

TWENTYNINTH ANNUAL REPORT : 1960-61

Accounts for the year ending 31st March 1961

<i>By Expenditure</i>		Rs.	nF.	Rs.	nF.
1.	Part payment in advance towards purchase and/or acquisition of land adjacent to Gooptu Niwas				5,652.00
2.	Expenditure on buildings, equipment and other purposes :				
.1	Development of land, fencing, etc. at Giridih		1,194.65		
.2	Purchase of two motor vehicles		47,020.22		
.3	Electrical equipment		31,918.98		
.4	Calculating, punching and tabulating equipment		32,167.60		
.5	Office machineries and equipment		45,377.28		
.6	Laboratory, workshop, photo and optical equipment		1,26,439.61		
.7	Furniture and fittings		70,995.73		3,65,814.35
3.	Expenditure on account of repairs, maintenance and constructions of properties of Government of India :				
	Repairs, renovations and new constructions, etc. at 202 B.T. Road				98,894.13
4.	Recoverable capital outlays :				
	Victoria Front Printing Press with accessories				66,500.00
5.	Repayment of loans taken from different funds of the Institute :				
	Leave Salary fund	45,000.00			
	Gratuity fund	8,000.00			
	Development fund II	1,84,747.42			2,17,747.42(a)
6.	Repayment of loan taken from Development Fund A/o. II as per contra... ..				3,32,640.82(a)
7.	Closing stock of building materials for work under progress and other constructions				4,48,727.27
					<u>Rs. 15,25,975.89</u>

(a) Out of temporary loans amounting to Rs. 18,81,397.78 nF taken from funded accounts for capital expenditure remaining unpaid upto 31-3-60, an amount of Rs. 5,50,388.24 nF (from Nos. 3 & 6 of expenditure side) having been repaid during the year under report, the present position of outstanding loans as at the close of the year 1960-61 comes as under :

i)	Leave Salary Fund	Rs. 5,48,000.00
ii)	Gratuity Fund	4,72,000.00
iii)	Development Fund No. I (Created out of savings from Director's salaries, etc.)	81,397.78
iv)	Development Fund No. II (Created out of contributions received from Government of India	2,09,811.76
		<u>Rs. 13,11,009.54</u>

In terms of our report of even date.

Calcutta,
29th October 1961

Sd/ LOVLAUK & LKWS
Chartered Accountants

PART 3 : APPENDICES

Appendix I : Twentyninth Anniversary Celebrations

The twentyninth anniversary celebrations commenced at 6 P.M. on 10 December 1960 with the singing of a Vedic hymn in the mango-grove at 203 Barrackpore Trunk Road. Professor Satyendra Nath Bose, Vice-President of the Institute, was the guest speaker. Inaugurating the celebrations, Sir D. N. Mitra, Chairman of the Council, said:

It is my pleasant duty to welcome you to the twentyninth anniversary of the Indian Statistical Institute. The most important event of the year has been the bringing into operation a Statute recognizing the Institute as an institution of national importance. It has not made any difference, however, in our way of life and though we are now a body associated with a Statute, the soul remains—the soul of the old Indian Statistical Institute with which Professor S. N. Bose has been connected right from its foundation and with which Sir Ronald Fisher, who will also address you, has been connected since 1937. I hope these old friends will not find any difference now in the soul of the Institute. Though we have been declared to be an institution of national importance, we may claim that we are also an institution of international importance.

INTRODUCTION OF FOREIGN GUESTS

Introducing the foreign guests, Professor P. C. Mahalanobis said :

I should like to mention here the names of some of the foreign scientists who are now working with us. We miss very much Professor J. B. S. Haldane, who has not been able to come as he hurt himself in an accident during a visit to Ceylon and we also regret the absence of Mrs. Haldane.

We have with us for the third time Dr. Pamela Robinson, whom we welcome once again and also Dr. Alec Smith from the University College, London. They are leaving the day after tomorrow for a geological expedition which would be in continuation of some very interesting and important work which Dr. Robinson carried out with the help of our workers in the Geological Studies Unit during the two previous expeditions. The importance of this work has been recognized by a grant of £1200 from the Royal Society of London, part of which is for certain equipment which were not available in India. We are extremely grateful for this support.

We also welcome Dr. Thomas Balogh, from Oxford University who is now working with our Planning Unit in Delhi. Two scientists from the USSR Academy of Sciences who are arriving shortly in Delhi, will be working in the Institute for four or five months. They are expected to arrive soon in Calcutta. We also have one or two others who are not in Calcutta just now. I also take this opportunity of welcoming Dr. Y. Biraud from the World Health Organization. He will be staying for a very short time but nonetheless he is a very welcome visitor.

Dr. C. R. Rao, Head of the Research & Training School, then introduced the foreign students who were trainees of the International Statistical Education Centre.

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PRESIDENTIAL SPEECH BY PROFESSOR SATYENDRA NATH BOSE

This is an annual function at which every year we are fortunate in being able to record new developments in this old Institute. When the history of the Institute is written, it will no doubt mention the great debt which the Institute owes to the initiative of Professor Mahalanobis who, as a matter of fact, laid its foundation. In the early days he worked almost single handed, trained his own men and thus built up the Institute which grew in importance and which has now been recognized, as the Chairman has just told you, by the Government, as an institution of national importance. Even before this statute was passed, we had been carrying on work like sample surveys, helping the Government in various other ways, and at the same time promoting the cause of science by undertaking the training of people from India and abroad.

I am happy to see so many scholars who have come from outside India. It shows that the work that the Institute had been doing has now been recognized. We are able to contribute something to the total endeavour in the world in getting a new science going and placing it on sound foundations. When the trained young people who are here and whom we welcome as friends go back, they will be able to introduce new methods. I am sure they will remember their sojourn here and will be able to continue to think of this Institute as a true friend who will be ready always as before to help them, if help were needed. We are proud that the country has now recognized the great work begun by Professor Mahalanobis.

It is something to be a scientist and to work out new theorems or to add some chapters to the growing body of knowledge, but it is completely on a different plane of achievement altogether to be able to organize an institute like the Indian Statistical Institute as it stands at present, with its large number of workers, and the scores of people who come here to learn the methods of statistics.

We are glad that the experience that we have gained by working so many years will now be utilized by other countries. India offers her friendship to every country which wishes to introduce modern methods. India was recognized as the country which did not think of its own aggrandisement, but on the other hand by sending out apostles, it put at the disposal of other nations things which it had discovered and which were considered to be the real solace for life. I am thinking of the great preachers of the new religion founded by Buddha and the poor apostles who crossed the snow-clad mountains, the oceans and seas and spread the results of his contemplations to other countries, whereby people could build a foundation upon which civilization could be truly laid.

When the pages of history are turned, ancient India will be found to have been helping all people to recognize themselves. In the twentieth century, mankind has progressed a great deal, in spite of the many conflicts which have disfigured the pages of history. But we seem to be slowly moving towards a better state of affairs wherein people will instinctively recognize others as common friends for the uplift of humanity. They are already cooperating to utilize natural resources for the betterment of the condition of man in all countries and in order to utilize the resources properly, it is necessary that every country plans its future. Statistics has, therefore, a great part to play and I am glad that people from other countries where such developments are on the anvil are coming forward to learn from us what we have learnt by years of effort. I can say this much that this Institute, under the able guidance of Professor Mahalanobis

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is not narrow and parochial in its outlook. With this Institute as a basis, he has incidentally helped other sciences.

In the recent course of studies introduced in the Institute, a certain number of selected pupils are accepted to be trained according to our own ideas and we feel that this kind of training is a great and pioneering experiment which will be followed with interest by all nations. The method of the training is somewhat different from that followed in the universities. There is a sort of unitary approach so that all the sciences are taught from a particular point of view and so far as I am concerned, having applied the statistical method, at least in one field of science, it is a matter of great joy to see that these are now consistently being applied to all branches of sciences—in biology, chemistry, and other cognate subjects.

Thus not only are the fundamentals of these sciences taught properly to beginners, but when they go away as trained statisticians they will also be able to use the statistical tool in the proper way for analysis and interpretation of the raw data placed before them. As the Institute continues to grow under the able guidance of Professor Mahalanobis and Professor Haldane and other able colleagues who have now taken this work seriously in hand, I have no doubt that they will be able to establish a new method for the teaching of statistics within a few years. With these few words I wish the Indian Statistical Institute years of continuing progress in the national as well as in the international field.

SPEECH BY SIR RONALD A. FISHER

This is, I believe, my seventh visit to India, and the Indian Statistical Institute. You have listened to me on three previous occasions with exemplary patience and I shall not detain you long this evening, but I would like to say something on the topic which Professor Bose has already broached as perhaps central to our thoughts this evening, namely, the problem that since its national recognition one must begin to think of the Institute as a new kind of university, the problem that this Institute has undertaken in the teaching, at a university level, of that group of subjects which happens to be called statistics.

I say a group of subjects because the most characteristic feature of this problem is the emergence of comprehensive theories of new technologies, each developing under the impulse of its own intellectual development and each of great importance, I suggest, to the national programme to which they are contributing. Speaking here I need scarcely mention, sample survey as one of the first of these new technologies developed very largely due to the personal work of Professor P. C. Mahalanobis for a very long period of years. I scarcely dare to mention it because I am sure that there are more than a dozen men in the audience who know intimately more of sample survey in theory and practice than I ever shall. I can only say that I have watched with the greatest intellectual pleasure the development of this movement—a typically Indian movement in its origin which had developed very far in various Western countries. Sample survey is, in a sense, typical of these new technologies which is a part of the problem of university education in statistics, to inculcate. There are others like operational research and quality control.

Statistical Quality Control: Statistical Quality Control is of central interest, may I suggest, not only to industry but also for national and international commerce, whereby genuine guarantees of quality can be given with the same assurance that a firm of chartered accountants can guarantee the correctness of a company's accounts. I look forward to have international firms of quality control engineers being able to endorse the reliability

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of materials offered to wholesalers for export. Quality control then is one of the larger technological movements of our time stemming like sample survey directly from the same nucleus or core of academic or statistical studies. One may mention others such as the revolutionary operational evaluation of manufacturing processes—a process which has caused such remarkable successes in recent years in the United States.

As an academician and an ex-Professor, my immediate concern is with this central core or nucleus of the studies—a nucleus which, like that of the atom or of the biological cell, is self-composite and can only function because it is composite. In the statistical field, I suggest, we must think of three aspects of this nucleus, a mathematical aspect, an aspect that prolongs the natural sciences, an experimental aspect if you like, and the logical aspect, and unless these three are integrated and taught in an integrated manner, the central core may well become, and I have travelled enough in the United States to know that it can become, a rotten centre. There is neglect, specially of experimental science, in the education of many men. For example, good mathematicians write books, chamois-covered books on the design of experiments, without having had even a year's course in the natural sciences for their own education and without ever having had the responsibility of conducting any actual experiment. That I think is, shall I say, academization of the subject rather far.

When I wrote a book some years ago in 1935 on the design of experiments, I thought in my simplicity that I would be introducing interesting and useful mathematical methods to the attention of experimenters who might care to make use of them within their own judgment as responsible experimenters and whose business it was to improve natural knowledge by direct experimentation. And I hoped to induce a number of mathematicians to see that this business of practical experimentation is an intellectual duty and has a certain educational value.

In the first of these attempts, I believe, I have been successful and in the second, undoubtedly very much less successful. As I said, numerous books written by good mathematicians are now to be bought, each of which will give a summary of the exact mathematics which has been developed in connection with the subject and fail to introduce the students even with the kind of problem which a practical experimenter must face, must ponder about, and must overcome if he is even to design his experiments successfully. So I want to leave in your minds the notion of a closely-integrated course of abstract studies joined with the experience and the educational value of a considerable number of years given to the experimental sciences.

What I want to congratulate the Institute, of course, is first on the recognition by the Government. I should also like to congratulate you on the fact, that the teaching given in these various technologies under Dr. C. R. Rao's care is carried out by persons with actual experience in subjects like sample survey and quality control. They teach with the knowledge of technologists and not merely with the remote or arm-chair knowledge of a university professor who may never turn his hand to anything useful. I have been one myself and so I know it is quite possible.

I should like to congratulate this teaching centre on starting off on the right foot, on having developed a biometrical unit where those who have the time for it, those who have the gift for it, and those who have the passionate urge for it, may I suggest, may gain practical experience on research and the natural sciences in a way that is surely needed, in all centres where the statistical sciences are to be taught.

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ANNUAL REVIEW BY PROFESSOR P. C. MAHALANOBIS

Every year I have the opportunity and the privilege to make a brief, or sometimes not so brief, annual review. This year we are very fortunate in having Sir Ronald Fisher again with us. I did not introduce him while speaking of the foreign scientists who are working with us because he is a very old friend. But I should like to take this opportunity of mentioning how he has influenced the shaping of this Institute.

Statistics, of course, on what I usually call the descriptive side, has been associated from time immemorial with 'state-craft' or what may be broadly called the economic aspect of administration. And that is why I was aware, when I first started some work in this field, of a kind of 'dual motivation', because statistics, in one aspect, deals with practical affairs, problems of administration, of economics as it is broadly called, demography, trade and population. It started long ago from the counting of men. I think it is also generally true that during an upsurge of national life there has been a great advance of statistics. This happened in India at the time of the '*Arthashastra*' of Kautilya or '*Ain-i-Akbari*' or at the time of some of the magnificent surveys of Francis Buchanan, started in 1807, which marked the beginning of a period of great advance in statistical activities in India. This is true of every country.

There has also been a development of statistics from games of chance and an emergence of the mathematical aspects of statistics through probability, but I should like to trace the actual connection between the two in a very explicit way to two concepts. One is the concept of efficiency in statistics, which I think directly links what I may perhaps call the economic motivation and the scientific or intellectual or logical motivation which can find expression through mathematical forms. This concept of efficiency we owe to Sir Ronald Fisher.

There is a second point which I should also like to mention. I think Sir Ronald has stressed, specially in some of his recent works, statistical inference as inductive inference in all sciences. That supplies us with a second motive which I think is the logical foundation of the new teaching programme which we have started this year, namely that professional statisticians must have some kind of actual experience of working with their own hands in different branches of science. That is a very ambitious programme, but if statistical inference is, in essence, inductive inference, that is scientific inference, then nothing short of this would be adequate for the training of professional statisticians.

Therefore, since we started the undergraduate course for the first time in August 1960, our programme which has already been mentioned by Professor Bose and Sir Ronald Fisher, has consisted of practical work, a certain amount of even theoretical studies in. I repeat the words, all sciences, not with a view to cover a large area of knowledge in all the sciences nor even in any particular science in the sense of professional education in a particular subject but some acquaintance with the basic concepts and basic methods of observation, classification, measurement and experimentation. This is what we are aiming at in very carefully selected topics. That, we think, is one of the new developments in the Institute to which reference has been made and which finds its logical justification in the role of statistics of generalizing from the sample to the universe in all empirical studies.

I should like to refer again to what Sir Ronald Fisher had said in 1961. As it happened, that was the first year when we had moved out of Calcutta to this very place

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and a portion of the main building of the Institute was actually opened by Sir Ronald. And it was in this very spot that while describing the development of the Institute, he referred to it as (i) a learned society, (ii) a professional organization extending recognition to professional statisticians, (iii) a commercial non-profit distributing corporation capable of carrying out on economic terms projects of fact-finding and analysis for Government and other organizations and (iv) a teaching centre for pure and applied statistics at undergraduate and post-graduate levels. That was nine years ago. We are happy that his prophetic vision has been completely realized. For the first time this year, we are having both graduate and post-graduate courses. Fifthly, he had also referred to a publishing house which is associated with the Institute. He has himself referred to the need of bridging the gulf which separates purely academic studies from effective execution. That, of course, has been one of the main tasks of this Institute.

Referring to aspects of national planning, Sir Ronald has said that such an Institution may be either used or wasted in the course of national planning. He stated that it would be wasted if planning consisted of dull conformity to a blue-print of ready-made foreign conception. It could only be used if planning could recognize the aptitude of the spontaneous growth of this Institute as a national resource peculiarly fitted to the current changes of the modern world. I recall his words, because I think the Indian Statistical Institute has played an important role in breaking through the thought-barrier of sophisticated economic theories suited to the highly-developed countries. For nearly 50 years India has kept the production of steel below one million tons, thinking only of the current supply and demand. We expect to break through this barrier in the course of the next five or six years, and shall attempt to produce six million tons in a year or two and ten million tons by 1965-66, not thinking only of the current demand but also of the demand which we should create and supply by increasing the production.

I should like to refer to yet another aspect. When the Institute was first started not so much by design but by the force of circumstances, the first year's budget was about Rs. 200. It began as a learned society but as it became necessary to have some kind of operational work or, at least, to have one or two research students, it became necessary to earn some money. And therefore the Institute, out of sheer necessity, started what may be called project work on a small scale. In this manner the Institute developed that aspect of its activities to which Sir Ronald Fisher had referred as commercial or businesslike—I am introducing this word because for sometime the word commercial in our country has become somewhat stained—and as a non-profit distributing corporation the Institute is continuing to do that.

National Sample Survey : The National Sample Survey and other projects are to be on a contractual basis which is a challenge to this Institute. I should like to explain this point a little more clearly. The NSS and other government projects, it was decided nearly two years ago, should now be on the basis of contracts. There are two clear consequences. The Institute should then be entirely free to decide how it fulfils the contracts; and that is what we have been wanting to do and that is how it used to be done prior to 1950, when the Institute accepted contracts from the Governments of Bengal and Bihar and other Governments and private industrial organizations. Secondly, if any savings were made, the Institute would have earned it and could use it at its own discretion. It was in this way that the Institute gradually built up its assets as also its activities, with the help of savings, mostly out of contract grants for the crop surveys in Bengal.

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In 1942, during the war, a small workshop was started, because we were unable to replace machine-parts as imports were curtailed or even completely stopped. So it became necessary to establish a very small workshop for the maintenance and repair of our own calculating machines. We could do this because we could somehow find a little money to start it independently without having to go to the Government; otherwise we would have been asked why a statistical institute needed a workshop. It would have been very difficult to give a reply or to make the administrators understand the problem. Fortunately, because we had that little free income supplemented to some extent by what I could raise myself, we could start the workshop. The press had also been started in the same way some years earlier.

Therefore, it is very important that we should have the opportunity to bridge the gulf which separates purely academic studies from effective execution in the NSS or in other fields of applied statistics; and secondly, it is also extremely important that the work should be done efficiently so that we may earn a surplus. This is a problem which directly faces us today. There are a large number of junior operative workers in the NSS and it is quite proper that they have good scales of pay. But that depends on the level of earnings of the Institute: the higher the level, the better it would be for them as well as for the Institute. A pay committee has been set up to consider this problem which the Council will also discuss very soon. Personally, I should be very happy to adopt in this Institute as high a level of pay scale as is possible, depending on what the Institute is able to earn. Therefore, I consider this to be a challenge to the Institute to find a way by which it can earn, on the basis of its own efficiency, a sufficient amount to be able to give a high scale of pay and yet retain a surplus for future development.

Here I should like to refer again to Sir Ronald Fisher's warning—planning will be wasted if it consists of a dull conformity to a blue-print of ready-made foreign conception. If we simply imitate the highly-developed countries while dealing with labour, can we succeed in breaking through the barrier of low productivity? This question is of importance not only to the Institute but for the country as a whole. We must, if we are to emerge into a new age of modern technology and production, establish some connection between productivity and the earnings of labour. This problem has come to us as a challenge; if we succeed in finding a solution, the Institute may again offer a model to the country as a whole.

I should like to refer again to the workshop which was quite small during the war but has been gradually expanded since. In 1953, the Institute succeeded in designing, mainly through the effort of Samar Mitra, aided by a junior electronic engineer, Saumen Bose, the first analogue computer in India, and this led to other developments. In this way, the Institute started developing calculating machines and punched card sorters. I am happy to record that the Institute has now received a licence from the Government of India to manufacture calculating machines.

It is extremely important, especially in a country like India, for institutions like the Indian Statistical Institute or other institutions dealing with technology or applied science to prove their efficiency in production. Sir Ronald Fisher has referred to the Massachusetts Institute of Technology, which differs in structure and organization from the traditional university, as being particularly charged with the task of bridging the gulf which separates purely academic studies from effective execution and in which consultation

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work for industry is part of the duty of a professor. I suggest that it is also proper for the Indian Statistical Institute to show how it can produce tools like calculating machines and punched card equipment, and perhaps later on, some of the electronic attachments required for its own work, and do this on a commercial basis. If the Institute could thus earn even five per cent of its budget, it would have full scope for experimentation and should be truly independent. We should not then have to go through the almost impossible task of making some one sitting in a Ministry understand the implications of some new development in science and technology. Such freedom is essential for laying down sound foundations of, at least, applied science, and I venture to say, for pure science as a whole.

I think, a great opportunity has, therefore, arisen now for the Institute to show what it can do by manufacturing calculating machines of various kinds on a commercial scale. If it succeeds, there will be a great deal of scope for the application of statistical methods, statistical quality control, cost accounting in terms not only of money but also of real resources, and of experimentation in organization and management. Its success may perhaps give it economic independence and also perhaps set a pattern for the management of the enterprise in the public sector.

To quote Sir Ronald again, the Institute's "difficulties of organization may well require its segregation in the future into several economically autonomous, yet closely-linked organizations with different specified tasks." I think we are on the verge of such a development. Sir Ronald also stated "nevertheless an organic unity of personnel should be preserved as the only guarantee of harmonious development. In this way it can become a model for similar institutions badly needed by all forward-looking communities.

This year we have started undergraduate courses which will lead to the B.Stat and M.Stat. degrees and also Ph.D. and D.Sc. We have a programme of teaching of the basic concepts in different branches of science. We have the NSS on a full contract basis and we shall have a new opportunity for enterprises in the form of manufacture of calculating machines. We shall have to face the challenge of management where statistics also can play a big part. We have passed through a year of crucial significance; and the next year or two will determine for a long time to come the shape of the future of the Institute. We stand at a crossroads in a way in which we have never done in the past. The Statute confers a definite status on us, and we are on the point of undertaking more difficult but significant tasks.

We are having our celebrations this year in a rather quiet way for various reasons. We are having something like an academic celebration because we have our undergraduate and post-graduate students with us. I should like to thank all my colleagues including those who are students here. I have tried to tell you something about the past activities of the Institute and what we hope to achieve with your help in future.

CLOSING REMARKS BY THE CHAIRMAN

Sir D. N. Mitra said in his closing remarks :

It is now my pleasant duty to thank Professor Bose and Sir Ronald Fisher for their interesting speeches. Personally I am so glad they came down to my level and I really understood what they said. This is a great achievement for two great professors. I thank Professor P. C. Mahalanobis for his annual review which I could follow easily having been associated with him in all these matters from time to time. I thank you all, ladies and gentlemen, for joining this function and making it a success. We will now close this function with the National Anthem.

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Appendix 2

LIST OF OFFICE-BEARERS AND MEMBERS OF THE COMMITTEES

President: Shri Chintaman D. Doshmukh.

Vice-Presidents: Dr. P. N. Banerjee, M.A., D.Sc. was one of the Vice-Presidents until his death on 5 November 1960; Dr. S. K. Banerji, D.Sc.; Professor S. N. Bose, F.R.S.; Professor D. R. Gadgil, M.A., M.Litt.; Dr. Q. M. Hussain, M.A., Ph.D.; Dr. Zakir Husain, Ph.D.; Professor D. G. Karve, M.A.; Professor K. B. Madhava, M.A., A.I.A.; Dr. G. L. Mohla, M.A., LL.D.; Sir Shri Ram.

THE COUNCIL: 1960-61

Chairman: Sir D. N. Mitra.

Vice-Chairmen: Shri K. P. Goenka; Shri K. C. Mahindra, M.A. (Cantab.); Shri D. N. Mukherjee, M.L.A.; Shri S. C. Ray, M.A., B.L.; Professor N. R. Sen, M.A., D.Sc.

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

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

Joint Secretaries: Shri S. Basu, M.Sc.; Shri N. C. Chakravarti, M.A., Shri Pitambar Pant, M.Sc.

Members (Elected): Shri S. K. Acharya, Bar-at-Law; Shri R. Banerjee, I.A.S.; Shrimati Chameli Bose, B.Sc. (Lond.); Shri V. M. Dandekar, M.A.; Shri M. Ganguly, B.Sc. (Lond.); Professor H. C. Ghosh, M.A., P.R.S.; Shri D. B. Lahiri, M.Sc.; Shrimati Nirmal Kumari Mahalanobis; Shri N. T. Mathew, M.A., M.Sc.; Dr. M. M. Mehta; Shri K. R. K. Menon, M.A., B.L.; Shri A. Mitra, I.C.S.; Shri M. Mukherjee, M.A.; Shri J. K. Pande, M.A.; Dr. K. C. K. E. Raja, L.R.C.P.&S., D.P.H., D.T.M.&H.; Dr. C. R. Rao, M.A., M.Sc., Ph.D. (Cantab.); Dr. N. S. R. Sastry, M.A., M.Sc., Ph.D. (Lond.); Shri S. C. Sen, M.A., LL.B.; Shri S. C. Sen, B.A. (Cantab.); Shri S. Sengupta, M.Sc. (Dacca), B.Sc. (Lond.).

Members (Nominated by Government of India): 1. Shri Vishnu Sahay, I.C.S., Cabinet Secretary or his representative; 2. Shri A. C. Bose, Joint Secretary, Ministry of Finance (Food & Agriculture); 3. Shri Rajeswari Prasad, Chief Director, National Sample Survey.

GOVERNING BODY OF THE RESEARCH AND TRAINING SCHOOL: 1960-61

Sir D. N. Mitra, Chairman (*ex-officio*); Professor P. C. Mahalanobis, Director-Secretary (*ex-officio*); Shri Baliram Bhagat, M.P., Union Deputy Minister; Shri Vishnu Sahay, I.C.S., Secretary to the Cabinet, (Government of India); Dr. N. S. R. Sastry, M.A., M.Sc., Ph.D. (Reserve Bank of India); Dr. Ram Behari, M.A., Ph.D., Sc.D. (Cantab.); Professor and Head of Mathematics Department, Delhi University (Inter-University Board); Mr. George Barroil, Managing Editor, Capital (Private) Ltd., (Associated Chambers of Commerce of India); Shri G. Basu, B.A., F.C.A., F.N.A.A., F.C.I.S., F.I.C., W.A., M.L.C., J.P. (Federation of Indian Chambers of Commerce and Industry); Professor N. B. Prasad, D.Sc. (Paris), Ph.D. (Lond.), Head, Mathematics Department, Allahabad University, (National Institute of Sciences of India); Dr. S. N. Sen, M.A., Ph.D. (Indian Economic Association); Professor S. N. Bose, F.R.S.; Shri S. Basu, M.Sc.; Shri N. C. Chakravarti, M.A.; Professor K. B. Madhava, M.A., A.I.A., F.N.I.; Shri Pitambar Pant, M.Sc.; Sir Shri Ram; Dr. C. R. Rao, M.A., M.Sc., Ph.D. (Cantab.) [*Council of the Indian Statistical Institute*].

