4. Development Fund I .. .. .	1,19,521.94	
5. Development Fund II .. .. .	2,98,995.84	
6. Supervision Fee Fund .. .. .	1,98,805.61	
7. ISI General Provident Fund .. .. .	2,25,000.00	
<b>Total :</b> .. .. .	<b>35,68,342.59</b>	

S. P. Mukherjee  
Chief Accounts Officer

P. Ray  
Joint Secretary

**SCHEDULE X**

**EXCESS OF RECEIPTS OVER EXPENDITURE IN RESPECT OF MISCELLANEOUS PROJECTS AND ACTIVITIES ON BEHALF OF GOVERNMENT OF INDIA AS ON 31st MARCH 1968**

Projects and activities	Net excess of receipts (+)/ expenditure (-)				
	Upto 31st March 1967		For the year (vide Schedule XI attached)		Upto 31st March 1968
	Ra.	P.	Ra.	P.	Re. P.
1. Director of Health Services for Demographic Studies Excess of Expenditure					
As per last account .. .. .	1,32,080.78				
Less : amount received during the year .. .. .	1,25,000.00	-7,080.78			
Expenditure during the year .. .. .	1,02,918.88				
Less : amount received during the year .. .. .	1,11,280.00	+8,961.32			
<b>Total :</b> .. .. .		<b>-7,080.78</b>	<b>+8,961.32</b>		<b>1,880.54</b>

S. P. Mukherjee  
Chief Accounts Officer

P. Ray  
Joint Secretary

THIRTY-SIXTH ANNUAL REPORT : 1967-68

SCHEDULE XI

SECTOR-WISE BREAK UP OF INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31st MARCH 1968

Sectors	Grant from Cabinet Secretariat, Government of India		Miscellaneous income			Total income	Total expenditure	Excess of income over expenditure (+) Excess of expenditure over income (-)
	(1)	(2)	(3.1) direct	(3.2) alloated	(4)			
	Rs.	P.	Rs.	P.	Rs.	P.	Rs.	P.
<b>Non-Plan</b>								
<b>1. Non-Project Sectors</b>								
1 R.T.S. including C.M.E.L.	38,50,000.00		83,316.00	4,085.47	39,07,300.47	36,80,512.35	+28,787.12	
2 Planning Division	13,97,000.00		—	1,378.96	13,38,378.96	13,11,888.75	+26,490.21	
3 S.Q.C.	8,77,000.00		5,38,933.46	1,287.13	14,17,200.58	13,77,693.09	+39,505.48	
4 ISEC	2,20,000.00		—	292.58	2,20,292.58	2,10,182.35	+10,110.23	
Sub-total: Non-Project Sectors	63,14,000.00		6,22,148.46	7,022.12	69,43,170.57	67,79,977.54	+1,63,193.03	
2. Project Sector—NBS	96,31,000.00		—	6,942.92	96,37,942.92	96,61,169.41	-2,12,556.49	
Total: Project and Non-Project Sectors	1,59,45,000.00		6,22,148.46	12,965.04	1,65,80,613.49	1,66,31,176.95	-50,663.46 (Sch. III)	
<b>3. Gooptu Niwas : additional rent compensation</b>								
	47,585.19		—	—	47,585.19	47,585.19	—	
Total: Items 1 to 3	1,59,92,585.19		6,22,148.46	12,965.04	1,66,28,098.68	1,66,78,762.14	-50,663.46	
<b>4. Miscellaneous :</b>								
1 Family Planning Survey	—		1,01,400.00	—	1,01,400.00	1,14,485.62	-13,085.62 [Note a]	
2 Demographic Research	—		1,11,280.00	—	1,11,280.00	1,02,318.68	+8,961.32 [Note b]	
3 Sociology of Education (Tata Institute of Social Sciences)	—		1,650.00	—	1,650.00	4,976.80	-3,326.80 [Note a]	
4 Asia Foundation for Sociological Conference	—		—	—	—	4,693.47	-4,693.47 [Note a]	
5 International Social Science Council	—		—	—	—	2,222.36	-2,222.36 [Note a]	
Total: Items 1 to 4	1,59,92,585.19		8,36,478.46	12,965.04	1,68,42,438.68	1,69,07,468.78	-65,030.09	
<b>PLAN</b>								
<b>1. Non-Project Sectors :</b>								
1 R.T.S. including C.M.E.L.	2,50,000.00		—	—	2,50,000.00	2,41,868.91	+8,131.09	
2 Planning Division	1,50,000.00		—	—	1,50,000.00	68,330.51	+81,669.48	
3 S.Q.C.	70,000.00		—	—	70,000.00	82,527.83	-12,527.83	
4 ISEC	30,000.00		—	—	30,000.00	30,000.00	—	
Sub-total:	6,00,000.00		—	—	6,00,000.00	5,23,168.15	+76,831.85	
2. Project Sector—NBS	2,00,000.00		—	—	2,00,000.00	2,76,871.48	-76,871.48	
Total: Project and Non-Project Sectors	8,00,000.00		—	—	8,00,000.00	8,00,117.67	-117.67	

NOTES : (a) The items are vide Schedule V attached.  
(b) The item is vide Schedule X attached.

