

TWENTYSEVENTH ANNUAL REPORT : 1958-59

In the field of Biometry, some very interesting discoveries have been made under the guidance of Professor J. B. S. Haldane by one of our young workers, Subodh Roy. I shall try to explain to you one rather unexpected find. In statistics, one of the basic concepts is what is called normal distribution. If in this audience, we measure the height of men (or women) we shall find there is an average height, and most people would be nearer the average than farther away. To put it in a different way, there are very many more persons with heights nearer the average than there are people who are very tall or who are very short. This is normal distribution. The further away you go from the average, the fewer becomes the number of individuals. It has been now found that in certain things like the number of 'teeth' or leaves from a certain type of tree, there is a bi-modal distribution, that is, the number of teeth cluster round not one single value but round two different modes. This is extremely interesting, but its exact biological significance is not yet known. We feel encouraged that such small little discoveries, which do not require elaborate apparatus or anything in the way of a big laboratory, are being made here.

There are other things which Subodh Roy has noticed in experiments on rice in our own farm at Giridih which may have quite important repercussions on agriculture. This is only a possibility, which he mentioned in a letter written before he left India in early December, to attend a conference at Singapore.

But, of course, we must remember science is full of possibilities and also of disappointments. Science is very much like life in having ups and downs. We have had advances in other fields also. For example, the work of the National Sample Survey has shown some improvements which I am hoping will continue. The activities of the Workshop are also getting better organized.

But when I look to the Institute as a whole, I think, the past year from a certain point may have been a year of set-backs, from an administrative or organizational point of view. But this, I venture to think, may not be a real set-back, if we take a long view.

A few minutes ago, I was looking at the report of the last Anniversary Meeting at which I referred to a new Bill which, we were expecting, the Government of India would soon introduce to give the Institute a statutory position. This question of stabilization of the Institute, as it is called, has been under consideration by Government for more than 20 years. To be precise, it started in January 1938; and very soon, the whole matter will come of age, and will complete 21 years. Perhaps something may happen then.

There have been many ups and downs; there have been many proposals from the Government to stabilize the Institute, sometimes stated as the Institute being taken over by the Government; sometimes, to have it converted into a University through legislation; and finally, a Central Act of its own. And a Bill was actually introduced exactly two years ago, in December 1956, which was later withdrawn. Subsequently, we had further negotiations with the Government; and, with the full approval of our President and our Chairman, complete agreement was reached early this year; and with the concurrence of the members of the Institute we were ready to accept a certain Bill, but the proposal was dropped by Government.

Now this would seem to many to be a set-back. Personally, I have been, shall I say, somewhat unorthodox in my views, sometimes perhaps even in the way this Institute

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is being directed, for example, in having a geological unit in a statistical institute, but in which I and some of my colleagues find some unity of purpose. From my own point of view, I am not sure whether the withdrawal of the Bill is really a set-back. It may even have been of the greatest possible help. I should like to explain this point because it has some significance for the future.

The Institute was built up in its early years not with grants from the Government but mainly with our own earnings from what we call projects, that is, with fees for rendering services in the form of contracts. Up to, I think, about perhaps 1950, we had very small direct grants from the Government. I remember once having prepared a note for the Government in which I showed that of our total income (or our total expenditure, put it in any way you like) ninety per cent was earned by us, by our own work, and was not charity done to the Institute. The Government as well as the public required our expert services; and we undertook surveys, and preparation of reports for which we earned contract fees.

I have always held the view that in applied science and technology this relationship of payment for services rendered is ultimately the most sound basis for progress. The Bill having been dropped, one important advance from my point of view has been that the Government have practically agreed to restore the contract system for projects. That is, we shall undertake certain projects on behalf of the Government for which the Government will pay contract grants.

In the old days when we used to have such contracts, we were particularly careful about efficiency. I do remember that we suffered a loss instead of asking the Government for more money because we made some mistakes; although our resources were very meagre at that time we bore a loss—that was long ago—of about Rs. 40,000 in a total budget of two and a half or three lakhs. I think this approach was of great help in building up a sound tradition of careful work of high quality and also of high business-like efficiency. At that time we were cost-conscious.