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COMMITTEE OF THE GOVERNING BODY

FINANCE COMMITTEE

Sir D. N. Mitra (*ex-officio*); Professor P. C. Mahalanobis (*ex-officio*); Shri N. C. Chakravarti; Mr. George Barel; Dr. N. S. R. Sastry; Shri Vishnu Sahay, I.C.S.; Shri A. C. Bose.

COMMITTEES OF THE COUNCIL

FINANCE COMMITTEE

Sir D. N. Mitra, Chairman (*ex-officio*); Dr. S. C. Law, Treasurer (*ex-officio*); Professor P. C. Mahalanobis, Secretary (*ex-officio*); Shri S. K. Acharyya; Shri P. C. Mathew; Shri D. N. Mukherjee; Shri S. C. Ray; Shri S. C. Sen; Shri S. K. Sen (Financial Adviser); Shri S. Bau and Shri N. C. Chakravarti (one of the Joint Secretaries of the Institute would act as Convener).

EXAMINATIONS COMMITTEE

Shrimati C. Bose; Shri N. C. Chakravarti; Shri V. M. Dandekar; Shri N. C. Ghosh; Shri D. Y. Lole; Professor K. B. Madhava; Professor P. C. Mahalanobis; Shri N. T. Mathew; Dr. A. Matthai; Dr. K. R. Nair; Shri M. Mukherjee; Shri Pitambar Pant; Dr. C. R. Rao; Dr. J. Roy; Shri J. M. Sengupta; Shri Sadasiv Sengupta; Shri M. A. Telang; Dr. Ram Behari (nominated by Governing Body); Dr. N. S. R. Sastry (nominated by Governing Body), and Shri S. Raja Rao (*Member-Secretary*).

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Professor S. N. Bose; Shri V. M. Dandekar; Shri D. B. Lahiri; Professor K. B. Madhava; Professor P. C. Mahalanobis, Editor, *Sankhyā* (*ex-officio*); Dr. Sujit Mitra; Shri Moni Mohan Mukherjee; Dr. K. R. Nair; Shri Pitambar Pant; Dr. C. R. Rao; Dr. J. Roy; Shri G. Basu (nominated by Governing Body); Dr. B. N. Prasad (nominated by Governing Body) and Shri A. Mahalanobis (*Member-Secretary*).

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President : Dr. Jivraj N. Mehta.

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MYSORE STATE BRANCH

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Secretary : Shri Srinagabhushana.

Members of the Executive Committee : Sarvasri S. K. Iyengar, K. V. Krishna Sastry, H. S. Narayana Rao, P. S. Narayana, R. Ramaswami, Ravi L. Kirloskar, C. A. Sotly, M. C. Satyanarayana and M. V. Venkataraman.

INDIAN STATISTICAL INSTITUTE

Appendix 3 : Visitors to the Institute*

Australia

- DENTON, D. A., Department of Physiology, University of Melbourne. *4 July 1960.*
- FENNER, FRANK, F.R.S., Professor of Microbiology, School of Medical Research, Australian National University, Canberra. *27-31 December 1960.*
- McMOHAN, P. R., Professor of Wool Technology, University of New South Wales. *29 November 1960.*
- MYER, KENNETH, Prominent businessman, President, Myer Foundation. *8-9 April 1960.*
- ROSS, A. D., Australian Member of Council, Pan Indian Ocean Science Association. *7-8 December 1960.*
- WRIGHT, R. D., Professor of Physiology, University of Melbourne. *4-6 August 1960.*

Canada

- HOWE, J. D., Transport Statistician and Economist, Canadian National Railway. *7-9 September 1960.*

Czechoslovakia

- PRIBYLOVA, KATERINE, Librarian and Cultural Assistant, Indian Embassy, Prague. *27 October 1960.*
- STARL, J., Second Secretary, Embassy, People's Republic of Czechoslovakia, New Delhi. *7 April 1960.*

France

- BETTELHEIM, CHARLES, Directeur d'Etudes, Ecole Pratique Des Hautes Etudes. *22-27 February 1961.*
- FERRET, J. KAMPE DE, Professor of Mathematics and Statistics, University of Lille. *15-16 February 1961.*
- LEVY, P., Director, French Ministry of Industry. *14 November 1960.*
- LACASSAGNE, Professor, Institut de Radium, Paris. *6 November 1960.*
- LECOMTE, J., Professor, Department of Physics, University of Paris. *25-31 January 1961.*
- MONOD, J., Professor, Institut Pasteur, Paris. *9 January 1961.*
- POULIQUEN, JACQUES, Director, Centre Cultural Francais de Calcutta. *29 August and 14 November 1960.*
- SOULIER, J. P., M.D., Director-General, National Blood Transfusion Centre, Paris. *1-5 October 1960.*

Germany (Democratic Republic)

- FISCHER, HANS F., Trade Representation, Calcutta, Democratic Republic of Germany. *18 January 1961.*

* Those who come on behalf of international organizations like the United Nations, are listed separately.

TWENTYNINTH ANNUAL REPORT : 1960-61

Germany (Federal Republic)

- RUBENSTROTH-BAUER, G., Professor, Experimental Medicine, Max-Planck Institute for Biochemistry, Munic. 20 August 1960.
- SCHWENCKE, DIETRICH H., Director, Research Institute for International Technical Cooperation, Aachen. 17 March 1961.

India

- AGARWAL, URMILA, Department of Psychology, University of Lucknow. 14 September 1960.
- ANUJA, S. P., Research Officer, Department of Economic Affairs, Government of India. 10 December 1960.
- BAGAI, O. P., Lecturer, Mathematical Statistics, Government College, Ludhiana, Punjab University. 28 September 1960.
- BAGCHI, R. N., Director of Industrial Survey, Government of Rajasthan. 10 December 1960.
- BANERJEE, K. S., Deputy Director, State Statistical Bureau, West Bengal. December 1960.
- BANU, G., President, Institute of Cost & Works Accountants. 26 July 1960.
- BHATTACHARYA, A., Assistant Director of Industries, Vocational Training, Government of West Bengal. 30 December 1960.
- BHATTACHARYYA, BIDHAYAK, Bengali literateur. 9 December 1960.
- BHUSAN, B. S. N., Director of Research, Institute of Chartered Accountants of India, New Delhi. 26 December 1960.
- DATTA, M., Chief Engineer, West Bengal State Electricity Board. 26 December 1960.
- DATTA, SUKOMAL, Welfare Officer, Indian Council for Cultural Relations. 27 October 1960.
- DE, A. K., Assistant Professor in Mechanical Engineering, Indian Institute of Technology. 19 October 1960.
- DREB, S., Divisional Engineer, West Bengal State Electricity Board. 26 December 1960.
- DUTT, S., Foreign Secretary, Government of India. 24 February 1961.
- GANGULY, R. N., Divisional Engineer, West Bengal State Electricity Board. 26 December 1960.
- GEORGE, A. (MINS), Professor of Statistics, Kerala University. 10-22 May 1960.
- GHOSH, A. K., Occupational Information Officer, Directorate of National Employment Service (Labour Department), Government of West Bengal. 30 November 1960.
- GOPAL, M. H., Professor, Mysore University. 25 May 1960.
- HARAVU, VILANINI, Department of Economics & Statistics, Andhra Pradesh. 20 August 1960.
- IYER, H. T., English Electric Co. Ltd., Calcutta. 29 November 1960.
- LINDSAY, H. K. S., Deputy Managing Director, The Metal Box Co. of India. 20 October 1960.
- MURKHERJEE, RADHAKAMAL, Director, J. K. Institute of Sociology & Human Relations, Lucknow University. 19-24 September 1960.
- MURKHERJEE, R., Director, B.E. Pump Co., Calcutta. 19 July 1960.
- MURKHOADHYAY, SAILAJANANDA, Bengali literateur. 9 December 1960.
- NAG, KALLIDAS, Member of Parliament. 9 February 1961.

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- NAIK, Y. S., Officer on Special Duty, Socio-Economic Survey of Bihari, Directorate of Economics & Statistics, Madhya Pradesh. 23-30 August 1960.
- NEOGY, AKHIL, Bengali litterateur. 9 December 1960.
- PAL CHOWDHURY, ILA, Member of Parliament. 9 February 1961.
- PURI, G. L., Indian Trade Commissioner in Australia. 26-28 December 1960.
- RADHAKRISHNAN, M. V., Department of Statistics, Reserve Bank of India, Bombay. 19 January 1961.
- RAJAGOPALAN, A., Managing Director, Life Insurance Corporation of India. 17 November 1960.
- RAO, SEETHAPATHI, Head, Department of Engineering, Andhra University. 4 May 1960.
- ROY, PRAFULLA, Bengali litterateur. 9 December 1960.
- SEN, B. K., Financial Adviser, Board of Secondary Education, West Bengal. 7 August 1960.
- SINGH, VIRBAHADUR, Professor of Economics, Lucknow University. 22-26 March 1961.
- THAN, T., Counsellor, Indian Embassy in Moscow. 24 February 1961.
- VAIDYA, S. N., Zonal Manager, Life Insurance Corporation of India. 17 November 1960.
- VENKATA RAO, D. S., Assistant Armament Supply Officer, Indian Navy. 17 November 1960.
- WADIA, D. N., F.R.S., Geological Adviser, Department of Atomic Energy, Government of India. 11-16 December 1960.

Indonesia

- PARTANINGRANT, WINARTI (MISS), Officer-in-Charge, Documentation Section, Council of Science, Indonesia. 17-19 March 1961.

Iran

- FRIED, JEROME; MADAVI, HOUSSEIN; MARTIN, KURT; Economists, Iran Plan Organisation. 31 March-2 April 1960.

Ireland

- MCCARTHY, M. D., Director, Central Statistics Office, Ireland; Member, U.N. Statistical Commission. 24-26 November 1960.

Italy

- GINI, CORRADO, Professor, University of Rome. 18-22 June 1960.

Japan

- ABE, YASUJI, Senior Managing Director, Yamaichi Securities Co. Ltd.; S.E. Asia Economic Cooperation Mission, Japanese Management Association. 9 February 1961.
- AKIYAMA, K., Economic Planning Agency. 21 November 1960.
- BAN, T., Consul-General of Japan in Calcutta. 9 February 1961.
- HARA, KAKUTEN, Chief of Research, Institute of Asian Economic Affairs, Tokyo. 11-28 January 1961.
- HATA SEICHIRO, Chief, Production Section, Nihon Cement Co. Ltd., S.E. Asia Economic Cooperation Mission, Japanese Management Association. 9 February 1961.

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- HAYASHI, SHUNSUKE, Research Association of Indian Economics. 26 December 1960.
- INOUE, TENUMARU, Research Scholar, Institute of Asian Economic Affairs. 12 April 1960.
- INUMARI, TADASHI, Chief, Technical Education Section, Higher Education & Science Bureau, Ministry of Education; Member, Education Survey Mission for South East Asia, Government of Japan. 8 December 1960.
- ISHIKAWA, ROKURO, Vice-President, Kajima Construction Co. Ltd., S.E. Asia Economic Cooperation Mission, Japanese Management Association. 9 February 1961.
- KASAGI, SAHURO, Assistant Chief, University Section, Higher Education & Science Bureau, Ministry of Education; Member, Educational Survey Mission, S.E. Asia, Government of Japan. 8 December 1960.
- KIHARA, YUKIO, Professor, Ohtsuki College of Economics, Ohtsuki-shi. 17 May 1960.
- KIKUCHI, SABURO, Managing Director, Asian Culture Library, Tokyo. 26 November 1960.
- KISHI, KOICHI, Institute of Asian Economic Affairs. 15-16 November 1960.
- KITAGAWA, Y., Senior Statistical Officer, Statistical Standards Bureau, Government of Japan. 16 December 1960.
- KONOSUKE, KOIDO, Staff Member, Institute of Asian Economic Affairs. 22 February-6 March 1961.
- KURITA, SATOKO, Student, International Christian University. 26 November 1960.
- MAEDA, AKIRA, Research Scholar, Institute of Asian Economic Affairs. 7 April 1960.
- MASAHURO, IKEDA, Research Association of Indian Economics. 26 December 1960.
- MIRI, AKIRA, Assistant Chief, International Cultural Relations Section, Research Bureau, Ministry of Education; Member, Educational Survey Mission for South East Asia, Government of Japan. 8 December 1960.
- MONDEN, H., Research Officer, Statistical Standards Bureau, Government of Japan. 16 December 1960.
- MOTOAKI, SAKA, Research Association of Indian Economics. 26 December 1960.
- NAKAJIMA, KOKI, Accounting Supervisor, Dentsu Advertising Co.; S.E. Asia Economic Cooperation Mission, Japanese Management Association. 9 February 1961.
- OKESHAIH, FUMIO, Director of Research, Research Association of Indian Economy, Hitotsubashi University; Head, Delegation of Research Association of Indian Economics. 26 December 1960.
- OZAKI, M., Vice-Consul of Japan in Calcutta. 9 February 1961.
- SEIKE, TADASHI, President, Tokyo Metropolitan Junior College of Engineering; Member, Educational Survey Mission for South East Asia, Government of Japan. 8 December 1960.
- SHIRAYA, GENZABURO, President, Mabie Memorial School, Kanto Gakuin University, Yokohama. 21 September 1960.
- SHISHIDO, SHUNTARO, Statistical Standards Bureau, Administrative Management Agency, Economic Planning Board, Japan; Member, E.C.A.F.E. group of experts on programming techniques. 18-19 November 1960.
- SHIRUYA, MANAARI, Institute of Statistical Mathematics, Tokyo. Arrived 3 January 1961.
- TABE, NOBORU, Senior Research Fellow, Research Division, Institute of Asian Economic Affairs, Tokyo. Arrived 17 April 1960.

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- TAKAGI, YUICHIRO, Economic Planning Agency, Japan. 21 November 1960.
- TAKAKI, YASUHARU, Special Assistant Manager, Foreign Division, Fuji Bank Ltd.; member, delegation from S.E. Asia Economic Cooperation Mission, Japanese Management Association. 9 February 1961.
- TANAKA, SHIGERU, Research Scholar, Institute of Asian Economic Affairs. 12 April 1960.
- TETSUO, OZAWA, of Research Association of Indian Economics. 26 December 1960.
- TSUKAMOTO, TAKEYUKI, Chief, Metallurgical Control Section, Quality Control Department, Bureau of Industrial Engineering, Yawata Iron & Steel Co. Ltd.; member, Delegation from S.E. Asia Economic Cooperation Mission, Japanese Management Association. 9 February 1961.
- TUMURA, YOSIHO, Director, Planning Section, Division of Statistics & Research, Ministry of Agriculture & Forestry of Japan. 18-25 March 1961.
- WATANABE, KAZUKO, Secretary to Managing Director, Asian Culture Library. 26 November 1960.
- YAMAGUCHI, HIROCHI, Research Division, Institute of Asian Economic Affairs. July 1960.
- YAMASHITA, SABURO, Deputy Secretary, Institute of Asian Economic Affairs, Tokyo. 21-25 November 1960.
- YAMAZAKI, TAKUZO, Director, Sekuui Chemical Co. Ltd.; member, Delegation from S.E. Asia Economic Cooperation Mission, Japanese Management Association. 9 February 1961.
- Lebanon*
- FAIZ-EL-KHURI, Director, International Statistical Education Centre, Beirut. 25-26 May 1960.
- Netherlands*
- SANDERS, MARTINUS, Student, Netherlands School of Economics, Rotterdam. 25 March 1961.
- Norway*
- BOQUIST, BIRGER, Journalist, "Aften Posten", Oslo. 25 February 1961.
- Pakistan*
- HUDA, M. N., Head, Department of Statistics, Dacca University. 12 April 1960.
- IQBALUDDIN, S., National Bank of Pakistan, Chittagong. 13 June 1960.
- ISLAM, NURUL, Reader in Economics, Dacca University. 30 August 1960.
- MASUD, Agricultural Census Commissioner of Pakistan to India. 23-25 November 1960.
- RANIS, GUSTAV, Joint Director, Institute of Development Economics, Karachi. 26 May 1960.
- Philippines*
- COMCEPOION, MERCEDES, Statistical Centre, University of Philippines. 17 September 1960.
- VIRATA, ENRIQUE T., Acting Director, U.N. Statistical Centre; Executive Vice-President, University of Philippines. 10 February-2 March 1961.
- South Africa*
- KIWANUKA, E. M. KIMBOWA, Government of India scholar from Buganda, trainee at Chittaranjan Locomotive Works. 13 October 1960.

TWENTYNINTH ANNUAL REPORT: 1960-61

NAIDOO, SURRA THAMODARAN, Insurance Underwriter, Tongaat, Natal. 1-3 September 1960.
PARUK, D. I., Merchant, Durban. 1 March 1961.

Thailand

PHAKAYAWA, KHUN, Consul-General in Calcutta. 2 April 1960.
WU, T. Y., Chief, Special Economic Studies Section, Research & Planning Division,
Economic Commission for Asia & Far East, Bangkok. 26 November-2 December 1960.

United Arab Republic

RAFI, MOHAMMED SALEM EL, Head, Job Analysis & Classification Division, Department
of Labour, U.A.R. (Egyptian Region). 30 November 1960.
SILAFI, A. M. N., Under Secretary of State, Ministry of Social Affairs and Labour, Cairo.
12-16 May 1960.

United Kingdom

AMBLER, H. R., Scientific Adviser to U.K. High Commissioner, New Delhi. 3 July 1960.
BALOGH, THOMAS, Balliol College, Oxford. 26-28 December 1960.
BARTLETT, M. S., Head, Department of Statistics, Manchester University. 23-29 May
1960.
FISHER, SIR RONALD, A. 12 December 1960-12 February 1961.
GLASS, D. V., London School of Economics, University College, accompanied by Mrs.
Ruth Glass, University College, London. 6-14 March 1961.
MOUKANT, A. E., Director, Blood Group Reference Laboratory, the Lister Institute,
London. 20-22 September 1960.
MUIR, DONALD STUART, Reckitt Colman Clinwick (Oversea) Ltd., Hull. 6 January 1961.
ROBINSON, PAMELA L., University College, London. 10 November 1960-8 April 1961.
SEAL, ANIL, Assistant Lecturer, Trinity College, University of Cambridge. 21 January-
26 February 1961.
SMITH, ALEC, J., Department of Geology, University College, London. 12 December 1960-
31 March 1961.
WHITEHEAD, G. S., Counsellor, U.K. High Commissioner, New Delhi. 3 July 1960.

Union of Soviet Socialist Republics

BARABALINA, TATIANA, Interpreter. 4-8 February 1961.
BRATSK, B. V., Professor, University of Leningrad. 24 February 1961.
ERZIN, P. D., Vice-Rector, Friendship University, Moscow. 20 October 1960.
CHADAEV, I., Deputy Chairman, Gosplan, USSR. 4-5 February 1961.
KOSTENKO, MICHAEL, Academician, Institute of Electro-mechanics, USSR Academy of
Sciences. 10-13 January 1961.
KOSYGIN, A. N., First Deputy Chairman, Council of Ministers, USSR. 24 February 1961.
KUTOVSKI, G. G., Institute of the Peoples of Asia, USSR Academy of Sciences. 12 Jan-
uary-25 February 1961.

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- MASLENNIKOV, ANKADI A., Research Scholar, Institute of World Economy, USSR Academy of Sciences. 27 February-7 March 1961.
- MAXIMOV, MIKHAIL A., Institute of World Economy, USSR Academy of Sciences. 27 February-7 March 1961.
- MISCHENKO, E. F., Professor, Institute of Mathematics, USSR Academy of Sciences. 10-13 January 1961.
- PLOTSNIKOV, K. N., Director, Institute of Economics, USSR Academy of Sciences. 24 February 1961.
- POLOSUKHINE, A. I., Expert on planning for machine building, Gosplan, USSR. 4-8 February 1961.
- PUSHKIN, G. M., Deputy Minister of Foreign Affairs, USSR. 24 February 1961.
- RASTYANNIKOV, V. G., Institute of the Peoples of Asia, USSR Academy of Sciences. 12 January-25 February 1961.
- SHEVELYOVA, KATRINA, Correspondent in India, *Trud*, Moscow. 5 September 1960.
- SHUKLIN, N. I., D.Sc., Professor, Organic Chemistry, Moscow University, Corresponding Member, USSR Academy of Sciences. 10-13 January 1961.

United States of America

- BURNS, ARTHUR F., President, National Bureau of Economic Research, New York. 10 January 1961.
- COCHRAN, W. G., Professor, Harvard University. 19-24 June 1960.
- COPELAND, ARTHUR H., Professor, Michigan State University. 19-25 November 1960.
- DELSON, J. K., Electronic Specialist, General Electric Co. 3 November 1960.
- EDWARDS, WALTER R., Consultant in International Statistics, Bureau of Labour Statistics, U.S. Department of Labour. 8 August 1960.
- EVANS, W. DUANE, Assistant Commissioner, Bureau of Labour Statistics, U.S. Department of Labour. 22-24 June 1960.
- FAINSON, MERLE, Professor of Public Administration, Harvard University. 25 April 1960.
- FBI, JOHN C. H., Antioch College, USA, Ford Foundation Adviser in Pakistan. 26 May 1960.
- FREEDMAN, RONALD, Professor of Sociology, Survey Research Centre, University of Michigan. 12-14 September 1960.
- FREYMAN, MOYE N., Consultant in Health, Ford Foundation. 6-7 October 1960.
- GERARD, R. W., Director of Laboratories and Senior Research Scientist, Mental Health Research Institute, University of Michigan. 19-22 January 1961.
- GIFFORD, ROGER GAILLARD, Publication Officer, U.S. Embassy, New Delhi. 1 February 1961.
- HUCHON, THOMAS FRANCIS, Economic Counsellor, U.S. Consulate-General's Office, Calcutta. 8 August 1960.
- HOFFMAN, WALTHER G., Professor, University of Munster. 19-21 December 1960.
- HOLT, ESTELLE, Representative, *Holiday*, Philadelphia. 19 April 1960.
- KATZ, LEO, Head, Department of Statistics, Director, Statistical Laboratory, Michigan State University. 13-15 June 1960.

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- KNOWLER, LLOYD A., Chairman, State University of Iowa; Professor, Department of Mathematics & Astronomy. Consultant on SQC for one year under Technical Cooperation Mission. 22 June 1960-June 1961.
- MAUDLIN, W. PARKER, Associate Demographic Director, Population Council, New York. 27-30 November 1960.
- SHAPLEY, HARLOW, Harvard College, Cambridge. 12-13 January 1961.
- SOLOMON, MORRIS J., Mathematical Statistician, Atlas Powder Co., USA, October 1959-March 1961.
- NEWMAN, PETER H., Director, International Division, Addison-Wesley Publishing Co., Inc., Reading, Massachusetts. 21 October 1960.
- THOMPSON, J. D., Deputy Director, Technical Cooperation Mission. 7 April 1960.
- TINTNER, GERHARD, Professor of Economics, Mathematics & Statistics, Iowa State College of Agriculture and Mechanical Arts. 6 June-16 August 1960.
- WATSON, ERNEST C., Scientific Attache, Foreign Service, U.S. Embassy, New Delhi. 18 October 1960.
- WEINFELD, FREDERIC D., Graduate School of Education (now Science Research Associate), Chicago. 28 July-2 August 1960.

Vietnam

- KNOX, NEWTON B., General Statistical Adviser, U.S. Operations Mission to Vietnam, Saigon. 16-19 June 1960.
- LIENG, CHAU VAN, Chief, Statistical Coordination, Vietnamese National Institute of Statistics. 16-19 June 1960.

Yugoslavia

- MACERA, MILOŠ, U.N. Consultant, Savings Survey Expert, National Council of Applied Economic Research, Federal Statistical Institute, Belgrade. 18-23 January 1961.

International Organizations (UN/FAO/WHO)

- BIRAUD, YVES, Director of Health Statistics, World Health Organization. 17-19 December 1960.
- BLOCKENSTAFF, DAVID, Resident Representative, U.N. Technical Assistance Board, New Delhi. 8 February 1961.
- ECHIVERRIA, EDWARD, Ford Foundation Expert, Calcutta Water Sewerage Board. 20 March 1961.
- GOREUX, L., Regional Office for Asia & Far East, FAO, Bangkok. 7-9 November 1960.
- HELWEG-JANSEN, H. F., Regional Adviser in Health Statistics, Regional Office for S.E. Asia, World Health Organization, New Delhi. 25 May 1960.
- LEONBERGER, HERBERT, Ford Foundation (Community Development). 9-11 March 1961.
- LUSTON, P. J., Deputy Director, UN Statistical Office. 15-17 June 1960.
- MESHCHERYAKOV, G. N., UNESCO, Expert in machine tool design. 19 October 1960.
- MILLS, H. R., Director, Colombo Plan. January 1961.
- MUNDHARAN, T., Associate Economic Affairs Officer, ECAPF. 29-31 May 1960.
- YLVISAKKER, PAUL, Ford Foundation Expert, Calcutta Water Sewerage Board. 20 March 1961.

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Appendix 4 : Professor Mahalanobis's Tours Abroad

U.S.S.R. (7-11 April 1960) : At the invitation of the USSR Academy of Sciences, Professor Mahalanobis stayed in Moscow from 7 to 11 April 1960. He visited the Central Statistical Board on 8 April and between 8 and 11 April had discussions in the Presidium of the Academy of Sciences which were attended by Vice President A. V. Tupchiev and K.V. Ostrovitianov and other Academicians on the proposed international conference, at a non-governmental level, to consider problems of economic development of the less advanced countries in which the Soviet scientists were seriously interested.

U.K. (12-16 April) : During a short halt in London from 12 to 16 April Professor Mahalanobis had discussions with Bertrand Russell and Professor J. Rotblat (Chairman and Secretary respectively of Pugwash Conference of Scientists) regarding collaboration between the Pugwash Conference and the proposed conference of economic development. There were discussions on the same subject with Professor P. M. S Blackett, Sir Robert Hall (Economic Adviser to H.M.G.), and others.

U.S.A. (17 April-24 May) : Professor Mahalanobis attended the Eleventh Session of the U.N. Statistical Commission in New York from 18 April to 6 May as the representative of India. During his stay in New York, he had discussions on 23 April regarding the proposed non-governmental conference on economic development with Dr. E. Rabinowitch, Dr. B. Glass, Dr. H. Brown and Mrs. Ruth Adams of the U.S. Pugwash Continuing Committee at a meeting also attended by Dr. L. G. Reynolds.