S. P. Mukherjee  
Chief Accounts Officer

P. Ray  
Joint Secretary

INDIAN STATISTICAL INSTITUTE

STATEMENT OF ACCOUNT OF GRANT RECEIVED FROM GOVERNMENT OF INDIA IN RESPECT OF  
CAPITAL PROJECTS AND EXPENDITURE THEREOUT FOR THE YEAR ENDED 31st MARCH 1968

1967 Rs. P.	Expenditure	1967 Rs. P.	Grant Rs. P.
	<p>Additions to Assets during the year :</p> <p>1. As per Schedule I (Column 7.0) to the Balance Sheet of the Indian Statistical Institute [Note (a)] ..</p> <p>19,27,844.82</p>	<p>7,28,149.80</p>	<p>17,50,000.00</p>
	<p>2. OYT telephone-payments during the year</p> <p>4,187.00</p>	<p>6,752.00</p>	<p>2,05,851.82</p>
	<p>3. Advance on account of Expenditure on Joint Project for the construction of Electronic Computer (in progress) ..</p> <p>25,040.00</p>	<p>1,99,540.00</p>	<p>9,13,000.00</p> <p>21,441.80</p>
19,56,861.82		9,34,441.60	19,58,861.82
			9,34,441.60

Note : (a) Excluding Rs. 10,425/- being value of trees grown on land, payable to Government of Mysore not provided for in these accounts.

S. P. Mukherjee  
Chief Accounts Officer

P. Ray  
Joint Secretary

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

Calcutta,  
25th November, 1968.

PRICE WATERHOUSE FRAT & Co.  
Chartered Accountants

THIRTY-SIXTH ANNUAL REPORT : 1967-68

VISITING PROFESSORS AND FELLOWS FUND

BALANCE SHEET AS AT 31st MARCH 1968

1967	Fund and Liabilities	Rs.	P.	1967	Property and Assets	Rs.	P.
Rs. P.				Rs. P.			
	Fund :				Current Assets :		
118.18	As per last account ..	118.18		—	Amount due from the Institute on loan account ..		118.18
				118.18	Cash in hand ..		—
<u>118.18</u>		<u>118.18</u>		<u>118.18</u>			<u>118.18</u>

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

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

Calcutta,  
26th November, 1968.

S. P. Mukherjee  
Chief Accounts Officer

P. Ray  
Joint Secretary

PRINCE WATERHOUSE PRATT & Co.  
Chartered Accountants

LEAVE SALARY FUND

BALANCE SHEET AS AT 31st MARCH 1968

1967	Fund and Liabilities	Rs.	P.	1967	Property and Assets	Rs.	P.
Rs. P.				Rs. P.			
	Fund :				Current Assets :		
	As per last account ..	79,058.22			Amount due from the Institute on Loan Account ..	3,266.69	
	Add : Amount credited by the Institute on account of interest paid to the workers (vide item 16.3 of "Expenditure" side of the Income and Expenditure Account of the Institute) ..	80,000.00		4,053.23	Cash in hand ..		—
		<u>1,59,058.22</u>					
	Less : Leave salary paid during the year (including interest Rs. 28,815/-)	1,29,668.83					
79,058.22							
<u>79,058.22</u>				<u>3,266.69</u>			<u>3,266.69</u>
				79,058.22			

Note : A sum of Rs. 2,80,000/-, being liability in respect of Leave Salaries as at 31st March 1968 estimated by the Institute, has not been provided for in these accounts.

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

Calcutta,  
26th November, 1968.