As a matter of fact, in modern statistics the concept of cost, in some form or other, is basic. Two concepts are fundamental in modern statistics; one is variability and the other is cost. The whole of R. A. Fisher's theoretical work depends on the concept of efficiency, that is, to find a method which would give maximum information with a minimum number of sample-units. The basic logic of efficiency is essentially that of cost. In our own work in sample surveys also, the approach has been of doing a certain job, a certain survey, with the highest precision possible within a given cost, or, we can put it in another way, to attain the desired accuracy in the results at minimum cost. This was the basis on which we used to work in the old days.

Unfortunately, in the twilight and confusion of working like a pseudo-Government agency, this principle was not kept clearly in mind resulting, I am personally convinced, in a loss of efficiency. This is why in March of this year, when I thought that the Bill was likely to be withdrawn, I met our workers here in this mango-grove and told them that after twelve years I was again taking personal responsibility for the work. Since then I am trying to discharge my responsibility by examining everything on the applied side from the point of view of cost. This, I think, is a real gain. So, what may be considered to be a set-back. I have a feeling, may be a real gain, and may again put us on the right track.

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I will give one very simple example of how we used to work in the old days. At an early stage of sample surveys to estimate the agricultural production we used agricultural plots as sample-units. It was necessary to get the actual area in acres of each sample-plot by copying these from revenue records in government offices. We studied the cost. From careful studies we found that in copying the records there were always some mistakes—something over one per cent and a little less than two per cent; and we also found the cost. There was a second way. As we had the village maps in the Laboratory itself, we asked, can we quickly measure the area of the plots on the map? We found we could do this at a lower cost and with greater accuracy. This is exactly what I mean by cost-consciousness. A very trivial example, but, I think, instructive. If the contract grant is restored from next year, we shall again get back to the basic cost approach, namely, securing information of the highest precision at the minimum cost. This is proper, of course, on the applied side.

On the research side this has to be balanced not by the thought of immediate cost but by ultimate gains which can be secured by giving each young worker or each scientist as much facility as we can afford. A great scientist and a very good friend of our Institute, Professor P.M.S. Blackett, who was in the Institute for the third time in February of this year, holds that the only safe rule in research is to give as much money to a scientist as he can spend usefully; nothing less is satisfactory. If we want to utilize a scientist to the maximum possible extent in research then the principle must be to 'give him as much as he can usefully spend'.

So, when I say cost, I use it in a dual sense. In our Institute, I think, the broad policy is, as I have explained, to earn money, may be nine-tenths of the budget, on the basis of cost, in the sense of doing something with the highest precision or of the highest quality at the minimum cost; and use such earnings to encourage our colleagues, our young scientists to do what they can in research and in developmental work by giving them up to the limit, if we can afford it, of what they can usefully spend. This is the dual principle of cost which I am looking forward to be able to restore to the level of what it was 10 or 15 years ago.

A second point I shall mention briefly. We are becoming aware through our experience of professional training that in India at least (I should like for the present to speak about India) we require statisticians with a broad background of knowledge; and, therefore, for about a year or so, we have been giving a good deal of attention to the possibility of a highly integrated teaching of both natural and social sciences as a kind of basic foundation for the training of professional statisticians. Science in its broadest sense, physico-chemical, and biological, and also the social sciences, psychometry, and economics of planning,—we want to include all these in our scheme of integrated teaching. We have already prepared certain provisional courses; and at one time we were hoping that on the basis of such integrated teaching, the University Grants Commission might recommend that our Institute be authorised to award degrees. We submitted an application for this purpose. But, I understand, because of what was considered to be the highly specialized nature of statistics, it was felt that it would not be proper to give us powers to award degrees.