During a short visit to Washington between 9 and 13 May, he had discussions with Dr. Raymond Bowman in the Bureau of the Budget ; visited the National Science Foundation and met Dr. Alan T. Waterman (Director), Dr. B. C. Dees and other staff members; had discussions with Dr. Wallace Brode (Scientific Adviser to the President of the U.S.A.) and with some officials of the State Department. On 12 May, he had discussions with Dr. Samuel Alexander in the National Bureau of Standards and attended the Annual Dinner of the National Science Foundation the same evening. The next day he visited the U.S. Department of Labour and had discussions with Mr. James T. O'Connell (Under Secretary of Labour), Mr. Robert J. Myers (Deputy Commissioner of Labour Statistics), and other staff members.

After a short halt in New York Professor Mahalanobis left for Detroit on 21 May; and had a full programme in the Wayne State University with discussions in the Faculty of Economics and in the Faculty of Mathematics and Statistics. He delivered a public lecture at the University on "Planning for economic development of India." After attending a lunch meeting in the University Faculty Club in Seattle, Washington he left for Tokyo in the evening of 24 May.

Japan (25 May-11 June) : On 28 May, Professor Mahalanobis gave a public lecture in Tokyo on "Statistics for Economic Development" following a lecture by Sir Ronald A. Fisher on "Statistics for Scientific Inference." Professor Mahalanobis participated in the Tokyo Session of the International Statistical Institute; presided over one of the scientific sessions, and presented a paper on "Errors in Censuses and Surveys" at another session.

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He also had discussions with the Japanese Translation Unit maintained by the Indian Statistical Institute in Tokyo, and with the International Study Group in the International House of Japan. He gave a lecture on statistics at the Tokoku University on 6 June and after fulfilling some other engagements in Tokyo left for India on 11 June.

Australia and New Zealand (24 October-11 December 1960) : Sydney (24 October-5 November). Professor P. C. Mahalanobis accompanied by Mrs. Mahalanobis left India for Sydney on 24 October 1960 and stayed in Australia till 11 December as guests of the Reserve Bank of Australia. On 25 October an informal lunch was arranged by Dr. H. C. Coombs (Governor of the Reserve Bank) which gave opportunities for discussions with a number of guests including Mr. A. E. Maude (Editor, *Sydney Morning Herald*), Professor P. S. G. Rutherford (University of Sydney), Professor R. F. Henderson (Cambridge University), Mr. G. Carter (University of New South Wales), Mr. J. G. Phillips (Deputy Governor), Mr. A. W. Elvey (Adviser) and other top officials of the Reserve Bank. This was followed by a two hour general discussion on the draft Third Five Year Plan of India. On the same day Mrs. Mahalanobis met reporters from *Sydney Morning Herald* and spoke on Tagore and Indian Culture. On 26 October there were further discussions with the officials of the Reserve Bank in the morning followed by an informal lunch arranged by the Governor with the Directors of the Reserve Bank including the Deputy Governor, Sir Leslie Melville (Chairman, Tariff Board), Mr. W. H. Anderson, Mr. G. H. Grimwade, Mr. W. A. Gunn, Mr. R. G. Osborne, Mr. A. E. Symons (all non-officials and representatives of business and industry or public life).

During the next few days Professor Mahalanobis had an advanced seminar on mathematical statistics in the New South Wales University, gave a lecture on economic development followed by group discussions in the Faculty of Economics in the University of Sydney; and spoke on operational research techniques with special reference to Indian Planning at a special meeting of the Statistical Society of Australia.

On 28 October, he spoke at a meeting of the Women's League of International Relations on Rabindranath Tagore in place of Mrs. Mahalanobis who was indisposed. At a dinner arranged by the Reserve Bank on 28 October, he had discussions with Dr. Ewart (former Prime Minister of Australia), Chief Justice of New South Wales and other distinguished guests. On 29 October, he had further discussions in the Reserve Bank and at a lunch meeting with the India League on 31 October, he spoke on Indian economic progress. On 1 November, at a lunch in the Reserve Bank, he had discussions with the Export Development Group and in the afternoon he gave a lecture on Indian Planning to the members of the research staff of the Reserve Bank. On 2 November, he gave an interview to the News & Information Service in the morning and had a half hour discussion with a panel of three economists and journalists in the evening for television. On 3 November, he gave a lecture on "The Influence of Rabindranath Tagore in the East" at the Oriental Society. On 4 November, he had discussions at the Commonwealth Banking Corporation followed by a lecture on economic and scientific motivation in statistics at the University of New South Wales in the afternoon and another lecture at the Economic Society of Australia and New Zealand.

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New Zealand (6-12 November): On 6 November, Professor Mahalanobis left Sydney and reached Wellington to participate for a week in the Fifth Quinquennial Conference of Commonwealth Statisticians as the representative of India. In Wellington, he had discussions with the Australian High Commissioner on 8 November and the British High Commissioner on 10 November. On 11 November, he had discussions with the Governor of the Reserve Bank of New Zealand and later had a seminar with Mr. Low (economist) and the research staff of the bank. He had discussions with Mr. W. P. Reeves of the paper *Unionism* on 12 November.

Melbourne (15-25 November): Professor Mahalanobis had discussions with Professor R. D. Wright at the Melbourne University in the morning of 16 November. The same evening at a dinner arranged by Mr. E. S. Evers (Manager for Victoria, Reserve Bank) Professor Mahalanobis had discussions with Professor W. Prest and Professor D. Cochrane of the University of Melbourne, Mr. E. Cotes (Director of Finance, State Treasury), Dr. R. S. Andrews (Chairman, Gas & Fuel Corporation of Victoria), Mr. Ian Potter (financier) and other distinguished persons in political and official circles; and had a colloquium with economists on "Planned Development" at the Reserve Bank on 17 November.

Professor and Mrs. Mahalanobis spent the week-end along with other distinguished guests including Dr. and Mrs. H. C. Coombs, Dr. and Mrs. D. A. Denton, Mr. and Mrs. Ian Potter and Mr. T. Martin at the sheep-ranch "Booroola" of Mr. and Mrs. Kenneth Myer at Avelon about eighty miles from Melbourne.

On 21 November Professor Mahalanobis gave a lecture on "Economic Development of India and International Tensions" at the Australian Institute of International Affairs; and next evening gave a lecture on "Planning for Universities and Research in India" at the University of Melbourne. At a special meeting of the Commonwealth Scientific and Industrial Research Organisation (C.S.I.R.O.) which was attended by Dr. P. M. G. White (Chairman) and other senior staff of the C.S.I.R.O. and also by Lord Casey (former Governor of Bengal, and former Foreign Minister of Australia and a member of the Council of the C.S.I.R.O.), Professor Mahalanobis opened a discussion on problems of scientific personnel; visited the Australian Administrative Staff College and had a group discussion there on "Statistics for Economic Development" on 23 November. On 25 November, he had discussions with Sir Leslie Martin, Chairman, University Grants Commission and gave a lecture at the Annual Meeting of the Economic Society on the Third Five Year Plan of India.

Canberra (27 November-4 December): Professor and Mrs. Mahalanobis stayed in the University House as guests of the National University till 4 December. On 28 November, there was a lunch in the University House with Professor Burton (Head of Division of Social Sciences) and Mrs. Burton, Professor Fitzgerald (Master of the University House) and Mrs. Fitzgerald and other staff members. Professor Mahalanobis had discussions with Dr. Pierre (President, Economic Society), Professor Swan and several other members of the Faculty of Economics at a dinner at the University House the same evening and gave a lecture at a meeting of the Economic Society in the University House Auditorium on the Third Five Year Plan of India. On 29 November, Professor and Mrs. Mahalanobis attended an informal dinner given by Dr. H. C. Coombs at the University House and met Sir John Eccles, F.R.S.

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(President, Australian Academy of Science), Professor Fenner, F.R.S., Professor Bok (Mt. Stromboli Observatory), Professor Burgess Cameron, Dr. Westerman (Department of Trade), Professor Eunor and Professor Hope. Next day Professor and Mrs. Mahalanobis visited the Mt. Stromboli Observatory, and later Professor Mahalanobis visited the Parliament House, where he had discussions with Mr. Calwell (Leader), Mr. Whitlam (Deputy Leader), Dr. Cairns and a large group of other M.P.'s of the Australian Labour Party. He also met Mr. Holt, Treasurer, (that is the Finance Minister) of the Federal Commonwealth Government of Australia. On 11 December, Professor Mahalanobis opened a group discussion on organization of scientific research in the Physical Research Laboratory which was presided over by Sir Mark Oliphant, and attended by Dr. Frankel and other. The same evening, he gave a lecture on Fractile Graphical Analysis at the Statistical Society followed by some discussions. On 2 December, Professor and Mrs. Mahalanobis were guests at the Annual Dinner of the Australian Academy of Science where Professor Mahalanobis gave a short speech on role of science in economic development.

Professor Mahalanobis had discussions with the Secretary and other officials of the Department of Trade and with Sir Arthur Tange (Secretary, External Affairs); Mr. S. Sen the Indian High Commissioner was present on both occasions. Professor Mahalanobis also had several discussions with the High Commissioner, and other members of the Indian High Commission.

Sydney (4-10 December) : On return to Sydney, Professor Mahalanobis had discussions with the Governor and staff of the Reserve Bank on 5 December. On 7 December a whole-day meeting from 10.30 a.m., with informal discussions at lunch and at dinner with further discussions after dinner lasting till 11.20 p.m., was arranged at the Reserve Bank at which a number of Government and Reserve Bank officials, business representatives and economists were present. The morning session was presided over by Sir Leslie Melville, and the evening session by Dr. H. C. Coombs. A note on the need of economic collaboration between Australia and India prepared by Professor Mahalanobis, was circulated with some supplementary notes from the Reserve Bank. There were further discussions on 8 and 10 December at the Reserve Bank.

Mrs. Mahalanobis had independent programmes in both Melbourne and Canberra. In Melbourne, she visited the International House, had discussions with a group of ladies at a tea at the residence of the Vice-Chancellor of Melbourne University, and had the opportunity of meeting and discussing with members of some of the women's associations. She spoke on Rabindranath Tagore at a meeting in the University of Melbourne. In Canberra, she broadcasted a talk on Rabindranath Tagore and also recorded another talk on Rabindranath Tagore which was to be broadcast during the Tagore Centenary.

Professor and Mrs. Mahalanobis left Australia for India on 11 December accompanied by Sir Ronald A. Fisher.

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Appendix 5 : List of Research Papers, Reports and Scientific Lectures.

RESEARCH AND TRAINING SCHOOL

5.1 PUBLISHED PAPERS

A. *Theoretical Statistics*

- P1 BHADUR, R. R. (with Ranga Rao, It.) (1960) : On deviations of the sample mean. *Ann. Math. Stat.*, 31, 1015.
- P2 BHATTACHARYYA, P. K. (with Parthasarathy, K. R.) (1961) : Some limit theorems in regression theory. *Sankhyā*, Series A, 23, 61.
- P3 HALDANE, J. B. S. (1961) : Simple approximations to the probability integral and $P(\chi^2, 1)$ when both are small. *Sankhyā*, Series A, 23, 9.
- P4 JOHN, S. (1960) : On some classification statistics. *Sankhyā*, 22, 309.
- P5 ——— (1960) : On some classification problems. *Sankhyā*, 22, 301.
- P6 LAHA, R. G. (1960) : On a property of positive-definite function. *Bull. Amer. Math. Soc.*, 66, 388.
- P7 ——— (with Lukacs, E.) (1960) : On certain functions of normal variates which are uncorrelated of a higher order. *Biometrika*, 47, 175.
- P8 ——— (with Lukacs, E.) (1960) : On a problem connected with quadratic regression. *Biometrika*, 47, 335.
- P9 ——— (with Lukacs, E.) (1960) : On a characterization of the Wiener process; *Transactions of the Second Prague Conference on Information Theory, Statistical Decision Functions and Random Processes*; published by the Czechoslovak Academy of Sciences, Prague, 307.
- P10 ——— (with Lukacs, E. and Newman, M.) (1960) : On the independence of a sample central moment and the sample mean. *Ann. Math. Stat.*, 31, 1028.
- P11 ——— (1961) : On a property of functions with non-negative derivatives at the origin and its application. *Bull. Amer. Math. Soc.*, 67, 148.
- P12 MAHALANOBIS, P. C. (1961) : Economic development. *Jour. Oper. Res. Soc. Japan*, 3, 97.
- P13 ——— (1960) : Algunas observaciones sobre el censo agropecuario mundial de 1960. *Estadística*, 18, 11.
- P14 PARTHASARATHY, K. R. (1960) : On the estimation of the spectrum of a stationary stochastic process. *Ann. Math. Stat.*, 31, 508.
- (P2) ——— (with Bhattacharyya, P. K.) (1961) : Some limit theorems in regression theory. *Sankhyā*, Series A, 23, 61.
- P15 RAO, C. R. (1961) : A study of large sample test criteria through properties of efficient estimates. *Sankhyā*, Series A, 23, 25.

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- (P1) RANGA RAO, R. (with Bahadur, R. R.) (1960) : On the deviations of the sample mean. *Ann. Math. Stat.*, 31, 1015.
- P16 ----- (with Varadarajan, V. S.) (1961) : On the decomposition of Haar measure in compact groups. *Fundamenta Mathematica*, 49, 119.
- P17 ROY, J. (with Murthy, V. K.) (1960) : Percentage points of Wilk's L_{mn} and L_{cc} criteria. *Psychometrika*, 25, 243.
- P18 ----- (with Shah, K. R.) (1961) : Analysis of two-way designs. *Sankhyā, Series A*, 23, 129.
- P19 SETHURAMAN, J. (1961) : Some limit distributions connected with frailty graphical analysis. *Sankhyā, Series A*, 23, 79.
- P20 ----- (1961) : Conflicting criteria of 'goodness' of statistics. *Sankhyā, Series A*, 23, 187.
- P21 SHAH, K. R. (1961) : Optimality criteria for incomplete block designs. *Ann. Math. Stat.*, 31, 791.
- (P18) ----- (with Roy, J.) (1961) : Analysis of two-way designs. *Sankhyā, Series A*, 23, 129.
- (P16) VARADARAJAN, V. S. (with Ranga Rao, R.) (1960) : On the decomposition of Haar measure in compact groups. *Fundamenta Mathematica*, 49, 119.
- B. Biometry
- P22 BHATTACHARYA, S. K. (with Das, B. C.) (1961) : Variation in Lipoprotein level with changes in age, weight and cholesterol Ester. *Gerontologia*, 5, 25.
- P23 ----- (with Das, B. C.) (1961) : Changes in human serum protein fractions with age and weight. *Canadian Journal of Biochemistry and Physiology*, 39, 569.
- P24 DAS, B. C. (with Bhattacharya, S. K.) (1961) : Changes in human serum protein fractions with age and weight. *Canadian Journal of Biochemistry and Physiology*, 39, 569.
- (P22) ----- (with Bhattacharya, S. K.) (1961) : Variation in Lipoprotein level with changes in age, weight and cholesterol Ester. *Gerontologia*, 5, 25.
- P25 DAVIS, T. A. (1960) : Clonal propagation in the coconut. *Current Sci.*, 29, 273.
- P26 ----- (1960) : Aerial layering in *Areca catechu*. *Arecanut J.*, 11, 9.
- P27 ----- (with Thomas Varkey) (1960) : Studies on coconut pollen. *Indian Coconut Jour.*, 14, 1.
- P28 DEBNAMRAJU, K. R. (1960) : Selective visits of butterflies to flowers, a possible factor in sympatric speciation. *Nature*, 186, 178.
- P29 ----- (with Spurway, H) (1960) : Constancy to horticultural varieties shown by butterflies and its possible evolutionary significance. *J. Bombay Nat. Hist. Soc.*, 57, 138.
- P30 HALDANK, J. B. S. (1960) : Mind in evolution. *Zool. Jahrbuch Syst.* 88, 117.
- P31 ----- (1960) : Blood grouping and human trisomy. *Current Sci.*, 29, 375.
- P32 JAIN, S. L. (1960) : Monogene of Indian freshwater fishes, XII New Dactylogyrid Trematodes from the Gill filament of Cyprinidae and Gobiidae hosts. *Commemorative volume of Dr. Eduardo Caballero, Mexico*, 161.

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- P33 PAL, P. R. (with Christensen, H. N.) (1961): Uptake of pyridonal and pyridonal phosphate by Ehrlich ascites tumor cells. *J. Biol. Chem.*, 236, 894.
- P34 ROY, S. K. (1960): Interaction between rice varieties. *J. Genet.*, 57, 137.
- P35 ——— (1960): Variation in Indian cattle, buffaloes, and goats. *Proceedings of the Centenary and Bicentenary Congress of Biology*, Singapore, 213.
- P36 ——— (1960): Variation of leaves and flowers on the same plant. *Proceedings of the Centenary and Bicentenary Congress of Biology*, Singapore, 312.
- P37 SPURWAY, H. (with Kumar, Asit) (1960): On variation under Domestication with a description of Tussore silk cultivation. *Proceedings of the Darwin-Wallace Centenary and Linnaeus Bicentenary Congress*, 225.
- P38 ——— (with Callan, H. G.) (1960): The vigour and male sterility of hybrids between the species *Triturus Vulgaris* and *T. Helveticus*. *J. Genet.*, 57, 84.
- (P29) ——— (with Dronamraju, K. R.) (1960): Constancy to horticultural varieties shown by butterflies, and its possible evolutionary significance. *J. Bombay Nat. Hist. Soc.*, 57, 136.

C. Demography and Medical Statistics

- P30 POTI, S. J. (1960): A study of Indian population growth. *Indian Population Bulletin*, 1, 81.

D. Sociology

- P40 MUKHERJEE, R. (1960): Some considerations on social research (Presidential Address, Sociology Section, All-India Sociological Conference, Fifth Session, Lucknow, March 1960). *Eastern Anthropologist*, 13, 121.
- P41 ——— (1961): A note on village as unit or variable for studies of rural society. *Eastern Anthropologist*, 14, 3.

E. Psychology

- P42 CHATTERJI, S. (with Mukherjee, Manjula) (1960): Validity study of a college aptitude test battery. *Education and Psychology*, 18, 383.
- (P42) MUKHERJEE, M. (with Chatterjee, S.) (1960): Validity study of a college aptitude test battery. *Education and Psychology*, 18, 383.

F. Chemistry

- P43 DE, P. K. (with Jensen, H. L., Petersen, E. J. and Bhattacharyya, Roma): A new Nitrogen-fixing Bacterium: *Derxia Gummosa* nov. gen. nov. spec. *Archiv für Mikrobiologie*, 36, 182.
- P44 HALDANE, J. B. S. (1960): Pasteur and cosmic asymmetry. *Nature*, 185, 87.
- P45 ——— (1960): 'Dex' or 'Order of Magnitude'? *Nature*, 187, 4740.
- P46 MAHALANOBIS, P. C. (1960): Organisation of science in India. *Science and Culture*, 27, 101.
- P47 ——— (1960): Scientific workers in the UK, USA and USSR. *Science and Culture*, 26, 101.
- P48 SPURWAY, H. (1960): Vaishnava and Saiva biology. *Zool. Jb.*, 88, 107.

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5.2. PAPERS SUBMITTED FOR PUBLICATION

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

A. *Theoretical Statistics*

- S1 BANADUR, R. R. : On the number of distinct values in a large sample infinite discrete distribution. (*Proc. National Institute of Sciences of India*).
- S2 ——— : (with Anderson, T. W.) : Classification into two multivariate normal populations with unequal covariance matrices. (*Ann. Math. Stat.*).
- S3 BASUMALLICK, S. : Petrology and zonation of the Rewa sandstone in Maihar, Madhya Pradesh. (*Quart. J. Geol. Min. Met. Soc. Ind.*).
- S4 ——— : On some sedimentological features of the Bhandar sandstone in Maihar, Madhya Pradesh. (*Quart. J. Geol. Min. Met. Soc. Ind.*).
- S5 JOHN, S. : Methods for the evaluation of probabilities of polygonal and angular regions when the distribution is bivariate t (*Sankhyā*).
- S6 ——— : A tolerance region for multivariate normal distributions. (*Sankhyā*).
- S7 LAHA, R. G. : On a class of unimodal distributions. (*Proc. Amer. Math. Soc.*).
- S8 ——— : On functions having non-negative derivatives at the origin. (*Proc. Amer. Math. Soc.*).
- S9 ——— : Use of 'Order Statistic' in sampling without replacement. (*Sankhyā*).
- S10 PARTHASARATHY, K. R. : On the integral representation for the rate of transmission for a channel. (*Illinois Journal of Mathematics*).
- S11 ——— : On the category of ergodic measure. (*Illinois Journal of Mathematics*).
- S12 ——— : On testing the mean function of a discrete linear process. (*Sankhyā*).
- S13 ——— (with Ranga Rao, R. and Varadhan, S. R. S.) : On the category of indecomposable distributions on topological groups. (*Trans. Amer. Math. Soc.*).
- S14 ——— (with Ranga Rao, R. and Varadhan, S.R.S.) : On decomposition of distributions in locally compact groups. (*Teoriya Veroyatnostei i ee Primeneniya*).
- S15 PATHAK, P. K. : Evaluation of moments of distinct units in a sample. (*Sankhyā*).
- S16 RANGA RAO, R. : On the central limit theorem in R_p . (*Bull. Amer. Math. Soc.*).
- S17 ——— : On the law of large numbers for $[0, 1]$ -valued random variables. (*Teoriya Veroyatnostei i ee Primeneniya*).
- (S13) ——— (with Parthasarathy, K. R. and Varadhan, S. R. S.) : On the category of indecomposable distributions on topological groups. (*Trans. Amer. Math. Soc.*).
- (S14) ——— (with Parthasarathy, K. R. and Varadhan S.R.S.) : On decomposition of distributions in locally compact groups. (*Teoriya Veroyatnostei i ee Primeneniya*).
- S18 RAO, C. R. : On a combinatorial assignment problem. (*Nature*).
- S19 ——— : A study of BIBD designs with replications 11 to 15. (*Sankhyā*).
- S20 ROY, J. (with Shah, K. R.) : Analysis of two-way designs. (*Sankhyā*).
- S21 ——— : Analysis of incomplete block designs. (*Ann. Math. Stat.*).

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- S22 SETHURAMAN, J.: Some limit theorems for joint distributions. (*Sankhyā*).
- S23 SHAH, K. R.: An alternative estimate of inter-block variance in incomplete block designs. (*Sankhyā*)
- S24 ———: Recovery of inter-block information in quasi-Latin Squares. (*Sankhyā*)
- (S20) ——— (with Roy, J.): Analysis of two-way designs. (*Sankhyā*).
- (S21) ———: Analysis of incomplete block designs. (*Ann. Math. Stat.*).
- (S13) VARADHAN, S. R. S. (with Ranga Rao, R. and Parthasarathy, K. R.): On the category of indecomposable distributions on topological groups. (*Trans. Amer. Math. Soc.*).
- (S14) ———: On decomposition of distributions in locally compact groups. (*Teoriya Veroyatnostei i ee Primeneniya*).

B. Biometry

- S25 DAVIS, T. A.: Aerial roots in the Areca palm. (*Arecanut J.*).
- S26 ———: Non-inheritance of asymmetry in *Cocos nucifera*. (*J. Genet.*).
- S27 ———: A machine for climbing the coconut and similar palms. (*World Crops*).
- S28 ———: High root pressures in palms. (*Nature*).
- S29 ———: Importance of the aerial roots in *Cocos nucifera*. (*Oleagineae*).
- S30 ———: Morphological variations in *Areca catechu*. (*Arecanut Monograph*).
- S31 DEONABRAJU, K. R.: Non-genetic polymorphism in *Bauhinia acuminata* L. (*J. Genet.*).
- S32 ———: Hypertrichosis of the pinnae of the human ear, Y-linked pedigrees. (*J. Genet.*).
- S33 ———: Frequencies of hairy pinnae among Indian and Ceylonese peoples. (*Nature*).
- S34 ——— (with Spurway, H): The biology of the two commercial qualities of cocoons spun by *Antheraea mylitta* (Drury) with a note on the cocoons of the related *A. Assama* (Westwood). (*Proceedings of the VII Congresso Annuale della Societa Italiana di Genetica Agraria, Padova, 28—30 October 1960*).
- S35 ——— (with Khan, Meera P.): Inbreeding in Andhra Pradesh. (*J. Hered.*).
- S36 ——— (with Khan, Meera P.): Frequency of colour blindness in Andhra Pradesh School Children. (*Annals of Human Genetics*).
- S37 ——— (with Khan, Meera, P. and Narayanamurty, V.V.): The ABO blood groups distributions of the people of coastal Andhra Pradesh. (*Man*).
- S38 HALDANE, J. B. S.: Human Physiology at high pressure. (*Journal of Aero-Medical Society of the Indian Air Force*).
- S39 ———: The mathematical theory of Natural Selection. (*Golden Jubilee Number, Calcutta Mathematical Society*).
- S40 ———: Lenin's ideas on Natural Sciences. (*Journal Priroda, Moscow, USSR*).
- S41 ———: The distribution of extremal and nearly extremal values in samples from a normal distribution. (*Sankhyā*).
- S42 ———: Natural selection in men. (*Progress in Medical Genetics, Ohio*).

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- S43 ——— : The theory of interation with special reference to population genetics. (*Proc. National Institute of Sciences of India*).
- S44 ——— : A statistical analysis of Lord Avebury's observations on wasps. (*Notes & Records of Royal Society*).
- S45 ——— : More precise expression for the cost of natural selection. (*J. Genet.*)
- S46 ——— : Some simple systems of artificial selection. (*J. Genet.*)
- S47 ——— : The scientific work of J. B. S. Haldane. (*Penguins*).
- (S34) SPURWAY, H. (with Dronamraju, K. R.). The biology of the two commercial qualities of cocoons spun by *Antheraea mylitta* (Drury) with a note on the cocoons of the related *A. assama* (Westwood). (*Proceedings of the VII Convegno Annuale della Societa Italiana di Genetica Agraria, Padova, 28-30, October, 1960*).

C. Demography and Medical Statistics

- S48 BISWAS, S. (with Mukherjee, S) : A statistical note on the relationship between pregnancy and obstetrical complications based on hospital data. (*J. Indian Med. Ass.*).
- S49 GUPTA, P. B. (with Malakar, C. R.) : Fertility differentials by level of living and adjustment of birth and death rates. (*Sankhyā*).
- (S49) MALAKAR, C. R. (with Gupta, P. B.) : Fertility differentials by level of living and adjustment of birth and death rates. (*Sankhyā*).
- (S48) MUKHERJEE, S. (with Biswas, S) : A statistical note on the relationship between pregnancy and obstetrical complications based on hospital data. (*J. Indian Med. Ass.*).
- S50 RAMAN, M. V. : A method of improving the validity of cause of death statistics. (*Sankhyā*).