S. P. Mukherjee  
Chief Accounts Officer

P. Ray  
Joint Secretary

PRINCE WATERHOUSE PRATT & Co.  
Chartered Accountants

**INDIAN STATISTICAL INSTITUTE**

**GRATUITY FUND**

BALANCE SHEET AS AT 31st MARCH 1968

1967		Fund and Liabilities		1967		Property and Assets	
Ra.	P.	Ra.	P.	Ra.	P.	Ra.	P.
<b>Fund:</b>				<b>Current Assets:</b>			
		As per last account	28,81,264.07			Amount due from the Institute on Loan Account	27,82,689.58
		Add: Employer's contribution for the year:		34,97,000.00		Cash in hand	--
		From the Institute (including Ra. 224.54 in respect of employees of EDPCU)		24,264.07			
		Note below	.. 3,10,719.71				
			<u>28,41,883.78</u>				
25,31,264.07		Less: Paid during the year	.. 89,294.20	27,52,689.58			
<u>25,31,264.07</u>				<u>27,52,689.58</u>	<u>25,31,264.07</u>		<u>27,52,689.58</u>

*Note:* Employer's contribution for each year is estimated on the basis of the pay drawn by the entitled employees in respect of that year, whereas those employees are entitled to receive gratuity calculated with reference to the total number of years of service on the basis of last pay drawn by them. The estimated liability as at 31st March 1968 on the assumption that all the entitled employees would have retired and would be entitled to gratuity on that date has not yet been ascertained. Necessary calculations in this regard are being made by the Institute.

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

Calcutta, 25th November, 1968.	S. P. Mukherjee Chief Accounts Officer	P. Ray Joint Secretary	PRICE WATERHOUSE PEAR & CO. Chartered Accountants
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**DEVELOPMENT FUND I**

BALANCE SHEET AS AT 31st MARCH 1968

1967		Fund and Liabilities		1967		Property and Assets	
Ra.	P.	Ra.	P.	Ra.	P.	Ra.	P.
<b>Fund:</b>				<b>Current Assets:</b>			
1,19,521.94		As per last account	.. 1,19,521.94	1,08,000.00		Amount due from the Institute on Loan Account	.. 1,19,521.94
				11,521.94		Cash in hand	.. --
<u>1,19,521.94</u>			<u>1,19,521.94</u>	<u>1,19,521.94</u>			<u>1,19,521.94</u>

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

Calcutta, 25th November, 1968.	S. P. Mukherjee Chief Accounts Officer	P. Ray Joint Secretary	PRICE WATERHOUSE PEAR & CO. Chartered Accountants
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INDIAN STATISTICAL INSTITUTE

DEVELOPMENT FUND II

INCOME AND EXPENDITURE ACCOUNTS FOR THE YEAR ENDED 31st MARCH 1968

1967 Rs. P.	Expenditure	Rs. P.	1967 Rs. P.	Income	Rs. P.
	To depreciation				
21,086.18	On fixed assets ..	18,389.94	18,480.80	By rent .. ..	18,674.88
400.48	" Amount written off OYT telephone advances ..	800.48	1,466.00	" Interest on investment (Less Bank charges Rs. 4.00) ..	1,466.00
—	" Excess of income over ex- penditure transferred to Fund Account ..	608.48	1,510.48	" Excess of expenditure over income transferred to Fund Account ..	—
<hr/>		<hr/>	<hr/>		<hr/>
21,426.66		20,370.88	21,426.66		20,370.88

Calcutta,  
25th November, 1968.

S. P. Mukharjee  
Chief Accounts Officer

P. Ray  
Joint Secretary

PRICE WATERHOUSE FRAY & Co.  
Chartered Accountants

## THIRTY-SIXTH ANNUAL REPORT : 1967-68

## DEVELOPMENT FUND II

## SCHEDULES OF FIXED ASSETS AS ON 31st MARCH 1968

Particulars	Written down value as on 31st March 1967	Depreciation for the year		Written down value as on 31st March 1968
		rate	amount	
(1)	(2)	(3.0)	(3.1)	(4)
<b>1. LAND :</b>				
.1 Bidyut Sarani, Baranagar .. ..	89,000.00			89,000.00
.2 169 Gopal Lal Tagore Road, Baranagar .. ..	1,03,855.00			1,03,855.00
.3 Rose Villa, Giridih .. ..	1,07,502.72			1,07,502.72
.4 Biraja Kujur, Giridih .. ..	7,445.19			7,445.19
.5 Tahdab Plasterers' Club, Darjeeling .. ..	25,996.50			25,996.50
Sub-total : (1) .. ..	3,94,799.41			3,94,799.41
<b>2. BUILDINGS :</b>				
.1 169 Gopal Lal Tagore Road, Baranagar .. ..	23,485.80	2.8%	667.40	23,853.20
.2 Rose Villa, Giridih .. ..	94,903.64	"	2,670.09	97,573.73
.3 Health Home, Giridih .. ..	12,801.27	"	227.62	13,028.89
Sub-total : (2) .. ..	1,31,190.71		3,565.11	1,34,755.82
<b>3. SHEDS AND STRUCTURES :</b>				
.1 Students' hostel etc. at 206 Barrackpore Trunk Road, Baranagar .. ..	1,23,173.94	7.8%	9,628.05	1,32,802.00
.2 169 Gopal Lal Tagore Road, Baranagar .. ..	55,994.84	"	4,177.28	60,172.12
.3 Post Office at 204 Barrackpore Trunk Road	585.07	"	43.93	629.00
.4 Bidyut Sarani, Baranagar .. ..	1,522.75	"	114.21	1,636.96
.5 Petty construction at Giridih .. ..	7,858.18	"	529.20	8,387.38
Sub-total : (3) .. ..	1,89,034.78		14,492.47	2,03,527.25
<b>4. INTERNAL TELEPHONE SYSTEM .. ..</b>				
	4,745.23	10%	474.52	5,219.75
<b>5. MOTOR CARS .. ..</b>				
	7,124.08	20%	1,424.82	8,548.90
Total : (1-5) .. ..	6,30,088.90		19,288.94	6,49,377.84