Nevertheless, with the full concurrence of our President, who also happens to be the Chairman of the University Grants Commission, the Governing Body and the Council of the Institute have decided that, as soon as possible, we should start experimenting with a new integration of education. We are looking forward to this experiment. We are very fortunate

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in having with us Professor Haldane who is enthusiastic about this scheme and who is working very hard to organize these courses on sound lines.

I have spoken, briefly, of some of the ups and downs during the year under review, and also of some of the ways in which we hope to work in future. I am glad we are again having the chance of standing entirely on our own. We now know that our future depends mainly on what we can do ourselves by our own efforts. This was the way the Institute worked in the past. This is the way the Institute must work in future. Therefore, I personally look forward with even greater confidence to the future than I did last year.

SPEECH BY SRI C. D. DESHMUKH, PRESIDENT, INDIAN STATISTICAL INSTITUTE

12. I am very happy that it has again been possible for me to participate in these anniversary celebrations. I am not quite sure, however, if it is entirely appropriate or convenient for the President himself to give an address because he, more or less, belongs to the organization, whereas an address should preferably be given by someone who has had opportunities of watching the growth of the Institution or availing himself of the results of some of its operations. Moreover, speaking from my personal point of view, as President, I have often been torn by conflicting loyalties. It was not so in the beginning when I undertook this responsibility of the post of President, because at that time I was the Governor of the Reserve Bank of India and had no share in influencing any administrative arrangements that might affect the growth and fortunes of the Institute.

That was, as the Director has told you, some fourteen years ago, that is to say, round about 1944 or 1945. But within a few years, I came to be associated with the Government of India, as a member of the Planning Commission, and, almost simultaneously, as the Union Finance Minister. The Finance Minister has to take care to avoid any discrimination in favour of any Ministry, Department or Institution, whereas much of the work that was turned out by the Institute had a direct bearing on the activities of the Finance Ministry (which, I should state for your information, also includes the management of the economic affairs of the country). Therefore, I have always had to lead a sort of Jekyll and Hyde existence. I had to discuss the merits of the proposal put forward by the Director, Professor Mahalanobis, from the point of view of the Institute; but when it came to the point of finding money for or financing the necessary operations, then I had to withdraw from the field of decision, and to leave the matter to my colleagues, the Ministers of State of Finance, who were then helping me. That procedure had its advantages as well as its disadvantages. Statistics is not everybody's meat; and so far as men in politics are concerned, statistics is very far removed from their normal scope of activities. Therefore, although it was often a process of good education for the Ministers, this arrangement was not always favourable to the Institute. And I suppose it is due to this that at least some part of the delay occurred in finalising decisions to which the Director has referred.

I should have hoped that when I ceased to be the Union Finance Minister, then I should be free to devote myself to the affairs of the Institute with the full freedom and abandon of a partisan. But again, alas, events turned out to be otherwise. My present office, as you probably know, is the Chairman of the University Grants Commission; and it was for the Commission again to make a decision, not a decision, perhaps, but certainly to make a definitive and probably a decisive recommendation on the application of the

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Institute to be notified to be deemed to be equal to a University. So when the matter came up for consideration in the Commission whilst as President of the Institute I would have had a great deal to say in favour, as Chairman of the University Grants Commission and therefore as an interested party, in accordance with well-established conventions, I had to keep quiet and let the decision be given by my colleagues. That does not mean that I consider their decision to be wrong. The matter involved is, as the Director said, the interpretation of one of the sections of the University Grants Commission Act which has some bearing on what sort of institution can be regarded as equivalent to a University.