D. Regional Planning

- S51 BHAT, L. S. : Population studies—a regional approach. (*Bombay Geographical Journal*).
- S52 PAL, M. N. : Quantitative delimitation of regions. (*Bombay Geographical Journal*).

E. Psychology

- S53 CHATTERJEE, S. (with Mukherjee, Manjula) : Construction of a table for estimation of item validity indices in terms of Davis's discrimination for criterion groups based on median split. (*Psychological Studies*).
- (S53) MUKHERJEE, MANJULA (with Chatterjee, S) : Construction of a table for estimation of item validity indices in terms of Davis's discrimination for criterion groups based on median split. (*Psychological Studies*).
- S54 SHARMA, K. N. : Comparison of the responses obtained by two psychophysical methods and those obtained in simultaneous and successive presentations. (*Educational & Psychological Measurements*).

5.3 PAPERS READ AT CONFERENCES (NOT YET PUBLISHED)

- O1 BHAT, L. S. (with Rao, V. L. S. P.) : Delimitation of Metropolitan Regions Method. (*Town Planning Seminar, Bangalore, September 1960*).
- O2 ——— (with Rao, V. L. S. P.) : Macroscopic Approach—urbanisation in India. (*Town Planning Seminar, Bangalore, September 1960*).

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- C3 DAVIS, T. A. : Root pressure in palms—a preliminary report. (*Ceylon Association for the Advancement of Science*).
- C4 DRONAMRAJU, K. R. (with Spurway, H.) : Intervarietal selection by insect pollinators, comparable with sexual selection. (*Ceylon Association for the Advancement of Science, 1960*).
- C5 ——— (with Spurway, H.) : The forms of cocoon spun by the Tussock silkworm, *Antheraea mylitta*.
- C6 HALDANE, J. B. S. : Biological research with simple apparatus. (*Ceylon Association for the Advancement of Science, 1960*).
- C7 ——— : The physical chemistry of enzyme action. (*Ceylon Association for the Advancement of Science, 1960*).
- C8 ——— : The study of human heredity. (*Ceylon Association for the Advancement of Science, 1960*).
- C9 HANUMANTHA RAO, T. V. : On an existence theorem in sampling designs. (*Forty-seventh Session of the Indian Science Congress, Bombay, 1960*).
- C10 ——— : Some sampling mechanisms in varying probability sampling. (*Forty-seventh Session of the Indian Science Congress, Bombay, 1960*).
- C11 POTI, S. J. (with Chakravarty, B. and Malakar, C. R.) : Reliability of data relating to contraceptive practices. (*Proceedings of the Conference on Research in Family Planning, New York, October 13-10, 1960*).
- C12 RAO, V. L. S. P. : Problems of Metropolitan Planning—Geographers' view point. (*Town Planning Seminar, Bangalore, September, 1960*).
- (C1) ——— (with Bhat, L. S.) : Delimitation of Metropolitan Regions Method. (*Town Planning Seminar, Bangalore, September, 1960*).
- (C2) ——— (with Bhat, L. S.) : Macroscopic Approach—urbanisation in India. (*Town Planning Seminar, Bangalore, September, 1960*).
- C12 ROY, S. K. : Experiments on rice cultivation. (*Fifth Annual Session of Assam Science Society, Gauhati, 1960*).
- C14 ——— : Asymmetry in nipples of cattle buffaloes and goats, and leaves. (*Forty-seventh Session of the Indian Science Congress, Bombay, 1960*).
- C15 ——— : Variations in organs on the same plant. (*Forty-seventh Session of the Indian Science Congress, Bombay, 1960*).
- C16 ——— : Some biological experiments and their results. (*Institute of Genetics, University of Lund, Sweden, 1960*).
- C17 ——— : Different kinds of sterility barriers. (*Institute of Genetics, University of Lund, Sweden, 1960*).
- C18 ——— : Interactions among plants. (*Plant Breeding Institute, Swedish Seed Association, Svalof, Sweden, 1960*).
- (C4) SPURWAY, H. (with Dronamraju, K.R.) : Intervarietal selection by insect pollinators, comparable with sexual selection. (*Ceylon Association for the Advancement of Science*).
- (C5) ——— (with Dronamraju, K. R.) : The forms of cocoon spun by the Tussock silkworm, *Antheraea mylitta*.

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5.4 WORKING PAPERS, NOTES AND REPORTS

- W1 BANDYOPADHYAY, SURAJ (with Chattopadhyay, Kumarananda) : A report into the motivational and communications aspects of family planning.
- W2 ——— : An analysis of structural homogeneity of villagees around an urban centre.
- W3 ——— : On the claims of individual castes in the caste-hierarchy in some Bengal villagees—an exploratory formulation.
- W4 BHAT, L. S. (with Learmonth, A. T. A.) : Mysore State, Vol. 1—An Atlas of resources.
- (W1) CHATTOPADHYAY, KUMARANANDA (with Bandyopadhyay, Suraj) : A report into the motivational and communications aspects of family planning.
- W5 DAVIS, T. A. and others : Report on the "Micronutrient aspects of the coconut and Arecanut palms."
- W6 DRONAMRAJU, K. B. : Further observations on intervarietal selection by pollinators.
- W7 ——— : Inbreeding in Andhra Pradesh.
- W8 ——— : Further pedigrees showing Holandric inheritance in man.
- W9 HALDANE, J. B. S. (with Jayakar, S. D.) : Coefficients of human relationships.
- W10 ——— (with Jayakar, S. D.) : A complete enumeration of some human relationships.
- W11 ——— : The comparison of coefficients of inbreeding.
- W12 ——— : L' Oeuvre biometrique de J. S. Haldane.
- (W9) JAYAKAR, S. D. (with Haldane, J. B. S.) : Coefficients of human relationships.
- (W10) ——— (with Haldane, J.B.S.) : A complete enumeration of some human relationships.
- (W4) LEARMONTH, A. T. A. (with Bhat, L. S.) : Mysore State, Vol. 1—An Atlas of resources.
- W13 PAKRASI, KANTI BHUSAN : A preliminary report on social structures of Durgapur Townships—1958.
- W14 RAO, V. L. S. P. : Towns of Mysore State. (Asia Publishing House).
- W15 ——— : Regional concept.
- W16 RAYCHAUDHURI, BIMALENDU : An attempt to determine the Fe-Mg ratio in horn-blendes by x-ray diffractometric method.
- W17 ——— : Relation between chemical constitution and unit cell parameters of some calciferous hornblendes.
- W18 ——— : Variations in the distribution of major, minor and trace element contents of amphibolites and their constituent minerals as a function of their ranks of metamorphism.
- W19 ——— : Origin of the amphibolites of Lead area, Black Hills, South Dakota—a discussion on ortho versus para-origin.
- W20 ——— : Some data on the accuracy and reproducibility of silicate analysis by fluorescent x-ray spectrometric method.
- W21 SPURWAY, H. : Biometry on *Antheraea mylitta*.
- W22 ——— : Sexual cycles and life tables of *Lobioses reticulatus*.

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5.5 BOOK REVIEWS AND ABSTRACTS OF PAPERS

Professor J. B. S. Haldane reviewed the following books: (1) *Medical and Biological Research in Israel*; Ed. Moshe Frywes (to appear in *J. Genet.*, 57, Nos. 2 & 3). (2) *Developing Cell Systems and their Control*; Ed. D. Rudnick (to appear in *J. Genet.*, 57, Nos. 2 & 3). (3) *Stochastic Population Models in Ecology and Epidemicology* by M. S. Bartlett (to appear in *J. Genet.*, 57, Nos. 2 & 3). (4) *An Introduction to Human Blood Groups* by Fulton Roberts, M. D. (to appear in *J. Genet.*, 57, Nos. 2 & 3). (5) *A Proposed Standard of Nomenclature of Human Mitotic Chromosomes by a Human Chromosome Study Group* (*supplement to Cerebral Palsy Bulletin*, 2, No. 3, 1960; Published by the National Statistics Society, 28 Fitzroy Square, London W. 1).

K. R. Dronamraju reviewed the following book: (1) *A Guide Book to Bio-Chemistry* by Kenneth Harrison (*J. Genet.*, 57, 166).

The Research and Training School helped in the preparation of abstracts of statistical papers published in India and Pakistan for the *International Journal of Abstract* issued by the International Statistical Institute. C. R. Rao was the regional editor and the following members of the staff reviewed one or more articles each: S. John, S. K. Mitra, K. R. Parthasarathy, T. V. Hanumantha Rao, R. Ranga Rao, J. Roy, S. R. S. Varadhan.

R. G. Laha reviewed a number of articles on Probability Theory and Statistics for *Mathematical Reviews*.

PLANNING DIVISION

5.6 PUBLISHED PAPERS

1. BINWAS, A.: Planning and Choice of Technique. *Perspective*, January 1961.
2. BHATTACHARYA, N.: Correlation between Word-length and Word-frequency. *Proc. Indian Science Congress, Forty-eighth Session*, January 1961.
3. ——— (with Mitra, B. N.): On the inter-relations between total length, total weight and weight of flesh in fresh water prawn. *Proc. Indian Science Congress, Forty-eighth Session*, January 1961.
4. CHATTERJEE, I.: An assessment of the food, cost of maintenance and milk production of India's milking animals on the basis of scientific standards. *J. Science Club*, June-August 1960.
5. ———: Milk production in India. *Economic Weekly*, September 1960.
6. ———: Low milk production in India—a note. *Economic Weekly*, December 1960.
7. DEY, B.: National income and standard of living. *Atithik Prasangna*, 1960. (May-June).
8. IVENGAR, N. N.: On the standard error of the Lorenz concentration ratio. *Sankhyā*, 22, June 1960.
9. ———: On a problem of estimating increase in consumer demand. *Sankhyā*, 22, June 1960.
10. ———: On a method of computing Engel elasticities from concentration curves. *Econometrica*, October 1960.
11. ———: A note on quality sensitiveness to changes in standards of living. *Proc. Indian Science Congress, Forty-eighth Session*, January 1961.

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12. MUKHERJEE, M. : On the appropriateness of the price average to be used for obtaining the value of output in agriculture. *Papers on National Income and Allied Topics : Indian Conference on Research in National Income, 1960.*
13. ——— : A note on the magnitude of the incremental net output investment ratio in periods of rising and falling national income. *Economic Affairs, 5, 1960.*
14. PIPRAI, T. : Rail Traction in India and USSR. *Indian Railways, 5, 1960.*
15. RUDRA, A. : Planning at the State level. *Economic Weekly, Special Number, 1960.*
16. ——— : The translation problem in technological choice. *Economic Weekly, 1960.*
17. ——— : National income estimate—why not discontinue them? *Economic Weekly, Annual Number, 1961.*
18. ——— : Three neglected problems of planning. *Economic Affairs, August 1960.*
19. ——— : The basic problems in resources mobilization. *Economic Affairs, 5, 1960.*

5.7 PAPERS SUBMITTED TO OR READ AT CONFERENCES

1. BISWAS, A. and BOSE, D. : Consumption projections of selected items over the period of the Third Five Year Plan. (Presented at the Second Indian Conference of Research in National Income (IORNI) Delhi, September 1960).
2. ——— : Inter-industry Economics and Planning. (To be published in the *Economic Weekly*).
3. CHAKRAVARTI, A. K. : Analysis of demand for wheat (British India, 1924-25 to 1941-42). (Presented at the Second ICRNI, Delhi, September 1960).
4. ——— and PANDE, S. B. : On estimation of gross and net earnings on road transport in India (1951-55). (Read at the Second ICRNI, Delhi, September 1960).
5. CHATTERJEE, G. S. and SINHA, MUKA : National income estimates of India for the years 1944-45 to 1947-48—A review. (Presented at the Second ICRNI, Delhi September 1960).
6. CHATTERJEE, I. : The nutritional food cost and its economic impact on the cost of milk production. (Read at the Third Conference of Agricultural and Animal Husbandry Research Workers on Dairying at Bangalore, February 1961).
7. CHATTOPADHYAY, N. and LAHIRI, R. K. : Cost of production of cotton textile industries in India (1948-56). (Read at the Second ICRNI, Delhi, September 1960).
8. DEY, B. and NAYYAL, A. : Production, utilization and cost structure of mining in India 1954-55. (Read at the Second ICRNI, Delhi, September 1960).
9. MAHALANOBIS, P. C. and MUKHERJEE, M. : Operational research models used for planning in India. (Submitted to the Second Operational Research International Congress, September 1960).
10. MAZUMDAR, H. : The financing of Indian Capital formation. (Read at the Hongkong Conference of the International Association for Research in Income and Wealth, August 1960).

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11. MUKHERJEE, M. : A preliminary study of the growth of National Income in India during the period 1857-1957. (Presented at the International Conference on Income and Wealth held at Hongkong, August 1960).
12. ——— : A review of series estimates of national income in India, 1900-1958. (Presented at the Second ICRNI, Delhi, September 1960).
13. ——— : On the available estimates of the breakdown of National Income by distributive shares in India. (Presented at the Second ICRNI, Delhi, September 1960).
14. ——— : An introduction to the study of growth of national income in India 1857-1957. (Submitted for publication in a volume on *Economic History in India*).
15. ——— : National income in India during the last decade. (Submitted for publication in *A Decade of Economic Development and Planning in India*, Asian Studies Press).
- (9). ——— and MAHALANOBIS, P. C. : Operational research models used for planning in India. (Submitted to the Second Operational Research International Congress, September 1960).
16. NAQVI, S. : Problems of marketable surplus in Indian Agriculture. (Read at the Indian Agricultural Economic Conference, Chandigarh, December 1960).
17. ——— : Organization of future research in Indian Economic history. (Read at the seminar on Problems of Indian Economic History at the Delhi School of Economics, April 1961).
18. PIPLAI, T. : Contribution of financial intermediaries to national income of India during 1954-55. (Read at the Second ICRNI, Delhi, September 1960).
19. RUDRA, A. : Industrialization of Kerala. (Presented at the Kerala Economic Conference, Delhi).
- (8). SANYAL, A. and DEY, B. : Production, utilization and cost structure of mining in India 1954-55. (Read at the Second ICRNI, Delhi, September 1960).
- (5). SINHA, MIRA and CHATTERJEE, G. S. : National income estimates of India for the years 1944-45 to 1947-48—A review. (Presented at the Second ICRNI, Delhi, September 1960).

5.8 WORKING PAPERS AND TECHNICAL NOTES

(Working paper, number and date of release are given in brackets)

1. BISWAS, A. K. and BOSE, D. K. : Consumption projections of selected items over the period of Third Five Year Plan. (198/10 July 1960).
- (1). BOSE, D. K. and BISWAS, A. K. : Consumption projections of selected items over the period of Third Five Year Plan. (198/10 July 1960).
2. CHAKRAVARTI, A. K. : Analysis of demand for wheat (British India, 1924-25 to 1941-42). (197/24 June 1960).
3. ——— : On some aspects of the structure of the Indian economy (1953-54). (199/29 August 1960).
4. CHATTERJEE, G. S. : A note on per capita contribution to national income from professions and liberal arts and domestic service for rural and urban sectors of India (based on NSS fourth round, April 1952 to September 1952). (202/12 September 1960).
5. ——— : On variation in per capita contribution to national income from professions and liberal arts and domestic service for the rural sector of India (based on NSS fourth round, April 1952 to September 1952 and NSS fifth round, November 1952 to March 1953). (210/12 December 1960).

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6. CHATTERJEE, G. S. and SINHA, MIRA : National income estimates of India, 1944-45 to 1947-48—A Review. (204/17 October 1960).
7. CHATTERJEE, J. : Studies on the economics of livestock industry. (211/13 December 1960).
8. ——— : Studies on the economics of livestock industry. (212/13 December 1960).
9. ——— : The production, availability and requirement of milk in India and its States in the perspective of planning. (214/3 January 1961).
10. ——— : The factors affecting the production, availability and requirement of milk in India and its States in the perspective of planning. (215/5 January 1961).
11. ——— : The relationship of cropping area, work animals and plough number in their bearing on the assessment of animal efficiency in India and its States. (216/7 January 1961).
12. CHATTOPADHYAY, N. and LAHRI, R. K. : Cost of production of cotton textile industry in India, 1948-56. (206/20 October 1960).
13. DEY, B. and SANYAL, A. : Production, utilization and cost structure of mining in India (1954-55). (208/2 November 1960).
14. GANAPATHI, R., PIPLAI, T. and SANYAL, A. : On some aspects of rural transport in India, 1955-56. (201/19 September 1960).
15. INTER-INDUSTRY UNIT : Inter-industry relations of the Indian economy, 1955-56 (at market prices). (217/12 January 1961).
16. IYENGAR, N. S. and TINTNER, G. : A special form of demand function. (200/20 August 1960).
- (12). LAHRI, R. K. and CHATTOPADHYAY, N. : Cost of production of cotton textile industry in India, 1948-56. (206/20 October 1960).
17. MAZUMDAR, H. K. : The financing of Indian capital formation. (213/26 December 1960).
18. ——— and SOLOMON, M. J. : Inventory holding by manufacturers in India and the United States. (203/15 October 1960).
19. MUKHERJEE, M. : A review of series estimates of national income in India, 1900-58. (196/24 June 1960).
20. ——— A preliminary study of the growth of national income in India 1857-1957. (207/21 October 1960).
- (14). PIPLAI, T., SANYAL, A. and GANAPATHI, R. : On some aspects of rural transport in India, 1955-56. (201/19 September 1960).
21. PIPLAI, T. : Contribution of financial intermediaries to national income of India during 1954-55. (205/18 October 1960).
- (13). SANYAL, A. and DEY, B. : Production, utilization and cost structure of mining in India (1954-55). (208/2 November 1960).
- (14). SANYAL, A., PIPLAI, T. and GANAPATHI, R. : On some aspects of rural transport in India, 1955-56. (201/9 September 1960).
- (6). SINHA, MIRA and CHATTERJEE, G. S. : National income estimates of India, 1944-45 to 1947-48—A review. (204/17 October 1960).
22. SOLOMON, M. J. : Pattern for optimum plant utilization in India. (200/20 November 1960).
- (18). SOLOMON, M. J. and MAZUMDAR, H. K. : Inventory holding by manufacturers in India and the United States. (203/15 October 1960).
- (16). TINTNER, G. and IYENGAR, N. S. : A special form of demand function. (200/20 August 1960).

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NATIONAL SAMPLE SURVEY

5.0 LIST OF NATIONAL SAMPLE SURVEY REPORTS UP TO NOVEMBER 1961
(Number within parentheses indicates draft reports)

sl. no.	report no.	title
1.	1	General Report No. 1 on the First Round (October 1950-March 1951).
2.	2	Tables with Notes on the Second Round (April-June 1951).
3.	3	Tables with Notes on the Third Round (August-November 1951).
4.	4	Survey of persons in the "Live-Register" of Delhi Employment Exchange (August-September 1951, <i>ad hoc</i> March 1954).
5.	5	Technical Papers on some aspects of the development of the sample design.
4.	6	Survey of Faridabad Township (March-April 1954).
7.	7	Couple fertility. Second Round (April-June, 1951) and Fourth Round (April-June 1952). <i>December 1955.</i>
8.	8	Report on Preliminary Survey of Urban Employment (September 1953).
9.	9	Sample Survey of Displaced Persons in the Urban Area of Bombay State (July-September 1953).
10.	10	First Report on Land Holding (Rural Sector; July 1964-March 1955).
11.	11	Report on Sample Survey of Manufacturing Industries, 1950.
12.	12	A Technical Note on Age Grouping, <i>October 1958.</i>
13.	13	Report on Small Scale Transport Operation (Seventh Round, October 1953-March 1954).
14.	14	Some Characteristics of the Economically Active Population (Fourth to Seventh Rounds: April 1952-March 1954).
15.	15	Report on Sample Survey of Manufacturing Industries, 1951.
16.	16	Report on Sample Survey of Employment and Unemployment (May-November 1955).
17.	17	Calcutta Employment Survey, <i>September 1953.</i>
18.	18	Tables with Notes on Fourth Round Consumer Expenditure Survey (April-September 1952).
19.	19	Report on Small Scale Manufacturing: Household Enterprise (October 1953-March 1954).
20.	20	Pattern Consumer Expenditure (Second to Seventh Rounds: April 1951-March 1954).
21.	21	Report on Small Manufacturing Establishments (Ninth Round: May-November 1955).
22.	22	Report on Sample Survey of Manufacturing Industries, 1953.
23.	23	Report on Sample Survey of Manufacturing Industries, 1953.

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sl. no.	report no.	title
24.	24	Report on Household Retail Trade (Seventh to Ninth Rounds : October 1953-September 1955).
25.	25	Sample Survey of Livestock Census, 1956.
26.	26	Preliminary Report on Housing Conditions (Seventh Round : October 1953-March 1954).
27.	27	Some Basic Information about Sample Villages (Ninth Round : May-November 1955).
28.	28	Report on the Sample Survey of Manufacturing Industries 1954(1).
29.	29	Notes on Some Results of the Land Utilization Survey (Tenth Round : December 1955-May 1956).
30.	30	Report on Land Holdings (2) (Operational Holdings in Rural India) (Eighth Round, July 1954-April 1955).
31.	31	Tables with Notes on Household Transport Operations (Eighth to Tenth Rounds : July 1954-May 1956).
32.	32(I)	Some Aspects of Costs of Cultivation (major crop) (Fifth to Seventh Rounds: October 1952-March 1954).
33.	32(II)	Some Aspects of Cost of Cultivation (further crops) (Fifth to Seventh Rounds: October 1952-March 1954).
34.	32(III)	Some Aspects of Cost of Cultivation of Minor Cereals Crops, Pulses and Sugar-cane (Fifth to Seventh Rounds : October 1952-March 1954).
35.	33	Tables with Notes on Wages, Employment, Income and Indebtedness of Agricultural labour households in rural areas (Eleventh and Twelfth Rounds: August 1956-August 1957).
36.	34	Tables with Notes on Employment and Unemployment (Tenth Round, December 1955-May 1956).
37.	35	Tables with Notes on Livestock Products (Fifth to Seventh Rounds : April 1952-March 1954).
38.	36	Report on Land holdings (3) (Some aspects of ownership holdings) (Eighth Round : July 1954-April 1955).
39.	37	Survey of Book Readers' Preference in India (Thirteenth Round : September 1957-May 1958).
40.	38	Some results of the land utilization survey and crop-cutting experiments (Thirteenth Round : September 1957-May 1958).
41.	39	Tables with Notes on Consumer Expenditure (Eighth Round : July 1954-March 1955).
42.	40	Tables with Notes on Consumer Expenditure (Ninth Round : May-November 1956).
43.	41	Household Retail Trade (Nineteenth Round : December 1955-May 1956).

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sl. no.	report no.	title
44.	42	Report on Small Scale Manufacture Household Enterprises. Smaller than Registered Factories (Seventh and Eighth Rounds: October 1953-April 1955).
45.	43	Tables with Notes on Small Scale Manufacture Household Enterprise Smaller than Registered Factories (Ninth and Tenth Rounds: May 1955-May 1956).
46.	44	A Note on Profession, Service and Financial Operations (Fourth to Eighth Rounds: April 1952-April 1955).
47.	45	Indian Villages: A study of some social and economic aspects (Tenth to Twelfth Rounds: December 1955-August 1957).
48.	46	Tables with Notes on Consumption Expenditure of Agricultural Labour Households (Eleventh and Twelfth Rounds: August 1948-August 1957).
49.	47	Tables with Notes on Consumer Expenditure (Tenth Round: December 1955-May 1956).
50.	(36)	Preliminary estimates of birth and death rates and of the rate of growth of population (Fourteenth Round: July 1968-July 1959).
51.	(43)	Tables with Notes on employment and unemployment (Eleventh and Twelfth Rounds: August 1956-August 1957).
52.	(44)	Tables with Notes on employment and unemployment (Thirteenth Round: September 1957-May 1958)—Urban.
53.	(46)	Report on Land Holdings (4) Rural Sector: some aspects of operational holdings—population zones and all India (Eighth Round: July 1954-April 1956).
54.	(47)	Vital Rates (Seventh Round: October 1953-March 1954).
55.	(50)	Notes on the results of the land utilization survey and crop-cutting experiments (Twelfth Round: March 1957-August 1957).
56.	(56)	Tables with Notes on internal migration (Ninth, Eleventh, Twelfth and Thirteenth Rounds: May 1953-May 1958).
57.	(57)	Report on Employment and Unemployment (Ninth Round supplementary: May-November 1955).
58.	(59)	Report on Sample Survey of Manufacturing Industries 1954(2): Exploratory Survey of Scheduled Industries.
59.	(60)	Notes on the results of the land utilization survey and crop-cutting experiments: (Eleventh Round: August 1956-February 1957).
60.	(62)	Report on Sample Survey of Manufacturing Industries 1955(1): Survey of Scheduled Industries.
61.	(63)	Report on Morbidity (Thirteenth Round: September 1957-May 1958).
62.	(64)	Tables with Notes on pattern of household ownership and profession of land in rural areas 1950-51 to 1953-54 (Eighth Round: July 1954-April 1955).
63.	(75)	Tables with Notes on Housing Condition (Tenth Round: December 1955-May 1956).

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sl. no.	report no.	title
64.	(60)	Report on Sample Survey of Manufacturing Industries 1956(1).
65.	(69)	Consumer Expenditure by levels of Household Expenditure (Thirteenth Round : September 1957-May 1958).
66.	(70)	Tables with Notes on farming condition and practices in rural Indian areas 1953-54 (Eight Round : July 1954-April 1955).
67.	(71)	Tables with Notes on Housing Condition (Eleventh Round : August 1956-January 1957).
68.	(73)	Report on Land Holdings (5) Rural Sector—States (Eight Round : July 1954-April 1955).
69.	(74)	Report on the Sample Survey of Manufacturing Industries 1955(2).
70.	(72)	Tables with Notes on Consumer Expenditure (Eleventh Round : August 1956-January 1957).
71.	(75)	Tables with Notes on Rural Indebtedness (Eighth Round : July 1954- April 1955).
72.	(77)	Tables with Notes on Milk Production (Twelfth Round : March 1957-August 1957).
73.	(78)	Technical Paper on Sample Design (Fourteenth Round : July 1958-June 1959).
74.	(79)	Tables with Notes on Consumer Expenditure (Twelfth Round : March-August 1957).
75.	(80)	Tables with Notes on Consumer Expenditure (Thirteenth Round : September 1957-May 1958).
76.	(81)	Tables with Notes on some aspects of cost of cultivation of paddy wheat, barley, maize, millet, pulses, oilseeds and vegetables (Fifth-Seventh Rounds : April 1952-March 1954).
77.	(82)	Tables with Notes on Housing Condition (Twelfth Round : March-August 1957).
78.	(83)	Tables with Notes on Animal Husbandry (Eleventh Round : August 1956-January 1957)
79.	(85)	Report on the Sample Survey of Manufacturing Industries 1956(2).
80.	(86)	Report on Manufacturing Industries 1957 (1).
81.	(87)	Tables with Notes on employment and unemployment in urban areas (Fourteenth Round : July 1958-June 1959).
82.	(89)	Fertility and Mortality Rates in rural India (Fourteenth Round : July 1958-June 1959).
83.	(91)	Some Results of the land utilization survey and crop-cutting experiments (Fourteenth Round : July 1958-June 1959).
84.	(88)	Tables with Notes on small scale manufacture—Rural and Urban (Fourteenth Round : July 1958-June 1959).