\* Situated on land, acquired as gift, the value of which has been ignored for the purposes of these accounts.

S. P. Mukherjee  
Chief Accounts Officer

P. Ray  
Joint Secretary

INDIAN STATISTICAL INSTITUTE

SUPERVISION FEE FUND

BALANCE SHEET AS AT 31st MARCH 1968

1967 Rs. P.	Fund and Liabilities	Rs. P.	1967 Rs. P.	Property and Assets	Rs. P.	Rs. P.
	Fund :			Fixed Assets :		
2,16,304.87	As per last account	2,16,304.87		Land :		
	Liabilities :			At Calcutta—303 Barrack- pore Trunk Road (a)	87,558.85	
	Amount due to ISI Small Scale Indus- tries Experimental Unit	4,878.88	1,12,218.11	At Giridih—Farmland (b)	14,961.16	1,13,218.11
				Current Assets :		
				Amount due on Loan Account :		
				(a) From the Institute ..	1,08,865.61	
				(b) From ISI Small Scale In- dustries Experimental Unit	—	
			81,490.36	(c) From ISIJU Computer Projects ..	—	1,08,865.61
			22,696.40	Cash in hand ..	—	—
<u>2,16,304.87</u>		<u>2,20,883.72</u>	<u>2,16,304.87</u>			<u>2,20,883.72</u>

NOTES : (a) Value of the building on this land is shown in the Fixed Assets Schedule attached to the Institute's Balance Sheet [Items B.1.1 and C.1.1 and (e) of Schedule I].

(b) Excluding Rs. 9,514.51 paid out of General Fund and included in the accounts of the Institute [Item A2.1 and note (a) of the Schedule I].

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

Calcutta,  
25th November, 1968.

S. P. Mukherjee  
Chief Accounts Officer

P. Ray  
Joint Secretary

PRICE WATERHOUSE FRAY & CO.  
Chartered Accountants

**THIRTY-SIXTH ANNUAL REPORT : 1967-68**  
**ELECTRONIC DATA PROCESSING AND COMPUTATION UNIT**

BALANCE SHEET AS AT 31st MARCH 1968

1967 Fund and Liabilities Rs. P.	Rs. P.	Rs. P.	1967 Rs. P.	Property and Assets	Rs. P.	Rs. P.
<b>1. Fund :</b>			<b>1. Fixed Assets :</b>			
As per last account ..	7,18,743.13			1. Magnetic tape : Written down value As per last account	40,185.00	
Add : Excess of income over expenditure for the year ..	5,57,909.56	12,76,652.69	40,186.00	Less : depreciation written off during the year ..	16,078.00	24,122.00
<b>2. Liabilities :</b>			<b>2. Furniture and fittings :</b>			
3,94,186.51	Sundry creditors	62,542.53		Written down value As per last account	1,830.11	
			1,830.11	Less : depreciation written off during the year ..	183.01	1,647.10
				<b>3. Electrical equipment :</b>		
				Written down value As per last account	1,530.00	
			1,530.00	Less : depreciation written off during the year ..	153.00	1,377.00
						26,966.10
				<b>2. Current Assets :</b>		
			66,478.20	1. Sundry debtors ..	1,12,259.00	
				2. Amount due from the Institute on Loan Account ..	12,00,250.42	13,12,549.42
			8,68,192.33			
				<b>3. Machine tabulation expense (importation charges) to the extent not written off :</b>		
				As per last account	1,30,900.00	
			1,30,900.00	Less : written off during the year ..	1,30,900.00	—
<u>11,12,929.64</u>		<u>12,38,616.63</u>	<u>11,12,929.64</u>			<u>13,30,616.62</u>

B. P. Mukherjee  
Chief Accounts Officer

P. Ray  
Joint Secretary

We have examined the above Balance Sheet of the Indian Statistical Institute Electronic Data Processing and Computation Unit as at 31st March 1968 and the annexed Income and Expenditure Account for the year ended that date with the books and records maintained by the Institute and produced to us and the information and explanations given and have found them to be in accordance therewith.