For your information, I should state that the University Grants Commission can consider the developmental problems and the standards of only those institutions of higher learning which can be regarded as "Universities". There are three categories of Universities; the first is the University as established by Law either by Acts of the Central Government or by the State Governments; the second is any other institution affiliated to a University which can, in accordance with regulations to be made by the Commission with the approval of the Central Government and in consultation with the University concerned, be regarded as a part of the University, which really means the constituent and affiliated colleges of the Universities. This was because as the scheme was originally drawn up, in view of possible inadequacy of funds, the intention was to enable the University Grants Commission to assist only the Universities and not its affiliated colleges. There is a third category which we have to consider here and that is institutions of higher education which on examination may be considered to be equivalent to a University. The law itself does not lay down any criteria in this respect except, of course, what is implicit in the language of the section, that is, an institution of higher learning, which does only research and no training, would certainly not be regarded as equivalent to a University, because, to start with it would not be an institution of higher education. But here in regard to the application of the Indian Statistical Institute and particularly, of course, the Research and Training School, we were obviously dealing with an institution which was both conducting research and imparting training, and therefore, *prima facie* there was a case for advising the Government that it might be notified to be deemed equal to a University. I think the Institute was encouraged in making this application by the decisions of Government in two previous cases, namely, the Bangalore Institute of Science and the Institute of Agricultural Research, in New Delhi. Here it looked as if even where the combination of disciplines was apparently narrow, that is to say, science and technology in one case and agriculture in another case, both the University Grants Commission and Government were satisfied that the intermixture of disciplines inherent in their courses and scheme of teaching was wide enough to justify their being declared as Universities. But when the matter was examined in respect of the Research and Training School of the Institute in the light of a very favourable report by a visiting committee of experts sent by the Commission, although the members of the Commission readily recognised the high quality of the work that was done in the institution, although it was recognised that many Universities were glad enough to send even their post-graduate students of Mathematical Statistics to be finished, so to speak, by further training in the Research and Training School of the Indian Statistical Institute, they honestly felt that from a purely academic point of view the total range of disciplines was too narrow to permit of their advising the Central Government that the Institute might be notified as deemed equal to a University. The Visiting Committee had before it the scheme of integrated science courses to which the Director has made a reference; and it was my personal hope as that of the Director, that

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the Commission might be impressed by the wide range of the science subjects that were included as a broad background of knowledge for instruction in statistics. But the view finally prevailed that although background knowledge was good and although it was essential and although the integration of such courses was a step in the right direction on which the Institute could be congratulated and in which it could be encouraged, so to speak, it would be dangerous to include the Institute formally amongst Universities. I think it is only fair that I should state this in some detail because although the worth and the value of the Institute are well recognised in India as well as abroad, one should not allow any room for any kind of misunderstanding.

Well, then, the next matter of importance to which the Director has made a reference is also one in which, perhaps, there was room for some honest difference of opinion; and I happen to know a great deal about this not only as President of the Institute but also as the former Finance Minister of the Union of India. The original decision that the Institute should be made into an Institute of national importance with an all-India character was taken, I think, some 5 or 6 years ago. The matter did not gather much momentum in the beginning on account of various difficulties to which it is unnecessary to refer now; but during the last year or two it did seem to gather momentum, and as the Director has already told you, at one time, almost every one was agreed and there was hardly any point of difference or perhaps there was no point of difference¹. The next step to be taken according to the common agreement was that a Bill should be introduced in the Legislature; and I believe almost the period when it was likely to be introduced was settled and then suddenly from out of the blue came a little cloud, no bigger than a man's hand, which assumed enormous dimensions.

It was all over the question of audit. That is to say, it was suggested to Government that the affairs of the Institute should be audited by the persons nominated by the Auditor-General in the same way in which all other Government transactions are audited. We feel here, on behalf of the Institute, that this would be a very misconceived step. The operations of the Institute are mainly scientific in character and are not primarily administrative, and, therefore, they do not lend themselves to that kind of audit to which Government affairs have to be subjected. I agreed with the Director that this was a very important matter of principle. I was in a position to realise the strength of both the pros and the cons: and the conclusion that I reached was a deliberate conclusion, that it would not be in the interest of good scientific work and not in the interest of the Institute, if the Institute were to accept this condition that their affairs should be audited by the Auditor-General, and it was on this rock, to change the metaphor, that the ship was wrecked.