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sl. no.	report no.	title
85.	(78)	Some Results on the Land Utilization survey and crop-cutting experiments (Fifteenth Round : July 1959-June 1960).
86.	(84)	Indian Villages : A study on some social and economic aspects (Thirteenth Round : September 1947-May 1958).
87.	(88)	Tables with notes on Rural employment and unemployment (Fourteenth Round: July 1958-June 1959).
88.	(90)	Tables with Notes on Household Receipts and disbursements in urban areas (Fourteenth Round : July 1958-June 1959).
89.	(91)	Tables with Notes on Manufacturing Industries 1957(2).
90.	(92)	Tables with Notes on Manufacturing Industries 1957 (3).
91.	(93)	Tables with Notes on Households Receipt and disbursements in rural areas (Fourteenth Round : July 1958-June 1959).
92.	(94)	Report on Land Holdings—Urban Sector (Eighth Round : July 1954-April 1955).
93.	(95)	Tables with Notes on Average Budget of Agricultural Labour Household in Rural Areas (Eleventh and Twelfth Rounds : August 1956-August 1957).

5.9.1. RESULTS SUBMITTED TO THE GOVERNMENT NOT INCLUDED IN
THE LIST GIVEN IN 5.9

1. Some Tables on Family Living Surveys (Middle Class) for the four Metropolitan Centres (Bombay, Calcutta, Delhi, and Madras).

2. Some Tables on Family Living Surveys (Working Class) for the priority Centres : Bombay, Calcutta, Delhi, Madras, Bhopal, Coimbatore, Guntur, Gwalior, Yamunanagar, Jamshedpur, Kanpur, Monghyr-Jamalpur, Saharanpur, Sholapur.

5.10 PUBLISHED PAPERS

- NSS/P1. BANERJEE, S. K. : Confidence interval for linear function of means based on ranges or mean ranges. *Bull. Cal. Stat. Assn.*, 10, 39.
- NSS/P2. MAITRA, P. : (1960) : New classical approach to economic growth. *Economic Studies*, June 1960.
- NSS/P3. ——— (1960) : Schumpeterian Approach to Economic Growth. *Economic Affairs*, September, 1960.
- NSS/P4. ——— (1960) : Harrod-Domar Model of Economic Growth. *Economic Affairs*, November 1960.
- NSS/P5. ——— (with B. R. PANEKAR) : (1961) : Problems of marketable surplus in agriculture in India. *Economic Affairs*, February, 1961.

TWENTYNINTH ANNUAL REPORT: 1960-61

- NSS/P6. МУКHERJEE, G. P. (1960): Structure of Indian Industries—IV: *Economic Affairs*.
- NSS/P7. ——— (1961): What makes productivity grow. *Economic Review*, 12, 21.
- NSS/P8. ——— (1961): Towards higher productivity. *Economic Studies*, 2.1.
- NSS/P9. MURTHY, M. N.: (1961): Some recent advances in sampling theory. ISI (Mimeographed).
- NSS/P10. ——— (1961): The work of the United States Bureau of the Census with emphasis on sample designs and control of errors in censuses and surveys. ISI (Mimeographed).
- NSS/P11. ——— (1961): Introduction to sampling theory. ISI (Mimeographed).
- NSS/P12. ——— (with V. K. Sethi) (1961): Randomized rounded off multipliers in sampling theory. *J. Amer. Stat. Assn.*, 56, 328-334.
- NSS/P13. PANENAR, B. R. (with P. Maitra) (1961): Problems of marketable surplus in agriculture in India. *Economic Affairs*, February, 1961.
- (NSS/P12). SETHI, V. K. (with M. N. Murthy) (1961): Randomized rounded off multipliers in sampling theory. *J. Amer. Stat. Assn.*
- NSS/P14. SOM, R. K. (1960): Agricultural labour in India: its characteristics as revealed by the National Sample Survey. *Economic Weekly*, 11 October, 1960.
- NSS/P15. ——— (1960): Population trends and problems in India. Chapter in *India's population*, Asia Publishing House, 1960.
- NSS/P16. ——— (1961): Response errors in the economic classification of population. *Economic Affairs*, Annual number, January 1961.
- NSS/P17. ——— (1961): Agricultural labour in India. *Economic Weekly*, 25 February 1961.

5.11 PAPERS SUBMITTED FOR PUBLICATION

- NSS/C1. BANERJEE, S. K.: On confidence interval for the two means problem based on separate estimates of variances and tabulated values of *t*-table (*Sankhyā*).
- NSS/C2. BHATTACHARYYA, A.: A revision to Risleley's anthropometric data relating to Darjeeling Hill Tribes (accepted for publication in *Sankhyā*).
- NSS/C3. MAITRA, P.: A Chapter on Indian large scale industries to be included in the book 'Indian Economy since Independence,' edited by Dr. V. B. Singh, Lucknow University.
- NSS/C4. ———: Indian Economy under plans for annual number, 1961, *Economic Affairs*.
- NSS/C5. МУКHERJEE, H. L. (with R. K. Som): Analysis of variance of demographic variables (accepted for publication in *Sankhyā*).
- NSS/C6. MURTHY, M. N.: Variance and confidence interval estimation (accepted for publication in *Sankhyā*).
- NSS/C7. ———: Assessment and control of non-sampling errors in censuses and surveys (*Sankhyā*).

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- NSS/C8. SOM, R. K. : Use of interpenetrating networks of sub-samples in demographic studies (accepted for publication in *Sankhyā*).
- (NSS/C4). ——— (with H. L. Mukherjee) : Analysis of variance of demographic variables (accepted for publication in *Sankhyā*).

5.12 LIST OF WORKING PAPERS

- NSS/W1. BOSE, S. S. (with R. K. Som) : A note on the household size and the household expenditure (16 May 1960).
- NSS/W2. DAS, N. C. (with H. L. Mukherjee) : Pre-testing of 1961 Census of India : draft questionnaire (15 April 1960).
- NSS/W3. ——— (with A. Ganguly) : Progress of literacy in West Bengal as revealed in West Bengal household comparative study (17 May 1960).
- NSS/W4. DUTTA MAZUMDAR, D. K. : Reference period in family budget enquiries (19 October 1960).
- (NSS/W3). GANGULY, A. (with N. C. Das) : Progress of literacy in West Bengal as revealed in West Bengal household comparative study (17 May 1960).
- (NSS/W2). MUKHERJEE, H. L. (with N. C. Das) : Pre-testing of 1961 census of India : draft questionnaire (15 April 1960).
- NSS/W5. RAO, G. D. : Estimation of real income difference between rural and urban areas on the basis of NSS price data (20 November 1960).
- NSS/W6. SINHA, A. K. : Some results of Public Opinion Enquiry in Calcutta. 956 (18 June 1960).
- (NSS/W1). SOM, R. K. (with S. S. Bose) : A note on the household size and the household expenditure (16 May 1960).

5.12.1. LIST OF TECHNICAL NOTES

- NSS/N1. SEN GUPTA, J. M. : Special crop survey experiments at Jalpaiguri and Murshidabad, 1958-59 : September 1960.
- NSS/N2. ——— : A study of the field cost for the collection of household consumption by an interview method : January 1961.
- NSS/N3. SEN GUPTA, J. M., TALUQDAR, J. N. and SEN, T. : Studies on the consumption of specific drugs through retail sale in Calcutta. February 1961.

5.13 PAPER READ AT CONFERENCE (AS YET UNPUBLISHED)

- MUKHERJEE, G. P. : On size-productivity relationship in Indian Industries. (Fortyeighth Session of the Indian Science Congress, Roorkee. 1961).

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Appendix 6 : Electronic Computer Division

6.1 PROBLEMS COMPUTED ON THE COMPUTERS

Type of Problem	Sponsoring Authority	Numerical Method and Check	Programmed by	Machine
1. A Problem on External Ballistics	Ministry of Defence	Runge & Kutta	P. K. Mitra	URAL
2. Inversion of Matrix of Order of 38	Planning Division	Pivotal Condensation	-do-	-do-
3. Least Square Solution of 27 Linear Equations with 7 variables	I.I.T., Bombay	-do-	-do-	-do-
4. Standard Error Calculation (Consumer Expenditure)	NSS Department	—	S. M. Mukherjee	-do-
6. Rapid Inversion of Matrix upto Order 18	Departmental	Pivotal Condensation	R. N. Bose	-do-
6. Computation of the Error Matrix of the Inverted Matrix	-do-	Matrix Multiplication and Addition	P. K. Mitra	-do-
7. Fractile Graphical Analysis of NSS data	Director	—	A. Sen Gupta	-do-
8. Determination of Structure Factor of Crystal Structure Analysis	I.I.T., Kharagpur	—	-do-	-do-
9. Latent Vectors of Matrices of orders upto 20	Saha Institute of Nuclear Physics, Cal.	Cayley-Hamilton Theorem	S. M. Mukherjee	-do-
10. Latent Roots of Symmetrical Matrices upto Order 28	—	Jacobi's Method Invariance of Norm & Trace	-do-	-do-
11. Analysis of Variance Tables (Stratum, State, Zone & All-India level)	N.S.S. Department	—	-do-	-do-
12. Surge Tank Calculation for Jaldakha Hydro-Electric Project	B. E. College, Shibpur		A. Ghosh	URAL
13. Random Walk, Rayleigh's Problem in Brownian Motion Theory	Departmental		R. N. Bose	-do-
14. Solution of problem of finding Latent Vectors of a 10×10 matrix, the latent roots being given	Mathematical Research Section of the Division		P. Banerjee	HEC2M

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Type of Problem	Sponsoring Authority	Numerical Method and Check	Programmed by	Machine
15. Solution of problem of finding the distribution of lines of force due to magnetic head	Engineering Research Section of the Division		A. Ghosh	HEC2M
16. Research Problem on the Estimation of Equivalent Adult Scales on consumption from Family Living Survey data	N.S.S. Department			
17. Computation of A-B-O Blood Group Zone frequencies problem (iterative solution of non-linear simultaneous equations for maximum likelihood)	R.T.S.		A. Ghosh	-do-
18. Solution of Linear equations of 7 variables	I.I.T., Bombay			
19. A Random Walk Problem of Genetics	R.T.S.		A. Ghosh	-do-
20. A Number Theory Problem	Punjab University		-do-	-do-
21. A Problem on Numerical Integration using Gaussian Quadrature (arising out of so-called Fisher-Behren Hypothesis)	ICAR, Delhi		Pratul Banerjee	-do-

6.2 LIST OF SUB-ROUTINES AVAILABLE IN THE PROGRAMME LIBRARY

For HEC2M

1. Evaluation of the n th root of a proper fraction.
2. Multiplication of two Square Matrices upto an order 18.
3. Evaluation of the Eigen Values of Real Symmetric Matrices.
4. Calculation of the Eigen Vectors of a Royal Symmetric Matrix by a finite interaction process with predetermined Eigen values.
5. Multiplication of two rectangular matrices with check.
6. Inversion of Matrix upto order 16 by the pivotal condensation method.
7. Solution of Linear Equations upto a maximum of 22 variables.
8. Linear Programming by Simplexing Method for a maximum of 500 elements.
9. Calculation of the Square Root of a number.
10. Computation of $\sin x$ and $\cos x$ by the method of Chebyshev's polynomials.
11. Multiplication of Rectangular Matrices (with sum check) in orders $m \times n$ and $n \times p$ where $mn + np \leq 750$.

For URAL

1. Matrix Multiplication of two matrices each upto 36 order in floating point arithmetic.
2. Determination of Latent Roots (Eigen Values) of Symmetrical Matrices upto 28 order.

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3. Determination of the Latent Vectors (Eigen Vectors) of Matrices upto 20 order when all the roots are known.
4. Inversion of Matrix upto 60 order by Pivotal Condensation.
5. Rapid Inversion of Matrix upto order 18.
6. Evaluation of Square Root of a number.
7. Evaluation of exponential sine, cosine and logarithmic functions.
8. Computation of the Errors Matrix of the Inverted Matrix.
9. Computation of Trajectories of Shells using standard law of air-resistance.

6.3 LIST OF PAPERS PUBLISHED

1. DUTTA MAJUMDAR, D. : On Theory of Digital Data Recording on magnetic drum surface. *Proc. Indian Science Congress Association*, 1960-61.
2. ————: A Magnetic Drum Digital Storage System. *Journal of the Institution of Telecommunication Engineers*, January, 1961.
3. GHOSH, AMBARISH : On the laminar boundary layer on a semi-infinite flat plate placed parallel to a stream whose velocity relative to the plate oscillates in magnitude but not in direction. *Proc. Indian Science Congress Association*, 1961.

6.4 LIST OF PAPERS COMPLETED

1. SINHA ROY, P. K. and DUTTA MAJUMDAR, D. ; A Transducer Microseism Pick-up.
2. BASU, SAILAJAKSHA : On Diode Transistor Logical (DTL) Circuits.
3. DUTTA MAJUMDAR, D. : Experimental & Theoretical Investigation on Pulse Recording.

Appendix 7 : A Note on Demographic Research

RESEARCH

Population problems began to receive serious attention in the 1930's. The only sources of data available at that time were the successive decennial censuses and the vital statistics provided by the registration departments, the latter known to be wholly inadequate both in quality and quantity. Professor Mahalanobis pointed out in 1937 (1) that long-range forecasts of the growth of population were not reliable and of little value, but the growth of population in the immediate future was of supreme importance to national welfare. He emphasized that scientifically planned sample surveys could adequately meet the needs for demographic research, provide estimates of population growth, and furnish useful information for the study of differential fertility and mortality and the factors associated with them. He further stated that the demographic data secured through inter-causal sample surveys could also supply independent external checks on the decennial census returns.

Although the collection of the primary data was completed in the population census of 1941, tabulation was severely cut down owing to war conditions. Fortunately, a two per cent systematic sample census slip (called the Y-sample, after Mr. M. W. M. Yeatts, the Census Commissioner) had been preserved. At the instance of the Indian Statistical Institute, the Government of India agreed to entrust the Institute with the task of tabulation of the 1941 census data on the basis of the 2 percent Y-sample in respect of certain important census characteristics such as age, sex, means of livelihood, etc. The Government of India

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also sanctioned a grant to this Institute to conduct experimental studies on sampling census slips for sample tabulation. Work on this project based on the 1941 census slips of Hazaribagh district (Bihar) was initiated in this Institute by D. B. Lahiri and others (2). As a result of this study valuable information was obtained for the preparation of efficient designs of sample selection of census slips for tabulation purposes as well as for sample surveys of population. Besides, some analytical work in the sphere of graduation of birth rates and labour measurement from census were done in the Institute (3).

After the 1951 census further work on population sampling was carried out in this Institute for the National Sample Survey (NSS) on the basis of the census frames. Construction of a suitable frame for urban sample selection was conducted by S. J. Poti and others (4), and currently this problem has been taken up on an all-India scale by the NSS Programmes Committee. A good deal of useful demographic data are being systematically collected in the National Sample Survey. In the second and fourth rounds of the National Sample Survey, detailed information was collected on the fertility history of the couples and other demographic characteristics on an all-India basis. The past trend in fertility and its differentials with respect to socio-economic characteristics were studied in great detail by A. Das Gupta and his associates (5). Extensive data on urban and rural employment (6), rural urban migration, etc. were collected in the subsequent rounds of the NSS. Further, a detailed study of some characteristics of the economically active population based on the demographic data collected in the fourth to the seventh rounds of the NSS was carried out by R. K. Som and others (7).

Besides the collection and analysis of demographic data, studies of methodological importance were carried out in this Institute. An assessment of the validity of demographic statistics based on interpenetrating sub-samples was made by Mahalanobis and Das Gupta (8). Further, notable contributions in this field have been made by D. B. Lahiri, A. Das Gupta and R. K. Som. In this connexion the works done by D. B. Lahiri (9) on the validity of statistics collected by census and sample surveys, on recall lapse in the reporting of vital events by R. K. Som (10) and on the accuracy of age reporting by A. Das Gupta (11) deserve special mention. Besides these, an extremely interesting study on the comparability of census economic data was carried out at the Bombay branch of the Institute by Daniel and Alice Thorner (12).

Pilot surveys are also being carried out for the purpose of developing suitable techniques for special purposes. In this connexion, reference may be made to the health survey conducted in West Bengal wherein the validity of morbidity and other health statistics collected through the usual agencies of the NSS were assessed by S. J. Poti and his associates (12). The Government of India is interested at present in assessing the current growth rate of the population for the formulation of the Third Five Year Plan. On the recommendation of the Working Group in Vital and Health Statistics of the Planning Commission, a major item was included in the NSS fourteenth round to collect relevant population data for studying growth rates in rural areas. Results of a provisional analysis based on the sample of the sub-rounds have been given in a series of working papers (14).

With the help of a grant from the Ministry of Health a centre for demographic research has been recently established in this Institute to study factors associated with fertility and mortality. A team including S. J. Poti, M. V. Raman and some young research workers have been engaged in such research projects since the latter part of 1957.

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A number of research topics have been dealt with by this centre among which the study on social mobility and their demographic effects (15) and the enquiry on prevalence of contraceptive practices and their effect on fertility (16) may be mentioned here. A study of existing information on population for development planning in India was carried out at the instance of the United Nations by S. J. Poti and others (17).

TRAINING

In the curriculum for the advanced professional course in Statistics provided by the Research and Training School of the Institute, training in demographic techniques forms one of the important topics. A number of lectures and practical classes are held for the first and second year post-M.Sc. students along with the special course in Biometry conducted by Professor J. B. S. Haldane who himself has been giving a series of lectures on the biological aspects of fertility and mortality. Poti, Raman and Malakar dealt with the general demographic methods including mathematical theory of population, health statistics, demographic surveys and census methods. Students of the third or final year of the Research and Training School who seek specialization in demography are given training lasting for a year in advanced demographic methods and are required to submit the results of their studies in the form of thesis on assigned topics. This specialization course was started in 1957-58 and already one student in 1957-58, four in 1958-59 and one in 1960-1961 have been trained.

REFERENCES

1. MAHALANOBIS, P. C. (1937) : The Need of a Sample Survey of the Growth of Population in India, *Sankhyā*, 3.
2. LAURIE, D. B. (1957) : Studies in Population Sampling, Volume 1, Indian Statistical Institute, 1957.
(This report is based on the experimental study on 1941 census slips of Hazaribagh district (Bihar) carried out at the instance of the Government of India.)
3. SARKAR, B. N. (1951) : Graduation of Birth Rates.
(This paper discusses the relative merits of different methods of fertility rate graduation with reference to weaving survey (1936) data and Y-sample data (1941).)
4. POTI, S. J. (1954) : A Population Sample Frame for Calcutta City, Indian Statistical Institute, 1954.
(Maps showing geographical boundaries of 30 census circles in Calcutta City comprising a population of about 2 lakhs and of the blocks within them have been included in this note.)
5. DASGUPTA, A., SOM, R. K., MAJUMDAR, M. and MITRA, S. N. (1955) : Couple-Fertility, Report No. 7, National Sample Survey, Government of India, 1955.
(Demographic data from the second and fourth rounds of the NSS were used for this study. The fertility rates have been analysed in great detail to bring out the trend in fertility during the period 1910-19 and to study differential fertility with respect to social classes.)
- 6(a). REPORT ON PRELIMINARY SURVEY OF URBAN UNEMPLOYMENT, September, 1953. Report No. 8, National Sample Survey, Government of India, 1956.

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(This is a preliminary study carried out in 1953 covering towns with population about 50,000 but excluding the four big cities of Calcutta, Bombay, Madras and Delhi for the purpose of formulating suitable concepts and definitions and developing suitable designs of surveys of employment, unemployment and under-employment in future. Besides offering a number of statistical tables of gainfully occupied and unemployed persons, the report gives considerable amount of demographic data on migration, level of living, education, intensity of employment, etc.)

- 6(b). REPORT ON EMPLOYMENT AND UNEMPLOYMENT, PRELIMINARY, May-November, 1955. Report No. 16, National Sample Survey, Government of India, 1959.

(This survey undertaken in the ninth round of the NSS is the first of its kind to be carried out on an all-India basis. The demographic particulars of the gainfully occupied and unemployed persons have been extensively analyzed in this report. The problem of under-employment has also been dealt with in considerable detail.)

- 6(c). REPORT ON CALCUTTA EMPLOYMENT SURVEY, PRELIMINARY, September 1953. Report No. 17, National Sample Survey, Government of India, 1959.

(This is a preliminary study carried out in 1953 in Calcutta City. This survey was undertaken to formulate the concepts and definitions and for developing suitable designs of surveys of employment, unemployment and under-employment. Besides offering a number of statistical tables of gainfully occupied and unemployed persons, the report gives considerable amount of demographic data on migration, education, intensity of employment, etc. In this survey 5,000 households were selected by multi-stage sampling, the household being the ultimate sampling unit.)

7. REPORT ON SOME CHARACTERISTICS OF THE ECONOMICALLY ACTIVE POPULATION. Report No. 14, National Sample Survey, Government of India, 1958-59.

(This report is based on demographic data collected in the different surveys included in the fourth to seventh rounds of the NSS, covering about 90,000 sample households spread over the entire country. In this report, labour force participation in different sectors of industry by age groups and other demographic characteristics have been analysed in detail. Further, comprehensive studies on working life expectancy, intensity of employment, reasons for under-employment and occupational mobility have also been made.)

8. MAHALANOBIS, P. C. and DASGUPTA, A. (1954) : The Use of Sample Surveys in Demographic Studies in India. World Population Conference, Rome, 1954. (F/CONF-13/194).

(This paper discusses how the accuracy of demographic statistics from the point of view of both sampling and non-sampling errors could be quickly assessed by the method of inter-penetrating sub-samples.)

9. LAHIRI, D. B. (1958) : Recent Development in the Use of Techniques for Assessment of Errors in Nation-wide Surveys in India. *Bulletin de l'Institut International de Statistique*, Stockholm, 1958.

(This paper discusses various methods of external and internal checks for assessing errors in censuses and large-scale demographic surveys with particular emphasis on the method of 'self-validation' in demographic data.)

10. SOM, R. K. (1959) : On Recall Lapse in Demographic Studies in India. International Population Conference, Vienna, 1959.

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(In this paper the errors introduced in historical demographic data and those found in the reporting of vital events due to lapse of memory on the part of the respondents have been studied in detail.)

11. DASGUPTA, A. (1958): A Technical Note on Age-grouping, Report No. 12, National Sample Survey, Government of India, 1958.
(Digit preference on the part of the respondents in the reporting age has been studied in detail for the purpose of adopting suitable grouping of ages in future age classifications.)
12. THORNER, D. and THORNER, A. (1958): Comparability of Census Economic Data 1881-1951. Indian Statistical Institute, Bombay Branch, 1958.
(This paper deals with the comparability of economic classifications adopted in the successive Indian censuses from 1881-1951. As a result of this study the authors have made a number of valuable suggestions for future collection of census economic data.)
13. POTI, S. J., RAMAN, M. V., BINWAS, S. and CHAKRABORTY, B. (1959): A Pilot Health Survey in West Bengal. 1955, *Sankhya*, 21, parts 1 and 2.
(This pilot survey was undertaken with the object of evolving suitable method for the collection of morbidity, disability and medical care statistics. It also deals with the relative accuracies in the classification of causes of morbidity by medical and non-medical investigators.)
14. PRELIMINARY ESTIMATES OF BIRTH AND DEATH RATES AND OF THE RATE OF GROWTH OF POPULATION. National Sample Survey (fourteenth round).
(Provisional estimates of birth and death rates obtained in the various sub-rounds are available in a series of working papers.)
15. POTI, S. J. and DUTTA, S.: Pilot Study on Social Mobility and Differential Fertility, West Bengal. 1956.
(About 600 rural households selected from 24 villages in West Bengal and about 500 urban households selected from Calcutta City were covered in this survey. Inter-generational occupational mobility in rural and urban areas and its association with fertility and infant mortality have been studied. Further, differential fertility with respect to social classes have also been studied in some detail. The report has been submitted for publication.)
16. POTI, S. J., MALAKAR, C. and CHAKRABORTY, B. (1959): Enquiry into the Prevalence of Contraceptive Practices in Calcutta City, 1956-57. Report of the Proceedings of the Sixth International Conference on Planned Parenthood, 1959, New Delhi.
(This study relates to an assessment of the prevalence of different types of contraceptive practices and their effect in the reduction of pregnancies among three major social classes in Calcutta City. It also deals with some important cultural characteristics of those social classes and their relation to family planning.)
17. POTI, S. J., *et al.* (1957-58): A Study of existing Information on Population in relation to Development Planning in India. Indian Statistical Institute, 1957-59.
(This report prepared at the instance of the U.N. gives an integrated summary of the findings of various demographic surveys and censuses so as to present a picture of the past demographic trends in India. Attempts have also been made to utilize these results to estimate future population for development planning.)

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Appendix 8 : Library, Central Records and Museum

News Clippings : Newspaper articles and news items relating to Statistics, Economics and Planning from 25 representative Indian dailies were regularly clipped and the number of clippings made and processed during the period was 4,204, bringing the total number of clippings made to 36,693. Altogether 22,848 newspapers were checked during the year and 2,659 articles were indexed from newspapers and periodicals.

Circulating Library : The Workers' Circulating Library had a total book collection of 15,446 on 31 March 1961. Total number of books added during the current year was 2,391 volumes of which 1,786 were in Bengali, 447 volumes in English and 158 volumes were in Hindi. Of these 2,380 books were purchased and the remaining 31 volumes were received as gifts. As in previous years books were rotated among Delhi, Giridih and the Calcutta libraries and total number of books issued from Calcutta centro was 35,834 of which 93% were fiction. About 4,875 volumes were issued from the Giridih Branch of which 78 were English, 4,197 Bengali, 483 Hindi and 117 Urdu.

Museum : Systematic acquisition, indexing and filing of specimens proceeded steadily during the year. The specimens included letters, manuscripts and printed documents relating to important researches and investigations, and photographs and curios.