Calcutta,  
25th November, 1968.

PACON WATERHOUSE FRAY & CO.  
Chartered Accountants

**INDIAN STATISTICAL INSTITUTE**

**ELECTRONIC DATA PROCESSING AND COMPUTATION UNIT**

**INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31st MARCH 1968**

1967 Rs. P.	Expenditure	Rs. P.	1967 Rs. P.	Income	Rs. P.
92,839.13	1. To Salary and other remuneration ..	70,606.56	13,87,022.74	1. By Service charges (including Rs. 7,85,216.90 billed to the Institute) ..	9,02,206.60
	2. " Machine Tabulation expenses :			2. " Amount billed to Government of India for tabulation work ..	5,99,750.00
7,80,276.71	1. " Hire and maintenance ..	8,68,985.73	4,95,000.00	2. " Training fee etc. ..	900.00
	2. " Cards, rent, electricity, stores, stationary and other charges ..	78,106.83	4,685.00		
65,329.14	3. " Depreciation on Fixed Assets :		—	4. " Refund of importation charges paid in a previous year ..	5,15,994.78
	Magnetic tape ..	16,076.00			
	Furniture and fittings ..	168.01			
16,369.81	Electrical equipment ..	169.00	16,369.81		
1,80,000.00	4. " Importation charges written off ..	1,80,900.00			
5,70,736.56	5. " Excess of income over expenditure transferred to Fund Account ..	5,57,909.56			
<hr/>			<hr/>		
17,55,487.74			17,17,850.18	17,55,487.74	17,17,850.18
<hr/>			<hr/>		

Calcutta,  
25th November, 1968.

S. P. Mukherjee  
Chief Accounts Officer

P. Ray  
Joint Secretary

PAUL WATERBURY PEAR & Co.  
Chartered Accountants

THIRTY-SIXTH ANNUAL REPORT : 1967-68

HONEYWELL H-400 COMPUTER UNIT

BALANCE SHEET AS AT 31st MARCH 1968

Fund and Liabilities	Rs. P.	Property and Assets	Rs. P.
Loan from Government of India ..	16,00,000.00	Current Assets : .. .. .	
Liabilities .. .. .	1,046.07	Advances for installation of air-conditioning plant and high tension electricity ..	52,264.00
		Balance with State Bank of India, forming part of Institute's Bank Account as shown in Schedule VII to the Institute's Balance Sheet .. .. .	15,00,546.00
		Excess of expenditure over income ..	45,116.01
	<u>16,01,046.07</u>		<u>16,01,046.07</u>

S. P. Mukherjee  
Chief Accounts Officer

F. Ray  
Joint Secretary

We have examined the above Balance Sheet of the Indian Statistical Institute Honeywell H-400 Computer Unit as at 31st March 1968 and the annexed Income and Expenditure Account for the year ended that date with the books and records maintained by the Institute and produced to us and the information and explanations given and have found them to be in accordance therewith.

Calcutta,  
25th November, 1968.

PRICE WATSONS PRAT & Co.  
Chartered Accountants

**INDIAN STATISTICAL INSTITUTE**  
**HONEYWELL H-400 COMPUTER UNIT**

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31st MARCH 1968

Expenditure	Rs. P.	Income	Rs. P.
1. To Salary and other remuneration	26,021.80	1. By Excess of expenditure over income	45,116.01
2. " Travelling expenses ..	1,234.61		
3. " Stipend .. ..	8,225.48		
4. " Installation expenses ..	462.00		
5. " Other charges .. ..	45.00		
	<u>46,116.01</u>		<u>45,116.01</u>

Calcutta,  
25th November, 1968.

S. P. Mukherjee  
Chief Accounts Officer

P. Ray  
Joint Secretary

PRICE WATERHOUSE FRAY & CO.  
Chartered Accountants

## INDIAN STATISTICAL INSTITUTE GENERAL PROVIDENT FUND

### AUDITORS' REPORT

We have audited the Balance Sheet as at 31st March 1968 of the Indian Statistical Institute General Provident Fund, signed by us under reference to this report, and the relative Income and Expenditure Account for the year ended that date with the books and records of the Fund maintained by the Institute and produced to us and the information and explanations given and, subject to the belowmentioned remarks, have found them to be in accordance therewith. The remarks referred to above are :

1. The Board of Trustees as envisaged in Rule 14 read with Rule 2(1) of the Rules of the Fund has not yet been formed. Accordingly, the investments of the Fund are held in the name of the Institute and the Bank Account of the Fund is also maintained in its name.