But then, as the Director has said, and again I agree with him that this apparent set-back or this retardation can perhaps be regarded as a blessing in disguise. I can personally vouch for the fact that when I was the Finance Minister, I had often to argue with the Director regarding the desirability of paying the Institute something over and above its out-of-pocket cost, in the form of supervision fees, that is to say, towards the over-head charges

¹ A Bill had been introduced in Lok Sabha in November—December 1956 in which provision had been made for the Institute accounts being continued to be audited by chartered accountants. This Bill, however, was allowed to lapse for other reasons. At the end of 1957 agreement was reached about a revised Bill.

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or expenses on facilities such as library or building which the Institute supplies and towards which Government had made a very small and, perhaps in the beginning, very insignificant contribution. This would be now possible under contract arrangements.

I think the matter should be judged not as administrative decisions on the relations of the Institute to the Government, but in the light of the importance of the work for national development that the Institute is conducting. If one is sure that no enlightened Government can now dispense with the kind of operation that is being carried out at the Institute, then one may be sure that the Institute will be continuing this work for formulation of plans or for assessing the implementation of plans, because when one requires statistics of an all-India character or with an all-India coverage or in particular sectors of some special importance there is no other body more capable and experienced in this country than the Indian Statistical Institute. For instance, filling gaps in information for national income or the conducting of the National Sample Surveys are matters which require some organization of a special nature, and if the organization is already in place, if it is well established, if it has already an excellent academic reputation, then one need have no misgivings on whether the Government of the day will be prepared to use this organization. And from what the Director has said, it will have become clear that the Government have so recognised the validity of this position and are, perhaps, now prepared to make terms, so to speak, with the Institute. I feel that if we can persuade Government finally to bring into effect this contract system, to which the Director has made a reference, then we shall be able to concentrate, as he has indicated, on maximum economy and maximum efficiency, and the creation of the wherewithal for further developing the work of the Institute.

The Director, I think, has blamed himself somewhat unduly in regard to his past inability to devote greater attention to the day-to-day operations of the Institute. This is one of the institutions which, together with the growth of national affairs, has also grown. It has grown very fast and almost out of recognition. Looking back over that vista of 14 years to which I have referred before, I find that the total expenditure of the Institute together with its Research and Training School was a little over 5 lakhs; and in 14 years it has now gone up to nearly 78 lakhs, that is to say nearly 8 million rupees. Now, this is an indication of the rapidity of the growth of the Institute which is reflected even on the surroundings and the environment here. Every year, any one who renews his visit is surprised by the additions made, new building that come up, the new storeroys that are added to this new building which looks even higher than it is, because of its reflection in the lake; and you will see acquisition of lands and new plans. Now there is nothing very abnormal in this when one realises that this is only one facet of the way in which all kinds of problems are pressing for solution in the process of the economic development of the country. The Indian Statistical Institute supplies the tools for the planners; and more and more, I think, although there is no very clear evidence of the planners' solicitude, I think in their heart of hearts they are more and more inclined to rely on the work that is turned out in the Institute. It is perhaps symbolic of this; and certainly very opportune, that this should be the moment when we should be in the process of setting up and operating, by our own workers trained by our distinguished Soviet visitors, the new Electronic URAL Computer. I forget the figures but I believe that it reduces labour to 1/800th, that is to say, for any computation that would require 800 man-hours, this machine will require only one hour. This is a measure of the importance of installing this URAL machine.