Records Unit : About 3,413 project files were processed of which only 2,901 files were systematically checked in the Central Records Unit. The total number of indexed files are 14,394, 3,827 sheets of C.S. maps, 27,513 copies of newspapers were sorted, checked and arranged. Besides these, the Central Records also received various office files and records for preservation.

The Library Records Unit was reorganized in the Western shed at 203 B.T. Road and sorting and cataloguing of serials and officials were undertaken. During the period about 3,314 volumes of serials were sorted and 4,466 titles were duly catalogued. Altogether 21,204 titles were filed, including 17,721 copies of reprints. During the period 2,291 items were issued for reference.

Photographic Unit : Documentary reproduction work consisted of 5,540 frames of microfilms, 7,174 photoprints from microfilms and 987 photostat prints. The Unit also took 1,073 photographs of important functions, individuals, groups, etc. and made 2,023 bromide enlargements. Coloured photographs of 60 biological specimens were also taken. The Unit made 197 contact prints for other sections and took 200 feet of movie picture in colour and black and white. About 18 reproductions were made from old photographs and 9 blood slides were made for Biometric Section.

Appendix 9 : Medical Welfare Unit

Preventive Measures : Half-yearly inoculations against typhoid and cholera and yearly vaccinations against small-pox were given as usual during the year to the entire Institute staff, both at headquarters and the city offices.

Expansion : A substantial expansion of the present medical facilities has already been effected by new appointments in staff. The scheme of expansion includes addition and alteration to the existing building, provision of adequate facilities for indoor treatment, arrangement for pathological examination in collaboration with the Biometry Unit and carrying out health surveys.

Giridih : Regular medical aid, as in Baranagar, is also provided to workers at Giridih.

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Appendix 10 : List of Trainees in the Various Courses

10.1 INTERNATIONAL STATISTICAL EDUCATION CENTRE, CALCUTTA

Fourteenth Term : July 1960-April 1961

List of trainees : Against each country is shown within brackets the number of trainees admitted. The student from South Africa received Government of India (Ministry of Education) scholarship; trainees from Iran received scholarships equivalent in value to the Colombo Plan Junior Fellowships. All other foreign students received Colombo Plan Junior Fellowships.

Burma (1)

1. U. Own Thaika, *Central Statistical and Economics Department, Rangoon.*

Ceylon (2)

2. V. Abeywardena, *Coconut Research Institute, Colombo.*
3. K. Krishner, *Department of Census and Statistics, Colombo.*

India (7)

4. P. Chakraborty, *Central Fuel Research Institute, Dhanbad.*
5. S. Shanmugaraj, *Bureau of Statistics, Pondicherry.*
6. A. Chaudhuri, *Office of the Coal Controller, Calcutta.*
7. T. Varkey, *Indian Air Force, New Delhi.*
8. B. Prasad, *Cooperative Department, Patna.*
9. J. N. Singh, *Department of Statistics, Patna.*
10. H. C. Jain, *Directorate of Economics & Statistics, Bhopal*

Indonesia (3)

11. R. Soediman, *Central Bureau of Statistics, Djakarta.*
12. A. Mahdi, *Central Bureau of Statistics, Djakarta.*
13. M. Afiah, *Central Bureau of Statistics, Djakarta.*

Iran (2)

14. S. M. Sedmohammadi, *General Department of Public Statistics, Tehran.*
15. M. A. Abbasi, *General Department of Public Statistics, Tehran.*

Japan (2)

16. M. Ihara, *Statistical Standards Bureau, Tokyo.*
17. Y. Ohata, *Agriculture and Forestry Ministry, Tokyo.*

Malaya (1)

18. D. A. Shepherdson, *Central Electricity Board, Kuala Lumpur.*

Nepal (1)

19. H. S. Tripathi, *Nepal Rashira Bank, Kathmandu.*

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Philippines (8)

20. L. V. Madamba (Mrs.), *Bureau of Census and Statistics, Manila.*
21. G. Martinez, *Bureau of Census and Statistics, Manila.*
22. A. P. Sabalboro, *Philippines Air Force, Manila.*
23. C. M. Miel, *Philippines Constabulary, Manila.*
24. G. R. Modequillo, *Philippines Constabulary, Manila.*
25. F. Tamondong, *Armed Forces of Philippines, Quezon City.*
26. P. O. Crisostomo, *General Headquarters, Quezon City.*
27. J. R. Calimlim, *Philippines Navy, Manila.*

South Africa (1)

28. R. P. Naidoo (Miss), *Scholar (Government of India, Ministry of Education).*

Sarawak (1)

29. P. Wang Chin Hua, *Department of Statistics, Sarawak.*

Thailand (1)

30. P. Wattanasirikul (Mrs.), *Chulalongkorn University, Bangkok.*

Following examinations were held : Pre-training test : Mathematics, Statistics and Economics. Periodical test : Descriptive Statistics, General Statistical Methods; Operations Research; Auxiliary Mathematics; Economic Statistics; Official Statistics; Descriptive Statistics; General Statistical Methods and Sampling Distributions; Sampling Surveys; Economic Statistics; Vital Statistics and Operations Research; Statistical Methods—I, Statistical Methods—II, Probability and Sampling, Economics of Planning, Vital Statistics and Statistical Methods and Sampling. Final examinations : Statistical Methods—I, Statistical Methods—II, Economic Statistics and Vital Statistics, Design of Experiments, Probability, Sampling Theory.

Calendar : Number of working days, including training at CSO and Field training at Giridih : 180.

Lectures : Course in General Methodology	25 July–24 September 1960
Training at CSO, Delhi, including specialisation lectures	3 October–12 November 1960
Field training at Giridih	27 November 1960–4 January 1961
Further course in Statistical Methodology	5 January–11 February 1961
Specialisation course	13 February–15 April 1961

10.2 OFFICERS ON DEPUTATION

The list below gives the names of officers on deputation, the deputing authority, and the duration of their training at the Institute.

1. Tieng Pannuum, *Poste and Telegraphs Department, Government of Thailand, Bangkok, Thailand (31st July 1959–May 1961).*
2. Miss Songari Phithyratana, *The Royal Thai Air Force, Bangkok, Thailand (8 September 1959–20 August 1960).*
3. Miss Agnes M. Loador, *St. Joseph's College, Darjeeling (13–25 February 1961).*

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10.3 STATISTICAL OFFICER'S COURSE

(Jointly by the Indian Statistical Institute and the Central Statistical Organization)

List of trainees : Sponsoring authority, duration of training and subject of specialisation, if any, are shown against each name.

1. Sawarn Singh Ahuja, *Forest Research Institute, Dehra Dun, U.P.* (9 months, Agricultural Statistics).
2. A. Banerjee, *Ministry of Food and Agriculture, Department of Food, New Delhi* (9 months, Agricultural Statistics).
3. Brij Bhuvan Choudhury, *All-India Handicrafts Board, Ministry of Commerce and Industry, New Delhi* (9 months, Socio-economic Surveys).
4. Jagadiah Chandra Chakravarty, *Directorate-General of Commercial Intelligence and Statistics, Calcutta* (9 months, Economic Statistics).
5. Abnaah Chandar, *Ganga Basin (Statistics) Section, Ministry of Irrigation and Power, New Delhi* (9 months).
6. K. N. Dob, *Statistical Department, Tripura Administration* (9 months, State Income and Regional Income Estimation).
7. Ram Krishna Gupta, *Directorate of Health Service, Himachal Pradesh* (9 months, Vital Statistics and Census).
8. Indra Kumar Jain, *Office of Economics and Statistics, M.P.* (9 months, Machine Tabulation).
9. Yunal Chand Jain, *Office of the Development Commissioner, Development Department, Rajasthan* (9 months, Planning Statistics).
10. S. Kallat, *Central Statistical Organization, New Delhi* (9 months, Sampling Techniques).
11. M. B. Kannakar, *Directorate of Land Records, Madhya Pradesh* (9 months, Farm Management Surveys under Agricultural Statistics).
12. (Miss) Rekha Mazumdar, *Department of Company Law Administration, Ministry of Commerce and Industry* (9 months, Economic Statistics).
13. Girish Chandra Mishra, *Bureau of Statistics and Economics, Finance Department, Government of Orissa* (9 months, Machine Tabulation).
14. Paritosh Kumar Mukherjee, *Office of the General Manager, Eastern Railway* (9 months).
15. C. R. Gopinathan Nair, *Kerala Government* (9 months, National Income and Regional Income Estimation).
16. Karuna Shankar Pande, *Ministry of Community Development and Co-operation, Department of Community Development, New Delhi* (9 months, Sample Surveys).
17. Hari Prasad, *Ministry of Transport and Communication, Department of Transport, New Delhi* (9 months).
18. Ramasubrahmanya Rao Palanki, *Tariff Commission, Bombay* (9 months, Economic Statistics).
19. Bhuvananda Rath, *Finance Department, Government of Orissa* (9 months, Agricultural Statistics).
20. Kodar Nath Sahay, *Central Bureau of Economics and Statistics, Bihar* (9 months, Agricultural Statistics).
21. Kailash Chandra Saxena, *Office of the Comptroller and Auditor General of India, New Delhi* (6 months).
22. Narendra Narain Saxena, *Central Warehousing Corporation, New Delhi* (6 months).
23. Arjuman Singh, *Office of the Registrar General of India, Ministry of Home Affairs, New Delhi* (9 months, Machine Tabulation).
24. Ningomban Mohan Singh, *Statistical Bureau, Manipur* (6 months).
25. Nirmal Chandra Sarkar, *Office of the Superintendent of Census Operations, West Bengal* (9 months, Vital Statistics and Census).

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10.4 RESEARCH SCHOLARS AND ADVANCED STUDENTS

(with fields of research)

1. P. K. Bhattacharyya¹, M.Sc. (Statistics, Calcutta), D.Phil. *Statistical Inference*.
2. R. N. Bhattacharyya², M.Sc. (Statistics, Calcutta), *Mathematical Statistics*.
3. K. R. Dronamraju³, M.Sc. (Botany, Agra), *Genetics*.
4. S. D. Jayakar, M.Sc. (Statistics, Lucknow), Three-year ISI training, *Genetics*.
5. S. John, M.Sc. (Statistics, Travancore), *Multivariate Analysis*.
6. K. R. Parthasarathy, M.A. (Mathematics, Madras), Two-year ISI training, *Information Theory and Stochastic Processes*.
7. P. K. Pathak, M.Sc. (Statistics, Lucknow), *Sample Surveys*.
8. R. Ranga Rao, M.A. (Mathematics, Madras), Three-year ISI training, *Probability*.
9. S. Rangachary, M.A. (Mathematics, Madras), Diploma in Economics (Madras), *Applied Statistics in Demography*.
10. T. V. Hanumantha Rao, M.A. (Mathematics, Andhra), Two-year ISI training, *Genetics*.
11. S. K. Roy⁴, M.Sc. (Statistics, Lucknow), M.A. (Statistics, Columbia), *Inference*.
12. J. Sethuraman, M.A. (Statistics, Madras), *Order Statistics and Fractal Graphical Analysis*.
13. R. R. Shah, M.A. (Statistics, Bombay), *Design of Experiments*.
14. S. R. Srinivasa Varadhan, M.A. (Statistics, Madras), *Stochastic Processes*.

10.5 TWO-YEAR ADVANCED STATISTICIAN'S COURSE (1959-61)

10.5.1. TRAINEES IN THE SECOND YEAR LISTED UNDER FIELDS OF SPECIALISATION AND IN-SERVICE TRAINING

Planning and Econometrics

1. Talikicherla Krishna Kumar, M.A. (Andhra)
2. Parameswar Sreekumaran Nair, M.Sc. (Agra)
3. (Miss) Kalkuri Venkata Rukmini, M.A. (Madras)

Statistical Quality Control

4. Basudev Banerjee, M.Sc. (Cal)
5. Venkataraman Gopalan, M.A. (Annamalai)
6. Balasundaram Krishnan Moorthi, M.A. (Madras)
7. Valadi Sitaraman Rajamani, M.A. (Madras)
8. Kaathurirangappa Govinda Rajulu, M.A. (Madras)
9. Taniru Ramalingaswar Rao, M.A. (Andhra)
10. Vadrovu Kishore Saanaka Rao, M.A. (Andhra)
11. Samaymantry Venkata Redhakrishna Rao, M.A. (Andhra)

Geology

12. Tharuvath Sankaran Kutty, M.A. (Madras)

Examinations (1960-61): Mid-term examination was held on the following general subjects: Multivariate Analysis, Design of Experiments, Sample Surveys and Project Work.

Final examination was held on the following special subjects: Planning & Econometrics, Quality Control.

Calendar (1960-61): Total number of working days including training at the Central Statistical Organization (CSO), Government of India, New Delhi and field training at Giridih, excluding examinations etc. 200

Lectures	8 August-4 December 1960
Mid-term examination	5 December-9 December 1960

¹ Left for United States for higher studies in August 1960.

² Accepted a job in the River Research Institute from March 1961.

³ Accepted a Fellowship from the University of Glasgow and left in March 1961.

⁴ Accepted a job at the Lucknow University and left in October 1960.

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Field training at Giridih	11 December-18 December 1960
Vacation	19 December 1960-15 January 1961
Lectures and in-service training	16 January-7 May 1961
Final examination	8 May-14 May 1961
Training at CSO	15 May-30 June 1961

10.5.2. TRAINEES UNDERGOING THE IARS COURSE AT NEW DELHI
(completing the first year of the two-year Advanced Course at the Institute)

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|-------------------------------------|--------------------------------------|
| 1. R. Gopalan, M.A. (Karnatak) | 4. Bhanu Dutt Singh, M.Sc. (Lucknow) |
| 2. N. Krishnaji, M.A. (Andhra) | 6. Ravindra Singh, M.Sc. (Agra) |
| 3. P. V. A. Rama Rao, M.A. (Andhra) | 6. P. R. Sreenath, M.A. (Osmania) |
| | 7. S. S. Swaminathan, M.A. (Madras) |

10.6 M.STAT. DEGREE COURSE

10.6.1 TRAINEES ADMITTED TO THE FIRST YEAR (1960-61)

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|---|---|
| 1. Krishnaswamy Bala-subramanian, M.A. (Madras) | 11. Bhagavatsula Lakshmi Surya Prakash Rao, M.A. (Andhra) |
| 2. Tattamangalam Sitaramasayer Chidambaram, M.A. (Madras) | 12. Ranani Ramamoorthy, B.Sc. (Hons.) (Delhi) |
| 3. Buddhiraju Bhujanga Voora Kishore, M.A. (Andhra) | 13. Nagunathan Ramanathan, M.Sc. (Madras) |
| 4. Kalambar Srinivasan Krishnan, M.A. (Madras) | 14. Vomuganti Ramakrishna Rao, M.A. (Andhra) |
| 5. Vairelil Vialwanath Menon, B.Sc. (Hons.), (Banaras) | 15. Namuru Tulasi Veeragonaya Rangarao, M.A. (Andhra) |
| 6. Ganapathy Narayana Moorthy, M.A. (Madras) | 16. Tenjore Sankarow Ananthaswamy Rao, M.A. (Madras) |
| 7. Tarun Kumar Mukherjee, M.Sc. (Cal) | 17. Deb Ranjan Sen, M.Sc. (Poona) |
| 8. Ishwar Natarajan, M.A. (Madras) | 18. Satya Dev Sharma, M.A. (Allahabad) |
| 9. Subramanis Panchapakoson, M.A. (Madras) | 19. Bulakrishna Sarvottham Shenai, M.A. (Bombay) |
| 10. Koduvayur Rama Iyer Parthasarathy, M.A. (Madras) | 20. Makki Thimmappaiah Subramahanyan, M.A. (Madras) |
| | 21. Subramanian Swamy, B.A. (Hons.) (Delhi) |

10.6.2 IARS TRAINEES IN THE M.STAT. FIRST YEAR COURSE

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| 1. Puducode Rama Iyer Rama Chander, M.A. (Annamalai) | 4. Kolakad Sundaram Natarajan, M.A. (Madras) |
| 2. Raj Kumar, M.Sc. (Punjab) | 5. Susanta Kanta Ray, M.Sc. (Cal) |
| 3. Chomuduru Lakshmi Narayana, M.A. (Venkatowara) | 6. Musti Seshavadhanulu, M.A. (Andhra) |
| | 7. Goginoni Narasimhaiah, M.A. (Agra) |

Examinations (1960-61): Periodical examinations were held on the following subjects: Algebra, Numerical Mathematics, Probability, Data Processing, Descriptive Models, Economics, Economic Statistics, Vital Statistics.

Preliminary examination was held on the following subjects: Numerical Mathematics, Probability, Data Processing, Descriptive Models, Economics, Economic Statistics, Vital Statistics.

Annual examination was held on the five following papers: Economics-I: Principles of Economics and Indian Economics. Statistics-I: Probability and Statistical Inference. Statistics: II (theory and practical)-Data Collection, Processing, Time Series and Index Numbers. Statistics: -III (theory and practical)-Large Sample Methods, Sample Methods. Statistics-IV (theory and practical)-Group A: Elements of Design of Experiments, Sample Surveys, Statistical Quality Control; Group B: Vital Statistics (theory and practical).

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220 *Calendar (1960-61)*: Total number of working days excluding examinations etc.

Lectures	8 August-4 December 1960
Preliminary examination	5 December-10 December 1960
Vacation	11 December 1960-8 January 1961
Lectures	9 January 1961-22 April 1961
Preparatory holidays and annual examination	23 April 1961-12 May 1961
Training at CSO	15 May 1961-30 June 1961

10.7 B.Stat. DEGREE COURSE

10.7.1 TRAINEES ADMITTED TO THE FIRST YEAR (1960-61)

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|--|--|
| 1. Ajoy Kumar Adhikari, I.Sc. (Cal) | 16. Kadakodi Gopalakrishna Krishna, Pre-University (Poona) |
| 2. (Miss) Archana Banerjee, I.Sc. (Cal) | 17. Pran Nath Kumar, I.Sc. (Punjab) |
| 3. Asruti Basu, I.Sc. (Bombay) | 18. Bibokundu Majumdar, Higher Secondary (W.B. Board) |
| 4. Anil Chandra Bose, I.Sc. (Cal) | 19. (Miss) Mariam Paulose, Pro-University (Kerala) |
| 5. (Miss) Ruma Bose, I.A. (Cal) | 20. Janmatlamudaka Srinivasa Row, Pro-University (Andhra) |
| 6. Vijay Venkatesh Buche, Pro-University (Nagpur) | 21. Gouri Shankar Roy Chowdhury, I.Sc. (Cal) |
| 7. Nadhan Chandra Chakravarti, I.Sc. (Cal) | 22. Jaharlal Saha, I.Sc. (Cal) |
| 8. Prabir Kumar Chakravarti, I.Sc. (Cal) | 23. Bishnu Prasad Sarkar, I.Sc. (Cal) |
| 9. Gour Mohan Chatterjee, I.Sc. (Cal) | 24. Nitya Ranjan Sarkar, B.Sc. (Cal) |
| 10. Nityananda Chatterjee, I.Sc. (Cal) | 25. Fabian Thyokanath Sebastian, Pre-University (Kerala) |
| 11. Shared Gajanan Chivate, Pro-University (Poona) | 26. Debasbia Sengupta, Pre-University (Mysore) |
| 12. Swadeshi Ranjan Dasgupta, I.Sc. (Cal) | 27. Venkataraman Sundararajan, Pre-University (Madras) |
| 13. Nirmalendu Goswami, I.Sc. (Cal) | |
| 14. Mahendra Pal Jain, I.Sc. (U.P. Board) | |
| 15. Ivlash Johar, I.Sc. (U.P. Board) | |

Examinations (1960-61): Terminal examination was held on the following subjects: Mathematics, I, II; Statistics (theory and practical), Physics, Chemistry, Economics, English, Psychometric Test.

Mid-term examination was held on the following subjects: Economics, Physics, Chemistry, Statistics I, II, III; Mathematics, I, II; English, General Science, Biology (theory and practical).

Annual examination was held on the following subjects: Economics I, II, Physics, Chemistry, Statistics I, Statistics II (practical), Statistics III (practical), Mathematics I, II, English, General Science, Biology (theory), Biology (practical).

190. *Calendar (1960-61)*: Total number of working days excluding examinations etc.:

Lectures	22 August 1960-26 September 1960
Vacation	27 September 1960-1 October 1960
Lectures	3 October 1960-3 December 1960
Field training at Giridih	5 December 1960-10 December 1960
Lectures	12 December 1960-17 December 1960
Terminal examination	19 December 1960-24 December 1960
Lectures	26 December 1960-20 April 1961
Preparatory leave and Terminal examination	23 April 1961-15 May 1961

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10.7.2. EDUCATION TOURS, EXCURSIONS AND VISITS BY B.STAT. STUDENTS

The students were taken to the following places. Names of teachers accompanying the party are mentioned against places visited.

1. Zoological gardens (13-10-60) : Prof. J. B. S. Haldane, Dr. Helen Spurway, Dr. R. R. Bahadur, Dr. S. I. Jain, Sarbasi T. A. Davis, K. R. Dronamraju, M. Mukherjee, S. D. Jayakar, T. V. Hanumantha Rao and T. K. Roy Chowdhury.
2. Indian Aluminium Factory (20-10-60) : Prof. J. B. S. Haldane, Dr. Helen Spurway and Shri S. C. Sen.
3. Botanical Gardens (3-11-60) : Prof. J. B. S. Haldane, Dr. Helen Spurway, Sarbasi K. R. Dronamraju, T. A. Davis, S. D. Jayakar, M. Mukherjee, and T. V. Hanumantha Rao.
4. Bengal Chemical Factory (24-11-60) : Shri S. C. Sen and Dr. P. K. De.
5. Agricultural Farm at Giridih (5-10-12-1960) : Shri S. D. Jayakar.
6. Geological excursion to Giridih including visit to Karharbari Coal Mine (6-8-12-1960) : T. K. Roy Chowdhury.
7. National Agricultural Fair (23-2-61) : Prof. J. B. S. Haldane, Sarbasi S. K. Roy, M. Mukherjee, S. K. Jayakar, T. V. Hanumantha Rao and T. A. Davis.
8. Haringhata Dairy Farm (16-3-61) : Sarbasi S. K. Roy, T. A. Davis, M. Mukherjee, T. V. Hanumantha Rao and S. D. Jayakar.

10.8 SHORT-TERM STATISTICIAN'S COURSE

10.8.1 JUNIOR COURSE (CALCUTTA) MARCH-SEPTEMBER 1960 SESSION

(Total number of working days : 92)

List of successful trainees : 47 students were originally admitted, out of whom 34 satisfied the minimum attendance requirements, and the following 17 were awarded certificate of successful completion of the course.

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| 1. Asit Kumar Roy, B.Sc. (Cal) | 9. C. Gopinathan Nair, B.A. (Hons.) (Madras) |
| 2. Debatoosh Ghosh,* B.Sc. (Cal) | 10. Hridaynarayan Pahari, M.Sc. (Cal) |
| 3. Sabayanchi Chatterjee, B.Sc. (Cal) | 11. Sunil Kumar Mukherjee, M.Sc. (Cal) |
| 4. Gopal Chandra Mukhopadhyay, M.Sc. (Cal) | 12. Debendra Nath Basu, B.A. (Hons.) (Cal) |
| 5. Ramendra Ch. Roy, M.A. (Cal) | 13. Norottam Lal Manocha, B.Sc. (Agra) |
| 6. Madhusudan Dhara, B.Sc. (Cal) | 14. Gopal Chandra Hazra, B.Sc. (Cal) |
| 7. Shyamananda Senyal, B.Sc. (Cal) | 15. Soumyendra Nath Roy, B.Sc. (Cal) |
| 8. T. S. Ananthaswami Row,* B.A. (Hons.) | 16. Rangoo Das, B.A. (Cal) |
| | 17. K. Radhakrishna Moorthy, B.Sc. (Andhra) |

Examinations : Three periodical tests were held on the following subjects : Data Processing, Probability, Numerical Mathematics, Descriptive Statistics, Economic Statistics, Vital Statistics.

There were six papers in the final examination : Paper I—Probability and Inference; Paper II—Official Statistics and Statistical Methods; Paper III—Design of Experiments and Sample Surveys; Paper IV—Statistical Quality Control, Vital Statistics, and Economic Statistics; Paper V—Practical on subjects covered in papers I and II; Paper VI—Practical on subjects covered in papers III and IV.

* Awarded each a prize of Rs. 80/-.

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10.8.2 SENIOR COURSE (CALCUTTA) MARCH-SEPTEMBER 1960 SESSION

(Total number of working days : 60)

List of successful trainees : 11 students were originally admitted, all satisfied the minimum attendance requirements and the following 8 were awarded certificate of successful completion of the course.

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|-------------------------------------|---|
| 1. Ramaswamy Alwar, B.Com. (Utkal) | 5. C. Subramanian, B.A. (Madras) |
| 2. Ajit Singh Bhatti, B.A. (Punjab) | 6. Deb Ranjan Sen, M.Sc. (Poona) |
| 3. M. Thomas Baby, B.Sc. (Kerala) | 7. Biawanath Sarkar, M.Sc. (Cal) |
| 4. Satya Pall Gupta, B.A. (Punjab) | 8. Kailash Nath Anand, B.A. (Allahabad) |

Examinations : Three periodical tests were held on the following subjects : Planning and Economic Statistics, Statistical Quality Control, Algebra and Sample Surveys.

There were seven papers in the final examination : Paper I—Algebra, Linear Estimation, Analysis of Variance, Multivariate Analysis and Design of Experiments; Paper II—Estimation, Tests of Hypothesis, Sampling Distributions and Sample Surveys; Paper III—Practical on subjects covered in papers I and II; Paper IV—(Special subject) Statistical Quality Control; Paper V—(Special subject) Planning and Economic Statistics; Papers VI and VII—Practical on subjects covered in papers IV and V respectively.

10.8.3 JUNIOR COURSE (CALCUTTA) SEPTEMBER 1960-MARCH 1961 SESSION

(Total number of working days : 93)

List of successful trainees : 46 students were originally admitted, out of whom 33 satisfied the minimum attendance requirements and the following 14 were awarded certificate of successful completion of the course :

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|--|---|
| 1. S. B. Palokar, B.Sc. (Bombay) | 9. Pappu Venkata Rao, B.Sc. (Cal) |
| 2. Sushil Kumar Jhanb, B.A. (Punjab) | 10. Ramaswamy Balasubramanian, B.Com. (Madras) |
| 3. Vijay Kumar Bhatnagar, B.A. (Delhi) | 11. Gurbaksh Singh, B.A. (Punjab) |
| 4. N. Achyutan, B.Sc. (Kerala) | 12. K. Gopalakrishna, B.A. (Andhra) |
| 5. K. V. Krishnamurthy, B.A. (Andhra) | 13. Ajoy Kumar Ghosal, B.Sc. (Cal) |
| 6. K. Somaswami Sarna, B.Sc. (Andhra) | 14. Venkataraman Narayanaswamy, B.A. (Hons.) (Madras) |
| 7. Juglish Chandra Bose, B.Sc. (Cal) | |
| 8. Amal Kumar Poddar, B.Sc. (Cal) | |

Shri S. B. Palokar and Shri N. Achyutan passed with distinction. Considering their creditable performance in the final examination, cash prize of Rs. 80/- was awarded to each of them.