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

3. Certain advances were made to the Institute by the Fund which are not specifically permitted by the Provisions of the Rules of the Fund. The balance of such advances as at 31st March 1968 was Rs. 2,25,000/-.

In the opinion of the officials of the Institute, however, Rule 12(b) *inter alia* permits granting of loans to the Institute. In this connection, a resolution passed at the meeting of the Council held on 25th January 1961, authorising two of its members to obtain advances from the Provident Fund, subject to certain conditions, has been shown to us.

4. Membership subscriptions were neither deposited to the Fund's Bank Account nor invested in the manner required by the Rule 12 of the Fund within the year.

5. Rs. 3,68,862.28 being undistributed income including amount forfeited as at 31st March 1968 includes Employer's contributions together with interest thereon forfeited under Rule 25 and available for disposal of the Trustees as provided for in Rule 27, the extent of which is not readily ascertainable.

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

Calcutta,  
25th November, 1968.

PRICE WATERHOUSE PERAT & Co.  
*Chartered Accountants*



INDIAN STATISTICAL INSTITUTE

INDIAN STATISTICAL INSTITUTE

BALANCE SHEET

1967		Fund and Liabilities		Rs. P.		Rs. P.		Rs. P.	
Rs.	P.								
		Members' own subscription :							
		As per last account .. .. .				30,76,262.76			
		Add : during the year .. .. .				5,17,866.19			
							41,93,128.95		
30,76,262.76		Less : refunded during the year .. .. .					1,16,103.72		40,78,025.23
		Employer's contribution :							
		As per last account .. .. .				36,76,262.76			
		Add : during the year (including Rs. 640.41 in respect of employees of IDPCU) .. .. .				5,17,866.19			
							41,93,128.95		
36,76,262.76		Less : (i) refunded during the year .. .. .		1,06,869.87					
		(ii) amount forfeited .. .. .		9,234.16			1,16,103.72		40,78,025.23
		Members' Voluntary subscription :							
		As per last account .. .. .				1,38,286.34			
		Add : during the year .. .. .				31,653.86			
							1,67,940.20		
1,38,286.34		Less : refunded during the year .. .. .					12,766.71		1,65,184.40
		Interest payable :							
		a) On members' own subscription :							
		As per last account .. .. .				8,91,863.00			
		Add : during the year .. .. .				2,35,636.43			
							11,27,398.43		
8,91,863.00		Less : paid during the year .. .. .					27,078.92		11,00,319.51
		b) On employer's contribution :							
		As per last account .. .. .				8,02,463.11			
		Add : during the year .. .. .				2,18,333.22			
							10,20,796.33		
8,02,463.11		Less : (i) paid during the year .. .. .		22,814.98					
		(ii) amount forfeited .. .. .		717.01			24,531.99		9,96,264.34
		c) On members' voluntary subscription :							
		As per last account .. .. .				28,053.96			
		Add : during the year .. .. .				8,490.47			
							37,141.43		
28,653.96		Less : paid during the year .. .. .					2,305.14		34,839.29
		Undistributed income including amounts forfeited :							
		As per last account .. .. .					3,25,470.18		
		Add : (i) excess of income over expenditure for the year .. .. .		33,440.94					
		(ii) amount forfeited during the year .. .. .		9,061.15			43,392.10		3,68,662.58
3,25,470.18		Arrear dearness allowance including interest payable to workers as per contra .. .. .							1,43,433.41
									1,08,53,663.78
									96,56,363.11

\* The amount of Rs. 2,25,000/- has since been recovered and invested in Fixed Deposit with State Bank of India, Shamshar on 18th October 1968.

\*\* An amount of Rs. 15,00,000/- has since been invested in Fixed Deposit with State Bank of India, Shamshar on 3rd April 1968.

Calcutta,  
29th November, 1968.

S. P. Mukherjee  
Chief Accounts Officer

P. Ray  
Joint Secretary

**THIRTY-SIXTH ANNUAL REPORT : 1967-68**

**GENERAL PROVIDENT FUND**

**as at 31st March 1968**

1967		Property and Assets	Ra. P.		Ra. P.		Ra. P.		
Ra.	P.		Ra.	P.	Ra.	P.	Ra.	P.	
<b>Investments at cost :</b>									
a) Government Promissory Notes :									
		Ra. 18,55,000/- 3% conversion loan 1946-56	13,00,769	00					
		Ra. 13,55,000/- 5% 1st Development loan			11,45,154	08			
		Ra. 13,00,000/- 4½% loan 1965 .. ..			13,00,000	00			
		Ra. 44,70,000.00 (Market value Ra. 36,35,050.00)					37,45,924	29	
		b) Ra. 50,000/- 12 year National Plan Savings Certificates .. ..					50,000	00	
57,95,924	29	c) Fixed Deposits with State Bank of India, Shambazar .. ..			38,00,000	00		75,95,924	
10,82,944	00	Loans to members (including non-repayable loans under Rule 21(c)) .. ..						11,92,358	
<b>Current Assets :</b>									
Interest accrued :									
95,438	50	a) On Government Promissory Notes (excluding interest accrued but not due) .. ..	1,51,515	25					
30,558	22	b) On 12 year National Plan Savings Certificates	16,500	00					
92,500	00	c) On Fixed Deposit with State Bank of India Shambazar .. ..	99,790	88			2,87,905	13	
8,774	70	Income-tax recoverable .. ..					8,774	70	
6,00,000	00	Amount due from the Institute :							
		On loan account .. ..					2,35,000	00*	
21,084	54	Cash balance :							
		In custody of the Institute (as shown in Schedule VI to the Institute's Balance Sheet) ..					3,839	39	
With Banks on Current Accounts :									
		(i) with State Bank of India, Strand Road ..	15,18,027	86**					
		(ii) with State Bank of India, Shambazar (forming part of Institute's Bank Account as shown in Schedule VII to the Institute's Balance Sheet) on account of arrears dearness allowances including interest payable to workers as per contra	1,42,433	41			16,60,461	27	
18,16,027	86						21,86,771	49	
							1,00,53,943	78	
<u>94,35,383</u>							<u>11</u>		

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

PRICE WATERHOUSE FRAY & Co.  
Chartered Accountants

INDIAN STATISTICAL INSTITUTE

INDIAN STATISTICAL INSTITUTE

INCOME AND EXPENDITURE ACCOUNT

1967 Rs. P.	Expenditure	Rs. P.	Rs. P.
	To Interest :		
2,08,814.17	(i) On members' own subscription .. . . .	2,32,535.43	
1,97,421.94	(ii) On Employer's contribution .. . . .	2,18,223.22	
7,275.04	(iii) On members' voluntary subscription .. . . .	<u>8,490.47</u>	4,61,269.11
—	Adjustment of interest on 12-Year National Plan Savings Certificates taken in excess in previous years .. . . .		4,068.22
32,902.41	Excess of income over expenditure .. . . .		32,440.94

4,31,412.95

4,99,869.28

Calcutta,  
25th November, 1968.

S. P. Mukharjee  
Chief Accounts Officer

P. Ray  
Joint Secretary

THIRTY-SIXTH ANNUAL REPORT : 1967-68

GENERAL PROVIDENT FUND

FOR THE YEAR ENDED 31st MARCH 1968

1967					
Rs.	P.		Income		Rs. P.
By Interest :					
1,53,282.25		(i)	On G P Notes (excluding bank charges Rs. 817.76)	.. ..	1,53,282.25
2,926.49		(ii)	On 19-Year National Plan Savings Certificates	.. ..	—
1,03,355.45		(iii)	On Fixed Deposit with the bank	.. ..	2,04,181.29
25,788.40		(iv)	On Employer's contribution for the previous year @ 6% per annum'	..	—
—		(v)	Overriding interest for utilising G P Notes by the Institute in previous year		4,910.04
62,500.00		(vi)	From Institute on loans etc.	.. ..	43,750.00
83,560.37		(vii)	Realised on loan given to the members	.. ..	93,744.70
					4,09,868.28
					4,31,412.00

PRICE WATERHOUSE FRAT & Co.  
Chartered Accountants

GOVERNING BODY OF THE RESEARCH AND TRAINING SCHOOL : 1967-68

1. Shri K. P. S. Menon, Chairman (*ex-officio*); 2. Professor P. C. Mahalanobis, Honorary Secretary (*ex-officio*); 3. Dr. C. R. Rao, Director, Research and Training School (*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., Vice-Chancellor, Calcutta University (*Indian Economics Association*); 6. Shri B. M. Thapar, (*Federation of Indian Chambers of Commerce and Industry*); 7. Joint Director, (Dr. M. K. Ganguli) Central Statistical Organisation, (*Government of India*); 8. Joint Secretary (Shri A. P. V. Krishnan), Ministry of Finance, Financial Adviser to the Department of Statistics, (*Government of India*); 9. Professor (S. S. Srikhanda, F.N.I. Head of the Department of Mathematics, University of Bombay, (*National Institute of Science of India*); 10. Shri V. G. Pendharkar, Economic Adviser, Economic Department, Reserve Bank of India, (*Reserve Bank of India*); 11. Dr. C. S. Patel, M.Sc., Ph.D. (Leeds), Vice-Chancellor, M. S. University of Baroda, *Inter University Board of India, and Ceylon*); and 12. Dr. Bhabatosh Dutta, M.A., Ph.D., Secretary to the Government of West Bengal, Education Department; 13. Dr. B. B. Seshachar, D.Sc., F.N.I., Dean, Faculty of Science, University of Delhi; 14. Shri Jagjit Singh, M.A., F.R.S.S., General Manager, South Eastern Railway; 15. Dr. B. P. Adhikari, M.Sc., (Cal.), Dr. *es.Sc.* (Paris); 16. Shri Partha Ray; 17. Shri S. Basu, M.Sc., F.N.I., 18. Shri Pitambar Pant, M.Sc., Member, Planning Commission, Government of India (*Council of the Indian Statistical Institute*).