The following trainee of the earlier term was awarded certificate of completion of course on the basis of final examination :

1. Sambhu Nath Roy, B.Sc. (Cal)

Examinations : Three periodical tests were held on the following subjects : Presentation of Data, Probability, Numerical Mathematics, Descriptive Statistics, Economic Statistics, Vital Statistics and Sample Surveys.

There were six papers in the final examination. Paper I—Probability and Inference; Paper II—Official Statistics and Statistical Methods; Paper III—Design of Experiments and Sample Surveys; Paper IV—Statistical Quality Control, Vital Statistics and Economic Statistics; Paper V—Practical on subjects covered in papers I and II; Paper VI—Practical on subjects covered in papers III and IV.

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10.8.4 SENIOR COURSE (CALCUTTA) : SEPTEMBER 1960-MARCH 1961

(Total number of working days : 86)

List of successful trainees : 16 students were originally admitted, out of whom 15 satisfied the minimum attendance requirements and the following 8 were awarded certificate of successful completion of the course :

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|---------------------------------------|---|
| 1. Debatoosh Ghosh, B.Sc. (Cal) | 5. Gopal Chandra Mukhopadhyay, M.Sc. (Cal) |
| 2. Sunil Kumar Mukherjee, M.Sc. (Cal) | 6. Narottam Lal Manuella, B.Sc. (Agra) |
| 3. Gopal Chandra Hara, B.Sc. (Cal) | 7. K. Venkataraman, B.Sc. (Hons.) (Annamalai) |
| 4. G. Jesudhan, M.Sc. (Madras) | 8. K. Radhakrishna Murthy, B.Sc. (Andhra) |

Examinations : Two periodical tests were held on the following subjects : Statistical Quality Control, Demography and Vital Statistics, Probability, Algebra and Linear Estimation.

There were seven papers in the final examination. Paper I—Algebra, Linear Estimation, Analysis of Variance, Multivariate Analysis and Design of Experiments; Paper II—Estimation, Tests of Hypothesis, Sampling Distributions and Sample Surveys; Paper III—Practical on subjects covered in Papers I and II; Paper IV—(Special subjects) Statistical Quality Control; Paper V—(Special subject) Planning and Economic Statistics; Papers VI and VII—Practical on subjects covered in papers IV and V respectively.

10.9 ONE-YEAR EVENING COURSE IN STATISTICS, NEW DELHI (SESSION 1960-61)

List of trainees : degree and sponsoring authority are noted against each name

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|--|--|
| 1. Raj Bohari, M.A. (Mathematics), (Ministry of Commerce and Industry) | 15. Ved Kumar Bhatta, M.Sc. (Mathematics), (Directorate-General of Observations) |
| 2. Tej Narain Jaitle, M.A. (Economics), LL.B., (Ministry of Commerce and Industry) | 16. Mohinder Partap Chawla, B.A. (Hons.), (Mathematics), (Ministry of Rehabilitation) |
| 3. Hariish Chandra Kajoker, M.A. (Mathematics), (Ministry of Community Development) | 17. Satya Pal Mohita, M.A. (Mathematics), (Directorate-General of Observations) |
| 4. Kanehi Lal Gupta, M.A. (Mathematics), (Directorate of Policy and Plans, Air Headquarters) | 18. Gobind Chand, B.A. (Mathematics), (Ministry of Transport and Communication) |
| 5. Mukhan Lal Razdan, M.A. (Mathematics), (Ministry of Defence) | 19. Ramosh Chandor Mohanti, B.A. (Hons.), (Mathematics), (Ministry of Transport and Communication) |
| 6. A. Padmanabha Aiyer, B.A., (Ministry of Defence) | 20. Ram Prakash Mehta, M.A. (Mathematics), (Directorate-General of Supplies and Disposals) |
| 7. Om Prakash Khatri, M.A. (Mathematics), (Directorate-General of Health Services) | 21. Lakh Raj Sardana, M.A. (Mathematics), (Ministry of Works, Housing and Supply) |
| 8. Yoginder Paul Nanda, M.A. (Mathematics), (Ministry of Education) | 22. Kulwant Singh, M.A. (Mathematics), M.A. (Economics), (National Sample Survey) |
| 9. Yagna Datt Sharma, M.A. (Economics), (Ministry of Education) | 23. Jannamaladaka Satyanarayana, M.A. (Mathematics), (National Sample Survey) |
| 10. Nirmal Kumar Jain, B.A., (A.G.C.H.) | 24. Shishir Kumar Choudhury, M.A. (Mathematics), (Union Academy Higher Secondary School) |
| 11. Rabindar Singh Binda, M.A. (Mathematics), (Ministry of Finance) | 25. Dev Datt Singh, M.A. (Economics), (Planning Commission) |
| 12. Madan Mohan, M.A. (Mathematics), (Ministry of Food and Agriculture) | 26. Krishan Kumar Rastogi, M.Sc. (Mathematics), M.A. (Economics), (Planning Commission) |
| 13. Prakash Narain Mathur, M.A. (Mathematics), (Ministry of Home Affairs) | 27. Saroj Kumar Datta, M.A. (Economics), (National Council of Applied Economic Research) |
| 14. Ram Prakash Katyul, M.A. (Mathematics), (Central Water and Power Commission) | |

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|---|---|
| <p>28. Krishna Gopal Virmani, M.A. (Mathematics),
(Reserve Bank of India)</p> <p>29. (Miss) R. Sulochana, M.Sc. (Mathematics),
(Handicrafts Board)</p> <p>30. Oni Prakash Gupta, M.A. (Mathematics), B.T.
(Vidya Bhawan Maharashtra)</p> <p>31. Jagdish Chander Kalra, M.A. (Mathematics),
(Hindu College, Sonapat)</p> <p>32. Mannattoo Nanu Thampi, B.A. (Palai Central
Bank)</p> <p>33. Ravindra Mohan Saxena, M.A. (Mathematics)</p> <p>34. Sudhanshu Kumar Kapur, M.A. (History),
M.A. (Economics)</p> <p>35. Sursaj Bhan Gupta, M.A. (Economics), (Ministry
of Commerce and Industry)</p> | <p>36. Banarsi Das Chadha, M.A. (Economics), (Ministry
of Finance)</p> <p>37. Boin Dutt Sharma, M.A. (Economics), M.Com.,
(Ministry of Scientific Research and Cultural
Affairs)</p> <p>38. Satya Paul Mahrotra, M.A. (Economics), M.Com.,
(Ministry of Scientific Research and Cultural
Affairs)</p> <p>39. (Miss) Sharda Goel, M.A. (Economics) (Planning
Commission)</p> <p>40. Roshan Lal Gupta, M.A. (Economics), (Planning
Commission)</p> <p>41. Harbans Lal Dhingra, M.A. (Economics),
(Ministry of Health)</p> |
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10.10 ONE-YEAR EVENING COURSE IN STATISTICS, BOMBAY (MAY 1960-APRIL 1961)

List of trainees : degree and University are noted against each name

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|---|---|
| <p>1. S. S. Betrabet, B.Sc. (Poona), B.Sc. (Tooh.)
(Bombay)</p> <p>2. P. K. Chollappa, B.A. (Madras)</p> <p>3. V. G. Choubal, B.Sc. (Bombay)</p> <p>4. D. Eswaran, B.A. (Madras)</p> <p>5. P. V. George, B.A. (Travancore)</p> <p>6. T. N. Hariharan, B.Sc. (Madras)</p> <p>7. E. C. L. Henderson, B.A. (Bombay)</p> <p>8. M. Ramaswamy Iyengar, B.A. (Andhra)</p> <p>9. M. D. Joshi, B.A. (Bombay)</p> <p>10. M. S. Kashyapath, B.Sc., LL.B. (Mysore)</p> <p>11. M. G. Kulkarni, B.Sc. (Bombay)</p> <p>12. V. R. Marathe, B.Sc. (Bombay)</p> <p>13. A. H. Merchant, B.Sc. (Bombay)</p> <p>14. G. S. Mato, B.Sc. (Poona)</p> <p>15. S. Nagarnam, B.Sc. (Madras)</p> | <p>16. A. R. Narayan, M.A. (Andhra)</p> <p>17. K. V. Natarajan, B.Sc. (Madras)</p> <p>18. N. Nilakanthan, B.Sc. (Madras)</p> <p>19. S. Padmanabhan, B.Sc. (Madras)</p> <p>20. S. G. Padwal, M.Sc. (Bombay)</p> <p>21. D. S. Patil, B.A. (Karnatak)</p> <p>22. C. K. Pradhan, M.Sc. (Nagpur)</p> <p>23. S. G. Pradhan, B.A. (Bombay)</p> <p>24. L. N. Ramaswamy, B.Sc. (Madras)</p> <p>25. Rana Pratap, B.Sc. (Banarus)</p> <p>26. K. R. C. Reddy, B.E. (Andhra)</p> <p>27. M. T. Samant, M.Sc. (Bombay)</p> <p>28. V. S. Shastrabudhe, M.Sc. (Bombay)</p> <p>29. N. S. Subramanian, M.A. (Madras)</p> <p>30. R. N. Swamy, B.Sc. (Bombay)</p> <p>31. S. Venkatakrishnan, B.Sc. (Madras)</p> <p>32. T. C. Viswanathan, B.Sc. (Bombay)</p> |
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10.11 COMPUTER'S TRAINING COURSE (JUNIOR AND SENIOR) : CALCUTTA

10.11.1 JUNIOR COURSE (MORNING) : MARCH-SEPTEMBER 1960

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|---|--|
| <p>1. Narsyan Chandra Ghosh, I.Sc. (Cal)</p> <p>2. Alok Kumar Sen, I.Sc. (Cal)</p> <p>3. Sukha Ranjan Sarkar, B.Com. (Cal)</p> <p>4. Mohammad Noor Azam Khan, I.Sc. (Cal)</p> <p>5. Ranendra Nath Dey, I.Sc. (Cal)</p> <p>6. Dilip Kumar Bose, I.Sc. (Cal)</p> <p>7. Samir Kumar Das, I.Sc. (Cal)</p> | <p>8. Manindra Chandra Banerjee, I.Sc. (Cal)</p> <p>9. Gopal Krishna Chakraborty, I.Sc. (Cal)</p> <p>10. Rathindra Kumar Bose, I.Sc. (Cal)</p> <p>11. Saraswati Anuja (Mrs.), B.Com. (Kerala)</p> <p>12. Sanbhunath Mukherjee, I.Sc. (Cal)</p> <p>13. D. S. Supkar, (Studied upto I.Sc.) (Poona)</p> <p>14. Nirmalya Kumar Chowdhury, M.A. (Cal)</p> |
|---|--|

10.11.2 JUNIOR COURSE (EVENING) : MARCH-SEPTEMBER 1960

- | | |
|--|--|
| <p>1. Sunil Kumar Mukherjee, I.Sc. (Cal)</p> <p>2. Santi Ram Chatterjee, I.Sc. (Cal)</p> <p>3. Piani Ram Chatterjee, B.Sc. (Cal)</p> <p>4. Sunil Kumar Bhattacharjee, I.Sc. (Cal)</p> <p>5. Asim Kumar Bhattacharjee, I.Sc. (Cal)</p> <p>6. Murali Mohan Mitra, I.Sc. (Cal)</p> <p>13. Satyabrata Roy, I.Sc. (Cal)</p> | <p>7. Sujit Kanti Ray, B.Sc. (Cal)</p> <p>8. Nomai Chand Sinha Ray, B.Sc. (Cal)</p> <p>9. Subal Chandra Deb Nath, I.Sc. (Cal)</p> <p>10. Saktipada Mitra, B.Sc. (Cal)</p> <p>11. Kahudiram Maiti, I.Sc. (Cal)</p> <p>12. Sumit Kumar Noogi, B.Com. (Cal)</p> |
|--|--|

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10.11.3 SENIOR COURSE (EVENING) : MARCH-SEPTEMBER 1960

- | | |
|---|---|
| 1. Kaashinath Gupta, I.Sc. (Cal) | 8. Habibulla Tarooq Ahmad, I.Sc. (Cal) |
| 2. Sunil Krialina Basu, U.Com. (Cal) | 9. Binmal Chandra Gangopadhyay, I.Sc. (Cal) |
| 3. Nil Ratan Das, I.Sc. (Cal) | 10. Aniya Kumar Ghosh, B.Sc. (Cal) |
| 4. Subodh Chandra Sarkar, B.Com. (Cal) | 11. Sipra Sen Gupta (Mim), B.Sc. (Cal.) |
| 5. Nirmalya Praasn Chakravarty, B.Sc. (Cal) | 12. Suananta Kumar Kundu, I.Com. (Cal) |
| 6. Chinmoy Kumar Chowdhury, I.Sc. (Cal) | 13. Bajrang Lal Majorin, B.Com. (Cal) |
| 7. Sunil Kumar Das, B.Sc. (Cal) | 14. Dilip Kumar Ghosh, I.Sc. (Cal) |

10.11.4 JUNIOR COURSE (MORNING) : SEPTEMBER 1960-MARCH 1961

- | | |
|---|---|
| 1. Bireswar Pan, I.Sc. (Cal) | 12. Susil Kumar Gupta, B.A. (Agrs) |
| 2. B. S. Murty, B.A. (Andhra) | 13. Arun Kumar Chakravarti, I.Sc. (Cal) |
| 3. Hansraj Chopra, I.Sc. (Punjab) | 14. Satya Dulal Mondal, I.Sc. (Cal) |
| 4. Satyaranjan Gupta, Matric (Cal) | 15. Arup Kumar Paul, I.Sc. (Cal) |
| 5. Sadananda Kumar, B.Sc. (Cal) | 16. Hrishikosh Banerjee, I.Sc. (Cal) |
| 6. Chittaranjan Gangopadhyay, I.Sc. (Cal) | 17. Ranjit Kumar Gupta, I.Sc. (Cal) |
| 7. Sambhunath Saha, I.Sc. (Cal) | 18. Sudarshan Kumar Das, I.Com. (Cal) |
| 8. Chittaranjan Deb, B.Sc. (Cal) | 19. Mukul Ranjan Ganguli, I.Sc. (Cal) |
| 9. Brajeshwar Mukherjee, I.Sc. (Cal) | 20. Rabindra Nath Chakravarti, I.Com. (Cal) |
| 10. Nityaranjan Chakravarti, B.Sc. (Cal) | 21. Rabindra Kumar Dhar, I.Sc. (Cal) |
| 11. Amal Kanti Bhowmik, I.Sc. (Cal.) | 22. Lila Dhar Rajpal, I.A. (Allahabad) |
| | 23. Jai Dayal Gravor, I.A. (Punjab) |

10.11.5 JUNIOR COURSE (EVENING) : SEPTEMBER 1960-MARCH 1961

- | | |
|---|---|
| 1. Shankarendra Nath Dutt, B.A. (Cal) | 13. Baudob Bar, I.A. (Cal) |
| 2. Subir Mukherjee, B.Sc. (Bihar) | 14. Protonjit Ranjan Dutt Ray, B.Sc. (Cal) |
| 3. Sanat Kumar Sur, I.Sc. (Cal) | 15. Amal Kanti Gun, I.Com. (Dacca) |
| 4. Dilip Kumar Mukherjee, B.Sc. (Cal) | 16. Chittaranjan Roy, B.Sc. (Cal) |
| 5. S. Kaashivewanathan, B.Sc. (Cal) | 17. Asit Kumar Mukherjee, B.Sc. (Cal) |
| 6. Tripti Sekhar Dutta Roy, L.C.E. (State Council for Engg. and Tech. Educ., W. Bengal) | 18. Kandakar Abul Kaashim, B.A. (Cal) |
| 7. Ajak Kumar Hor Chowdhury, I.Sc. (Cal) | 19. Kalyan Kumar Biswas, B.Sc. (Cal) |
| 8. Hansibadan Chatterji, I.Com. (Cal) | 20. Gopal Chandra Mukhopadhyay, I.Sc. (Cal) |
| 9. Durgapati Ghosal, B.Sc. (Cal) | 21. Satya Ranjan Saal, B.Sc. (Cal) |
| 10. Sukumar Ghosh, B.Sc. (Cal) | 22. Asim Nath Bhattacharjee, B.Com. (Cal) |
| 11. Achinta Kumar Sengupta, I.Sc. (Cal) | 23. Amarosh Goswami, H.A. (Cal) |
| 12. Khagendra Nath Mandal, I.Com. (Cal) | 24. Tarun Kumar Batabyal, I.Sc. (Cal) |
| | 25. Ransandra Narayan Mazumdar, I.Sc. (Cal) |

10.11.6 SENIOR COURSE (EVENING) : SEPTEMBER 1960-MARCH 1961

- | | |
|--|--|
| 1. Asim Kumar Bhattacharyya, I.Sc. (Cal) | 6. Manindra Chandra Banerjee, B.Sc. (Cal) |
| 2. Narayan Chandra Ghosh, I.Sc. (Cal) | 7. Sambhu Nath Mukhopadhyay, I.Sc. (Cal) |
| 3. Nirmalya Kumar Chowdhuri, M.A. (Cal) | 8. Dilip Kumar Bose, I.Sc. (Cal) |
| 4. Kaliduram Maiti, I.Sc. (Cal) | 9. Holinety Satyanarayana Murty, B.A. (Andhra) |
| 5. Subal Chandra Dobbath, I.Sc. (Dacca) | 10. Nitran Das, I.Sc. (Cal) |

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10.11.7 NUMBER OF TRAINEES IN DIFFERENT COURSES FROM 1932-61
(Year given as academic year July-June)

course	1932-60	1950-51	1951-52	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	total
I. INDIAN TRAINEES													
1. Research & Advanced Studies	25	2	3	2	8	9	12	13	12	17	15	14	132
2. One/Two/Three Year Professional Statistician's													
2.1 first year	100	12	13	16	13	16	30	33	28	27	27	—	315
2.2 second year	7	9	8	17	17	16	18	20	32	25	23	12	204
2.3 third year	—	—	—	—	—	—	—	18	25	35	31	—	99
3. Degree courses													
3.1 M.Stat. first year	—	—	—	—	—	—	—	—	—	—	—	—	28
3.2 B.Stat. first year	—	—	—	—	—	—	—	—	—	—	—	—	27
4. Officer's Training	—	—	—	—	—	—	18	25	19	22	25	25	134
5. Short-term Statistician's													
5.1 Junior													
first 6 months	—	—	—	—	—	—	55	52	53	35	53	47	295
second 6 months	—	—	—	—	—	—	32	53	49	35	53	46	268
5.2 Senior													
first 6 months	—	—	—	—	—	—	—	—	12	10	10	11	43
second 6 months	—	—	—	—	—	—	—	—	12	8	6	15	57
5.3 Evening course in New Delhi	—	—	—	—	—	—	—	—	40	41	41	41	163
5.4 Evening course in Bombay (started in April 1950)	—	—	—	—	—	—	—	—	—	—	—	32	25
6. Officers on deputation	30	3	5	13	8	8	6	6	1	5	10	3	98
7. Computer's Training													
7.1 Junior													
first 6 months	—	—	—	31	24	32	30	42	45	25	22	28	292
second 6 months	—	—	31	30	25	35	30	45	39	39	35	48	344
7.2 Senior													
first 6 months	—	—	—	13	15	17	12	19	13	14	14	14	117
second 6 months	—	—	—	16	16	16	19	20	15	8	20	130	
8. ISEC													
8.1 Regular course													
first 6/9 months	—	—	10	10	7	15	6	10	3	3	5	7	75
8.2 second 6 months	—	—	3	12	5	12	—	—	—	—	—	—	32
9. Other special courses	—	—	—	—	—	—	—	82	37	16	11	—	146
total (Indian)	182	29	82	124	143	162	260	442	442	369	420	412	3056
II. FOREIGN TRAINEES													
1. Research & Advanced Studies	1	—	1	—	—	1	1	—	1	1	2	—	8
2. Research in special fields	—	25	—	—	—	—	—	7	5	8	—	—	45
3. ISEC													
3.1 Regular course													
first 6/9 months	—	—	26	27	18	12	6	18	15	24	21	23	190
3.2 2nd 6 months	—	15	28	25	12	—	—	—	—	—	—	—	80
3.3 Training in special fields	—	—	—	—	—	—	—	—	—	3	—	—	3
total (foreign)	1	40	55	52	30	13	7	25	21	36	23	23	326
total (all)	183	69	137	176	173	175	276	467	463	405	443	435	3382

Note: In addition about 2,700 technical apprentices and others were trained through participation in projects during the years 1932 to 1961.

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10.11.8 NUMBER OF CANDIDATES REGISTERED FOR DIFFERENT EXAMINATIONS

centre	September 1960			April 1961	
	Statistician's Diploma	Computer's Certificate	Field Survey Certificate	Statistician's Diploma	Computer's Certificate
(1)	(2)	(3)	(4)	(5)	(6)
1. Calcutta	48	65	2	53	52
2. New Delhi	37	7	5	41	12
3. Bombay	18	—	—	18	2
4. Bangalore	7	3	2	16	2
5. Giridih	—	—	—	—	—
6. Lucknow	—	—	—	—	—
7. Poona	7	—	—	3	—
8. Trivandrum	—	—	—	—	—
9. total	117	75	9	130	66

Appendix II : List of Successful Candidates in Professional Examination

(Roll numbers are mentioned within brackets after the name)

11.1 STATISTICIAN'S DIPLOMA EXAMINATION, APRIL 1960

I. GENERAL PAPERS

Paper I (Theoretical)

- | | |
|--|---|
| 1. C. Subramanian (055), B.A. (Madras) | 2. Bhagwati Prasad Dyundi (D13), B.A. (Allahabad) |
|--|---|

Paper II (Theoretical)

- | | |
|--|--|
| 1. Jitender Kumar Verma (B6), M.Sc. (Agra) | 5. Ramoshwar Prasad Srivastava (C40), M.A. (Lucknow) |
| 2. Vanudas Ramchandra Karkhanis (B9), B.Sc. (Poona) | 6. Rabintra Nath Banerjee (C43), B.Sc. (Calcutta) |
| 3. Akhil Nath Bhattacharyya (C34), B.Sc. (Cal) | 7. Motilal Jindal (D2), B.A. (Punjab) |
| 4. Chandrasekhar Shankar Joshi (C38), M.Sc. (Nagpur) | 8. Umrao Singh (D10), M.Sc. (Rajputana) |
| | 9. Banwari Lal (D17), M.A. (Agra) |
| | 10. Dharam Pal Aggarwal (D25), M.A. (Delhi) |

Paper III (Theoretical)

- | | |
|--|--|
| 1. Pritam Pal Garg (C18), M.Sc. (Agra) | 3. Sham Sunder Narula (D31), B.A. (Punjab) |
| 2. Ramoshwar Prasad Srivastava (C40), M.A. (Lucknow) | 4. Awadeesh Kumar Singh (D47), M.Sc. (Allahabad) |

Paper VI (Practical)

- | | |
|---|--|
| 1. Govind Bajirao Joshi (B1), M.Sc. (Bombay) | 7. Somesh Chandra Saha (C17), B.Sc. (Cal) |
| 2. Ashok Kanchanlal Parikh (B3), B.Com. (Ujjain) | 8. Prakesh Chandra Kundu (C22), B.Sc. (Cal) |
| 3. Suraj Bandyopadhyay (C6), B.A. (Cal) | 9. Ashim Kumar Mookherjee (C35), B.Sc. (Cal) |
| 4. Kullar Singh Bodi (C10), M.A. (Punjab) | 10. Makhan Lal Razdan (D37), M.A. (Agra) |
| 5. Gurrankonda Munaswamy Naidu (C12), B.A. (Andhra) | 11. Bajendra Kumar Tripathi (D40), M.Sc. (Allahabad) |
| 6. Ghani Gopal Bhattacharyya (C13), B.Sc. (Cal) | 12. Awadeesh Kumar Singh (D47), M.Sc. (Allahabad) |

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Paper VII (Practical)

1. Raghunath Shankar Abhyankar (B8), B.Sc. (Poona)
2. Ramneshwar Prasad Srivastava (C40), M.A. (Lucknow)
3. Ram Kishore Gupta (D3), M.A. (Delhi)
4. Kripa Shanker (D23), M.Sc. (Agra)

B. SPECIAL PAPERS

Papers IV and V (Theoretical)

Statistical Quality Control

1. Rajaram Bhalohandra Bhalo (B7), B.Sc. (Poona)
2. Raghunath Shankar Abhyankar (B8), B.Sc. (Poona)
3. Nanduri Chinanna Raju (C11), B.Sc. (Andhra)
4. Chuni Gopal Bhattacharyya (C13), B.Sc. (Cal)
5. Sanir Kumar Basu (C29), B.Sc. (Cal)
6. Ved Prakash Malhotra (C41), B.A. (Punjab)
7. Kankondra Nath Dutta (C44), B.Sc. (Cal)
8. Shyamalendu Ganguly (C46), B.Sc. (Cal)
9. Ajit Singh Blusti (C67), B.A. (Punjab)
10. Ranbir Rni Bagga (D30), M.A. (Punjab)
11. Awadeoh Kumar Singh (D47), M.Sc. (Allahabad)

Sample Surveys (Theory)

1. Shrikant Atmaran Alavani (B4), B.Sc. (Bombay)
2. Ramneshwar Prasad Srivastava (C40), M.A. (Lucknow)
3. Pawan Kumar Jain (D14), M.Sc. (Agra)
4. *Makhan Lal Razdan (D37), M.A. (Agra)

Sample Surveys (Applied)

1. Bibhus Chandra Somal (C6), B.Sc. (Cal)
2. Raj Kumar Nandy (C24), B.Sc. (Cal)
3. Rajendra Kumar Goswami (C32), B.A. (Punjab)
4. Ashim Kanti Bhowas (C39), B.Sc. (Cal)
5. *Ramneshwar Prasad Srivastava (C40), M.A. (Lucknow)
6. Surendra Kumar Chowdhury (C42), B.Sc. (Punjab)
7. Asim Kumar Dutta (C48), B.Sc. (Cal)
8. Ajoy Kumar Guha (C66), B.Sc., H.Com. (Cal)
9. Motilal Jindal (D2), B.A. (Punjab)
10. Kripa Shankar (D23), M.A. (Agra)