LIST OF MEMBERS OF DIFFERENT COMMITTEES : 1967-68

*Finance Committee of the Council*

1. Chairman of the Institute (*ex-officio*) or his nominee; 2. Secretary of the Institute (*ex-officio*) or his nominee; 3. Director of the Research and Training School (*ex-officio*) or his nominee; 4. Dr. B. P. Adhikari; 5. Dr. N. Das; 6. Dr. Bhabatosh Dutta; 7. Shri S. Dutta; 8. Dr. B. S. Minhas; 9. Shri Partha Ray (*Member-Secretary*) or in his absence a person nominated by the Secretary or the Chairman or Vice-Chairmen to make such nomination; 10 & 11. Two representatives nominated by the Government of India—Cabinet Secretary (Shri D. S. Joshi) or his representative and Joint Secretary, Ministry of Finance (Shri A. P. V. Krishnan).

*Finance Committee of the Governing Body*

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

*Journal Committee of the Institute*

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

*Examination Committee of the Institutes*

1. Dr. B. P. Adhikari, 2. Dr. K. S. Banerjee, Additional Director, State Statistical Bureau, West Bengal, 3. Shri Debnrata Basu, F.I.A., Assistant Manager (E.D.P.), L.I.D. Division, 4. Dr. P. K. Bose, Professor of Statistics, Calcutta University, 5. Shri N. C. Chakravarti, 6. Dr. (Miss) A. George, Professor of Statistics, Trivandrum University, 7. Dr. V. S. Humabasar, Professor of Mathematics and Statistics, Poona University, 8. Professor V. B. Kamath, Personnel Manager for Training & Development, The West Coast Paper Mills Ltd., 9. Professor D. B. Lahiri, 10. Dr. D. S. Minhas, 11. Dr. S. K. Mitra, 12. Professor M. Mukherjee, 13. Dr. M. N. Murthy, 14. Professor P. N. Phutane, 15. Dr. B. Ramchandran, 16 & 17. Two representatives of the Governing Body of the Research and Training School (Dr. Nirmal Chakravarti, CSO, and Shri S. Raja Rao), 18. Shri J. M. Sengupta, 19. Dr. G. R. Seth, IARS, ICAR, and 20. Shri S. Sengupta, *Member-Secretary*.

**BOMBAY BRANCH : 1967-68**

*Honorary President* : Shri S. K. Wankhede

*Honorary Vice-Presidents* : 1. Professor C. N. Vakil, 2. Shri R. G. Saraiya,

3. Dr. N. S. R. Sastry, 4. Dr. C. Nanjundayya.

*Honorary Secretary* : Shri P. K. Bhaumik

*Honorary Joint Secretary* : Professor P. N. Phutane

*Honorary Treasurer* : Dr. M. N. Vartak.

*Members of the Council* : Dr. H. N. Iyengar, 2. Professor V. B. Kamath,  
3. Professor N. S. Ramaswami, 4. Shri S. V. Barkar.

**MYSORE STATE BRANCH : 1967-68**

*President* : Shri K. G. Katwey,

*Vice-President* : Shri H. C. Ramanna

*Secretary* : Professor Sringabhusana

*Joint Secretary* : Shri C. Ananthapadmanabha Setty.

*Treasurer* : Shri M. V. V. Raman.

*Executive Committee Members* : 1. Professor B. Natarajan, 2. Shri H. S. Narayana Rao, 3. Shri V. Narayana, 4. Dr. M. V. Jambunathan, 5. Shri P. S. Narayana, 6. Professor M. Narayana Iyengar.

**KERALA BRANCH : 1967-68**

*Chairman* : Professor Samuel Mathai

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

*Members* : 1. Dr. R. Krishna Pillai, 2. Shri S. Janardhana Iyer, 3. Shri P. S. Janardhanan Nayar.