Design of Experiments (Applied)

1. Chuni Gopal Bhattacharyya (C13), B.Sc. (Cal)

Psychology and Education

1. Anil Kumar Malik (C4), M.Sc. (Cal)
2. Ravi Sarup Mahita (D26), M.A. (Punjab)

Probit Analysis

1. Awadeoh Kumar Singh (D47), M.Sc. (Allahabad)

Mathematical Theory of Sampling Distributions

1. Viswanath Tulpule (B11), M.Sc. (Bombay)

Papers VIII and IX (Practical)

Statistical Quality Control

1. Rajaram Bhalohandra Bhalo (B7), B.Sc. (Poona)
2. Raghunath Shankar Abhyankar (B8), B.Sc. (Poona)
3. Kuller Singh Bodi (G10), M.A. (Punjab)
4. Nanduri Chinanna Raju (C11), B.Sc. (Andhra)
5. Sanir Kumar Basu (C29), B.Sc. (Cal)
6. Mrinal Kanti Samanta (C37), B.Sc. (Cal)
7. Kankondra Nath Dutta (C44), B.Sc. (Cal)
8. Kripa Shanker (D23), M.Sc. (Agra)
9. Hrij Mohan Mahajan (D34), M.A. (Punjab)
10. Awadeoh Kumar Singh (D47), M.Sc. (Allahabad)

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Economic Statistics

1. Shriram Ganesh Pande (B5), M.Sc. (Bombay)

Sample Surveys (Theory)

1. Kharg Bahadur Singh (D7), M.A. (Punjab)

Sample Surveys (Applied)

1. Nanduri Chinnam Raju (C11), B.Sc. (Andhra) 3. Nikhil Ranjan Dhar (O86), B.Sc. (Cal)
2. Rajendra Kumar Goswami (O32), B.A. (Punjab) 4. Rameshwar Prasad Srivastava (O40), M.A.
(Lucknow)

Design of Experiments (Applied)

1. *Ashim Kumar Mookherjee (C35), B.Sc. (Cal) 4. *Bhagwati Prasad Dyundi (D13), B.A. (Allahabad)
2. Rabindra Nath Banerjee (O43), B.Sc. (Cal) bad
3. *Kharg Bahadur Singh (D7), M.A. (Punjab) 5. *Pawan Kumar Jain (D15), M.Sc. (Agra)
6. *Chhakkilal Prajapat (D43), M.Sc. (Agra)

Psychology and Education

1. *Makhan Lal Razdan (D37), M.A. (Agra)

Probit Analysis

1. Awadesh Kumar Singh (D47), M.Sc. (Allahabad)

Mathematical Theory of Sampling Distributions

1. S. Viswanath Tulpulo (B11), M.Sc. (Bombay)

11.2 STATISTICIAN'S DIPLOMA EXAMINATION, SEPTEMBER 1960

A. GENERAL PAPERS

Paper I (Theoretical)

1. Dharam Pal Aggarwal (D19), M.A. (Dolhi) 10. Thakkar Harkishan Manilal (B6), B.Sc. (Bombay)
2. Kailash Nath Anand (O15), B.Sc. (Allahabad) bay
3. Rabindra Nath Banerjee (O10), B.Sc. (Cal) 11. Vishnu Raghunath Marathe (B4), B.Sc. (Bombay)
4. Salil Kumar Chaudhuri (B12), B.Sc.-Hons. (Cal) 12. Rebecca Mukherjee (C1), M.Sc. (Cal)
5. Pranbandhu Das (C22), B.Sc.-Hons. (Cal) 13. Ranajit Kumar Naha (C36), B.Sc. (Cal)
6. Harbans Lal Dhingra (D8), M.A. (Punjab) 14. Nanduri Chinnam Raju (C47), B.Sc. (Andhra)
7. Asoke Das Gupta (C34), B.Sc. (Cal) 15. Samir Ranjan Guha Roy (C27), M.Sc. (Ca.)
8. Jasinder Singh Maini (D16), M.A. (Punjab) 16. Ramohwar Prasad Srivastava (D23), M.A.
9. Jagdish Chandor Malhotra (D29), M.A. (Punjab) (Lucknow)
17. Jitendra Kumar Verma (B11), M.Sc. (Agra)

Paper II (Theoretical)

None passed

Paper III (Theoretical)

1. Prakesh Chandra Kundu (C25), M.Sc. (Cal) 4. N. Purushottam Roddy (BB4), B.A. (Ormania)
2. Thakkar Harkishan Manilal (B6), M.Sc. (Bombay) 5. Samir Ranjan Guha Roy (C27), M.Sc. (Cal)
3. Gurrankonda Manaswamy Naidu (C48), B.A. (Andhra) 6. Jitondor Kumar Verma (B11), M.Sc. (Agra)

* Denotes distinction

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Paper VI (Practical)

1. Dharam Pal Aggarwal (D18), M.A. (Delhi)
2. Ramaswamy Alwar (C18), B.Com. (Utkal)
3. Kailash Nath Anand (O18), B.So. (Allahabad)
4. M. Thomas Baby (C37), B.So. (Travancore)
5. Ranbir Rai Bagga (C9), M.A. (Punjab)
6. Kanwar Mannohan Singh Bodi (D18), M.A. (Punjab)
7. Nikhil Ranjan Dhar (C40), B.Sc. (Cal)
8. Dharam Vir Gulati (B10), M.A. (Punjab)
9. Jagdish Chander Malhotra (D20), M.A. (Punjab)
10. Jaiinder Singh Maini (D10), M.A. (Punjab)
11. *K. Mukundan (D10), M.A. (Madras)
12. Gobindadnan Paul (C7), B.Com. (Cal)
13. Nanduri Chinnam Raju (C47), B.Sc. (Andhra)
14. Chitrapu Hanumantha Rao (C12), B.Sc. (Andhra)
15. Sriah Chandra Besu Roy (C20), B.Sc. (Cal)
16. Bibhas Chandra Sasmal (C36), B.Sc. (Cal)
17. C. Subramanian (C24), B.A. (Madras)

Papers VII (Practical)

1. Rabindra Nath Banerjee (C10), B.Sc. (Cal)
2. Chuni Gopal Bhattacharyya (C20), B.Sc. (Cal)
3. Kanwar Mannohan Singh Bodi (D18), M.A. (Punjab)
4. Asitini Kumar Mookhorjee (C8), B.Sc. (Cal)
5. K. Mukundan (D10), M.A. (Madras)
6. Makhan Lal Razdan (D20), M.A. (Agra)
7. Shankar Narasinha Sawaikar (B7), B.Com. (Bombay)

B. SPECIAL PAPERS

Papers IV and V (Theoretical)

Economic Statistics

1. Bedal Besu Mallick (C32), B.A. Hon. (Cal)
2. Shankar Narasinha Sawaikar (B7), B.Com. (Bombay)

Design of Experiments (Applied)

1. Hari Raghunath Kulkarni (P2), B.Sc.-Hons (Poona)

Sample Surveys (Theory)

1. Probir Kumar Banerjee (D4), M.Sc. (Lucknow)
2. Ram Sarup Mohta (D20), M.A. (Punjab)
3. *N. Furushottam Reddy (BB4), B.A. (Omania)

Sample Surveys (Applied)

1. Prafulla Kumar Basak (C81), B.A. (Cal)
2. Debabrata Chanda (C42), B.Com. (Cal)
3. Pritam Pal Gurg (C23), M.Sc. (Agra)
4. Arun Kanti Ghosal (C30), B.Sc. (Cal)
5. Ved Parkash Mallhotra (C17), B.A. (Punjab)
6. Basant Lal Sethi (D31), M.A. (Punjab)

Statistical Quality Control

1. Ramaswamy Alwar (C18), B.Com. (Utkal)
2. M. Thomas Baby (C37), B.Sc. (Travancore)
3. Satil Kumar Chaudhuri (B12), B.Sc.-Hons. (Cal)
4. Hari Raghunath Kulkarni (P2), B.Sc.-Hons. (Poona)
5. Venkatesubramanian Kadhakrishnan (BD3), M.Sc. (Poona)

Vital Statistics and Population Studies

None passed

Probit Analysis

None passed

Mathematical Theory of Sampling Distributions

None passed

* Donates distinction

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Papers VIII and IX (Practical)

Economic Statistics

1. Chandrasekhar Shankar Joshi (B18), M.Sc. 2. Shankar Narasinha Sawalkar (B7), B.Com. (Nagpur) (Bombay)

Design of Experiments (Applied)

1. N. Purushottam Reddy (BB4), B.A. (Osmania)

Sample Surveys (Theory)

1. Jagdish Narsin Garg (D7), M.A. (Dohi) 2. Pawan Kumar Jain (D27), M.Sc. (Agra)
3. Makhan Lal Hasdan (D26), M.A. (Agra)

Sample Surveys (Applied)

1. Samir Ranjan Guba Roy (C27), M.Sc. (Cal) 2. Ranajit Kumar Naha (C36), B.Sc. (Cal)
3. Jitender Kumar Verma (B11), M.Sc. (Agra)

Statistical Quality Control

1. Ramaawamy Alwar (C16) B.Com. (Utkal) 2. C. Subramanian (C24), B.A. (Madras)

Vital Statistics and Population Studies

None passed

Probit Analysis

None passed

Mathematical Theory of Sampling Distribution

None passed

11.3 COMPUTER'S CERTIFICATE EXAMINATION, APRIL 1960

Part IA Section I

- | | |
|--|--|
| 1. Dilukhraj Fatechand Mehta (B1), S.S.L.C. (Bombay) | 9. Kaashi Nath Gupta (C44), I.Sc. (Cal) |
| 2. *Mysore Sootharuma (BB2), B.Sc. (Mysore) | 10. Baladeb Bandyopadhyay (C46), B.Sc. (Cal) |
| 3. K. V. Sroorangachar (BB4), I.Sc. | 11. Amiya Kumar Ghosh (C51), B.Sc. (Cal) |
| 4. P. Narayan (BB6), S.S.L.C. (Madras) | 12. Habibullah Tarque Ahmed (C52), I.Sc. (Cal) |
| 5. *Bajrang Lal Bejoria (C33), B.Com. (Cal) | 13. Biswanath Bhattacharyya (C63), B.Sc. (Cal) |
| 6. Sunil Kumar Das (C28), B.Sc. (Cal) | 14. Nabendu Kumar Mustafy (C56), B.A. (Cal) |
| 7. Manjula Dhar (C39), B.Sc. (Cal) | 15. Sushanta Kumar Kundu (C59), I.Com. (Cal) |
| 8. Subhas Chandra Mukherjee (C42), I.Sc. (Cal) | 16. Mohinder Chanda (D1), B.Sc. (Rajputana) |

Part IA Section II

- | | |
|--|---|
| 1. M. Gurunathan (BB6), Dip. in Elect. Eng. (Mysore) | 4. Praasn Sen Gupta (C27), B.A. (Cal) |
| 2. Khirode Bohari Roy (C19) | 5. Bajrang Lal Bejoria (C33), B.Com. (Cal) |
| 3. Ranajit Kumar Ray (C20), I.Com. (Cal) | 6. Manik Lal Pal (C34), B.Sc. (Cal) |
| | 7. Biswanath Bhattacharyya (C63), B.Sc. (Cal) |

Part IB Section I

- | | |
|--|---|
| 1. Tapan Das Gupta (C16) I.Sc. (Cal) | 3. Bajrang Lal Bejoria (C33), B.Com. (Cal) |
| 2. Atul Krishna Pal (C30), B.Sc. (Cal) | 4. Baladeb Bandyopadhyay (C46), B.Sc. (Cal) |
| | 5. Senti Priya Bhowmik (C66), I.Sc. (Cal). |

Part IC Section I

- | | |
|---|---|
| 1. Sukesh Ranjan Debnath (C18), S.F. (W.B.) | 2. Ranjit Kumar Ray (C20), I.Com. (Cal) |
|---|---|

Part IB Section II

- | | |
|--|---|
| 1. Panchanan Mahoharank (C18), B.Sc. (Cal) | 3. Manjula Dhar (C39), B.Sc. (Cal) |
| 2. Bajrang Lal Bejoria (C33), B.Com. (Cal) | 4. Baladeb Bandyopadhyay (C46), B.Sc. (Cal) |
| | 5. Debabrata Bardhan (G6), B.A. (Cal) |

* Denotes distinction

INDIAN STATISTICAL INSTITUTE

Part 1C Section II

1. Manindra Chandra Basu (C11), B.Sc. (Cal)
2. Samarendra Barua (C14), B.A. (Cal)
3. Sukeeh Ranjan Debnath (C18), S.F. (W.B.)
4. Syamal Kumar Sen (C26), B.Sc. (Cal)
5. Manoharan De (C26), B.Sc. (Cal)
6. Praun Sen Gupta (C27), B.A. (Cal)
7. Manoj Kanti Ghosh (C29), Matric (Patna)
8. Biswanath Bhattacharyya (C63), B.Sc. (Cal)
9. Santipriya Bhowmik (C65), I.Sc. (Cal)
10. Madhai Lal Mukhopadhyay (D3), B.Sc. (Cal.)
11. Bharat Kumar Mitra (G3), B.Sc. (Cal)

11.4 COMPUTER'S CERTIFICATE EXAMINATION, SEPTEMBER 1960

Part 1A Section I

1. Manindra Chandra Banerjee (C6), B.Sc. (Cal)
2. Aparna Bhattacharjee (C40), I.Sc. (Cal)
3. Chinmoy Kumar Choudhuri (C10), I.Sc. (Cal)
4. Subal Chandra Debnath (C22), I.Sc. (Dacca)
5. Bimal Chandra Ganguly (O14), I.Sc. (Cal)
6. Arun Kumar Das Gupta (C28), I.A. (Cal)
7. Ranajit Kumar Ray (C33), I.Com. (Cal)
8. *Ram Gopal (D5), I.Sc. (U.P.)
9. Subodh Chandra Sarcar (C13), B.Com. (Cal)
10. Alok Kumar Sen (C9), I.Sc. (Cal)
11. Amarendra Lal Son (C32), Matric (Cal)
12. Sureeh Chander Saxena (D1), B.A. (Delhi)

Part 1A Section II

1. Aparna Bhattacharjee (C40), I.Sc. (Cal)
2. Chinmoy Kumar Choudhuri (C10), I.Sc. (Cal)
3. Parimal Kumar Roy (C41), I.A. (Cal)
4. Alok Kumar Sen (C9), I.Sc. (Cal)
5. Ira Son (C35), I.Sc. (Cal)
6. Pratima Sen (C24), B.A. (Cal)

Part 1B Section I

1. Lakshmi Narayan Das (C47), B.Sc. (Cal)
2. Nagendra Chandra Das (C43), B.A. (Cal)

Part 1B Section II

1. Biswanath Bhattacharjee (C52), I.Sc. (U.P.)
2. Sunirmal Bose (C53), B.A. (Cal)
3. Sudhir Chandra Chakravarti (C54), Matric (Cal)
4. M. Soetha Rama (BB1), B.Sc. (Mysore)
5. *Pratima Sen (C24), B.A. (Cal)
6. Shyamal Kumar Sen (C37), B.Sc. (Cal)
7. Praun Sen Gupta (C45), B.A. (Cal)

Part 1C Section I

1. Santipriya Bhowmik (O44), I.Sc. (Cal)
2. Sushil Kumar Tapoder (C81), Matric (Cal)

Part 1C Section II

1. Bajrang Lal Bajoria (C15), B.Com. (Cal)
2. Baladeb Bandyopadhyay (C18), B.Sc. (Cal)
3. Chinmoy Kumar Choudhuri (C18), I.Sc. (Cal)
4. Shib Shadhan Banerjee (C49), I.Sc. (Cal)
5. Lakshmi Narayan Das (C47), B.Sc. (Cal)
6. Hari Bhuvan Dutta (C48), I.Com. (Cal)
7. Subodh Chandra Sarcar (O13), B.Com. (Cal)

11.5 STATISTICAL FIELD SURVEYS CERTIFICATE EXAMINATION, SEPTEMBER 1960

Part 1 Section A

1. Nani Gopal Mukherjee (O1), Matric (Cal)

Part 1 Section B

1. Nani Gopal Mukherjee (O1), Matric (Cal)

Part 1 Section C

None passed

Part 2 Section 1

1. Tapan Kumar Chowdhury (O2), B.Com. (Cal)
2. H. S. Bhagwan (BB1), L.Com. (Mysore)

Part 2 Section B

1. H. S. Bhagwan (BB1), L.Com. (Mysore)

* Denotes distinction

TWENTYNINTH ANNUAL REPORT : 1960-61

114. SUMMARY OF RESULTS IN EXTERNAL EXAMINATIONS FOR ALL PAPERS FROM 1961 TO 1960-61

A. STATISTICIAN'S DIPLOMA EXAMINATION

	Paper	Year										total	
		1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70	1960-61		
General Papers	I	R	42	39	65	69	62	133	67	53	111	90	741
		A	24	37	43	45	43	72	61	47	92	66	539
		%	8	9	4	8	18	29	20	13	32	19	158
			25	24	9	18	43	40	33	28	34	29	30
	II	R	36	47	50	46	41	82	57	30	59	44	492
		A	18	27	33	28	21	39	50	24	51	35	326
		%	7	9	17	10	9	21	18	11	33	10	145
			39	33	62	36	43	54	36	46	64	29	46
	III	R	31	42	45	44	42	77	40	33	51	59	464
		A	16	22	29	28	25	43	22	29	44	49	307
		%	6	9	10	11	4	11	15	15	15	10	106
			38	41	34	39	16	29	68	62	34	20	36
VI	R	22	22	37	34	23	42	56	45	100	80	467	
	A	16	19	32	31	19	37	51	41	100	78	433	
	%	3	1	5	15	2	12	18	5	16	29	106	
		20	5	16	48	11	32	35	12	16	37	36	
VII	R	22	22	34	31	24	41	52	23	63	55	367	
	A	16	19	29	27	20	38	47	21	60	53	339	
	%	3	4	4	4	4	8	11	8	10	11	65	
		20	21	14	15	20	16	23	38	16	21	20	
Special Papers	IV	R	19	18	28	23	27	66	64	54	52	54	395
		A	14	9	20	20	22	41	56	46	48	43	318
		%	13	4	17	14	7	19	32	20	31	26	183
			93	44	86	70	32	46	57	44	64	60	58
	V	R	19	12	23	19	27	37	45	29	63	54	328
		A	14	8	18	14	22	23	41	27	56	45	287
		%	12	22	9	7	15	14	24	14	27	22	146
			86	25	50	50	68	81	59	62	49	49	55
	VIII	R	13	9	13	14	23	37	48	35	56	56	304
		A	10	8	13	13	21	29	39	34	54	53	274
		%	4	4	2	3	7	9	14	16	26	19	104
			40	50	15	23	33	31	36	47	49	36	38
IX	R	13	3	16	20	23	33	39	35	67	56	305	
	A	10	3	15	17	20	31	34	34	68	53	283	
	%	3	2	6	6	9	12	3	10	14	17	82	
		30	67	40	35	45	39	9	29	21	32	29	
All Papers	R	217	229	306	300	292	548	468	337	628	538	3863	
	A	136	162	232	223	212	358	401	302	570	475	3056	
	%	57	44	74	78	75	133	165	112	303	163	1094	
		42	29	32	35	35	38	39	37	35	34	30	

Notes: (a) R = number registered; A = number appeared; P = number passed and % = percentage of pass (approx.).

(b) Since 1966-67 the examination is held twice in the year.

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B. COMPUTER'S CERTIFICATE EXAMINATION

Paper	year										total	
	1951-52	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61		
IA(I)	R	123	99	67	37	144	234	129	50	83	65	991
	A	95	54	60	34	124	205	120	44	79	58	871
	P	48	19	31	16	88	105	84	12	17	28	448
	%	52	35	52	47	71	51	70	27	21	48	51
IA(II)	R	131	76	78	61	162	320	203	70	103	74	1268
	A	98	68	67	48	136	280	194	60	95	67	1113
	P	28	26	10	11	38	71	48	20	22	13	287
	%	29	38	15	23	23	25	25	33	23	19	23
IB(I)	R	87	68	79	52	132	243	168	65	84	81	1059
	A	67	57	65	49	108	315	162	59	70	77	938
	P	4	4	9	2	27	22	54	4	11	7	144
	%	6	7	14	4	25	10	33	7	14	9	15
IB(II)	R	88	63	72	47	130	275	144	74	90	71	1034
	A	61	52	60	43	99	233	136	64	83	68	904
	P	12	9	7	0	9	60	14	8	28	12	159
	%	20	17	12	0	9	26	10	13	32	18	18
IC(I)	R	34	34	31	19	43	135	87	40	49	38	520
	A	34	22	28	12	34	123	85	37	40	38	570
	P	6		5	2	1	39	22	8	12	4	102
	%	18	9	18	16	3	32	26	12	26	11	22
IC(II)	R	32	30	26	20	37	95	69	33	37	33	412
	A	23	29	22	14	29	87	66	30	34	33	367
	P	4	6	6	10	16	47	19	5	6	18	137
	%	17	21	27	71	55	64	29	17	18	55	37
All papers	R	505	330	353	226	648	1302	800	332	440	362	5304
	A	376	293	302	200	530	1143	763	294	421	341	4663
	P	102	67	68	41	179	344	241	49	96	82	1269
	%	27	23	20	34	30	30	32	17	23	24	27

Note: (a) R = number registered; A = number appeared; P = number passed and % = percentage of pass (approx.)

(b) Since 1956-57 the examination is held twice in the year.

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C. STATISTICAL FIELD SURVEY CERTIFICATE EXAMINATION :
JUNIOR AND SENIOR

Paper	year										total	
	1951-52	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61		
1A	R	323	10	9	37	98	72	18	4	17	3	591
	A	210	7	6	32	58	54	17	1	15	3	403
	P	88	1	4	9	22	31	0	—	3	1	165
	%	42	14	67	38	38	57	35	—	20	33	41
1B	R	323	18	10	30	98	80	22	3	17	3	610
	A	206	13	7	32	55	54	20	1	15	3	116
	P	44	4	5	15	18	30	0	—	—	1	132
	%	21	31	71	47	33	56	45	—	—	33	32
1C	R	159	13	8	30	93	79	20	8	16	3	423
	A	85	9	5	21	50	58	16	1	15	3	263
	P	24	3	4	9	10	30	0	1	—	—	98
	%	28	33	80	43	20	62	56	100	—	—	30
2A	R	20	1	10	25	92	123	25	2	8	8	323
	A	17	1	9	19	66	88	24	2	5	7	239
	P	4	0	4	10	23	32	13	1	2	2	91
	%	24	0	44	53	35	36	54	50	33	20	38
2B	R	28	3	12	29	92	131	36	33	14	7	355
	A	17	3	11	24	67	99	30	3	11	5	270
	P	0	0	5	14	13	18	2	1	4	1	58
	%	0	0	45	58	19	18	7	33	36	20	22
All papers	R	862	45	40	157	472	491	121	15	72	24	2308
	A	535	33	38	128	296	363	107	8	62	21	1591
	P	160	8	22	57	86	153	39	3	9	5	542
	%	10	24	68	45	29	42	36	38	14	24	34

Note : (a) R = number registered ; A = number appeared ; P = number passed and % = percentage of pass. (approx.)

(b) During 1954-55, 1956-57 and 1957-58 the examinations were held twice in the year.

INDIAN STATISTICAL INSTITUTE

Appendix 12 : External Activities

Sri N. Bhattacharyya, Planning Division, presented two papers at the Forty-eighth Session of the Indian Science Congress held at Roorkee in *January 1961*.

Sri A. Biswas, Planning Division, attended the All-India Economic Conference and the meeting of the Indian Economic History Group held at Chandigarh in *December 1960*. He also attended the Second Indian Conference on Research in National Income in Delhi in *September 1960* and presented a paper. He participated in a meeting of the Inter-industry Committee in *September 1960*.

Sri A. K. Chakravarti, Planning Division, attended the Second Indian Conference on Research in National Income held in Delhi in *September 1960* and presented a paper. He also attended a meeting of the Inter-industry Committee in *September 1960*.

Sri G. S. Chatterjee, Planning Division, attended the Second Indian Conference on Research in National Income and presented a paper.

Sri I. Chatterjee, Planning Division, attended the Third Conference of Agricultural and Animal Husbandry Research Workers on Dairying held at Bangalore in *February 1961* and read a paper. He presented three papers at the Forty-eighth Session of the Indian Science Congress.

Sri N. C. Das, National Sample Survey, attended the Conference of Census, 1961, Tabulation Programme held in Delhi on 13 and 14 *June 1960*.

Sri B. Dey, Planning Division, read a paper at the Second Indian Conference on Research in National Income.

Sri A. Ganguly, National Sample Survey, was selected as the Institute representative for the Working Group of the Indian Council of Medical Research formed in connection with the preparation of a dietary atlas for India. He also attended the Ninth Conference of Central and State Statisticians held at Jaipur in *December 1960* as a delegate of the Institute.

Sri N. S. Iyengar, Planning Division, presented a paper at the Forty-eighth Session of the Indian Science Congress held at Roorkee in *January 1961*.

Sri R. K. Lahiri, Planning Division, attended the Second Indian Conference on Research in National Income and presented a paper.

Sri M. Mukherjee, Head, Planning Division, attended the Ninth Conference of Central and State Statisticians as a delegate of the Institute.

Dr. V. L. S. Prakasa Rao, Research and Training School, participated in the seminar arranged by the Institute of Town Planners at Bangalore in *September 1960*. Papers on the delimitation of metropolitan regions—geographer's approach, and the method of delimitation of metropolitan regions, were read and discussed.

Sri J. Saha, Chief Librarian, attended, as a Senior Specialist, the Regional Seminar of Scientific Documentation for South East Asia held in New Delhi during 7-16 *March 1961*. He was invited by the UNESCO South Asia Science Co-operation Office, New Delhi.

Sri R. K. Som, National Sample Survey, visited the Regional Office of the World Health Organization in New Delhi in *September 1960* and had discussions on morbidity surveys with Dr. Helweg-Larsen, the Regional Adviser of Health Statistics, Regional Office for S. E. Asia, W.H.O. He visited the Demographic Training and Research Centre, Bombay, in *October 1960* and delivered a lecture on NSS demographic surveys.

The following members of the Library staff, Sarbasri Premosri Dutta, Biswajit Roy, Subinoy Roy, Kalyan Saha and C. V. Subba Rao, attended a seminar of Indian Names, organized by the Indian Association for Special Libraries and Information Centres, held in Calcutta from 30 *December 1960* to 1 *January 1961*. C. V. Subba Rao contributed a paper.

INDIAN STATISTICAL INSTITUTE

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