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Like the Director and the Chairman, I am very gratified by the continued response of visiting scientists to the work that is done at the Institute. It will have been clear to any one, who is attending this function today, how universal and how complete is the international character, so to speak, of this Institute. Much of the credit for the present state of development of the Institute belongs to the Director, Professor Mahalanobis (*applause*). There has both been a price to pay and reward; the reward, of course, entirely unelicited. The price to pay has been absence necessarily for studying what is happening elsewhere. One can imagine the difference which would have been made by the Director sticking to his post here and not moving at all during the last fourteen years. If he had never gone abroad, if he had never studied the statistical systems in other countries which are successfully pursuing their plans, if he had not kept touch with the march of not only statistics, but of other sciences, (you must not forget that he was a physicist to begin with and became a statistical scientist afterwards), this Institute would have remained obscure and stunted in its growth and very limited in its utility to the nation. This kind of refreshing of the spirit, I think, is very necessary. Apart from refreshing of the spirit, this kind of acquisition of knowledge—personal knowledge as to what is happening elsewhere—is also very essential for the establishment of the right perspectives. The price to be paid has been stated, namely, that there was a stage when one felt that efficiency was not as high as it might have been; and one hopes that the Director will now be able to do both things, that is to say, to continue in a certain measure with his visit to other lands and his observation of activities elsewhere and will also be able to look after more closely the work of the Institute. I suppose it must have been mentioned somewhere in this report or, at any rate, it is probably known to most of you that he has received two kinds of honour; one was his having been made a foreign member of the Academy of Sciences of USSR, a very rare honour which was shared, I think, by only about 37 people at the time (*applause*). Secondly, something which appeals more personally to the alumni of the Cambridge University where both of us were educated, he has recently been made an Honorary Fellow of his own College—King's College. But other workers in the Institute have not been entirely neglected and you are probably aware that Dr. Rao, who is the Director of the Research and Training School, has also been made a Fellow of the Institute of Mathematical Statistics, USA (*applause*).

Now all this is very gratifying indeed—gratifying in this sense that one feels that the affairs of the Institute are in good hands. I experience a certain amount of relief in saying this because again, on account of the difficulties I have mentioned before and the contradictory roles that I have had to fill, my own contact with the affairs of the Institute is not as close as I might have wished and, in any case, I am not a mathematician or statistician but only an administrative, as well as an admiring, head of the Indian Statistical Institute.

Reference has been made to the utilisation of the work of the Institute; and it is here that I feel that we have in India yet a long way to go, that is to say, there is now some realisation that the work of the Institute counts and indeed, in general terms, the work of statisticians counts; yet I doubt if any kind of an appropriate perspective has been established of the dimensions of the total work to be done in statistics. Are we spending enough money for essential statistics? What should be the right proportion of expenditure on statistics in relation to the national income or the size of the plan? These are questions which deserve serious consideration.

This is, however, not only a question of the availability of money. One may, by some good fortune, induce some Finance Minister in his weak moment to find additional

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funds for the development of statistics; but that would not furnish you with the necessary talent and that talent does not come out of the air, so to speak. It is only a product of the total system of higher education and that is where the University Grants Commission, of which I have the honour to be Chairman, comes in. In other words, unless the system of education and particularly, the system of higher education, is properly developed, there would not be sufficient potential mathematicians or potential statisticians. This is where, in a sense, there is a unity of interest between the fortunes of the Statistical Institute, between the requirements of the planning authorities and the work of the University Grants Commission.

A very gratifying aspect of the work of the Institute, of course, is the International Statistical Education Centre. It is now well-recognized that planning and economic development is not a kind of isolated or peculiar problem for any country in this part of the world. It is necessary to refer, I think logically, to the complex of problems of a similar nature that have to be handled by countries in south and south-east Asia. Because of historical and other circumstances it is very necessary that the same sort of statistical tool that we are fashioning here for India should also be fashioned for some of our neighbouring countries with which we have—so to speak—an organic, historical connexion; that is why it gladdens our heart to see that representatives of so many of our neighbouring countries are taking advantage of whatever facilities we can offer to them.

It is my hope that there will be a growing realization of the part which the Indian Statistical Institute could play, (without forcing any one to make any partisan commitments) in this process of orderly and well-thought out economic development. I believe that realisation is coming and, as it comes, I repeat, nothing will stand in the way of work coming to the Institute; and since no one is expected to carry out work of this order without necessary financial resources both for reimbursement of expenses as well as future development, I am quite confident that Government will place necessary financial resources at the disposal of the Institute. It is on this note that I should like to conclude in the hope that it will encourage the two thousand workers of the Institute, as may be, some of them might be a little anxious about their future. I myself do not have any anxieties, and I feel that the work which they are now doing with such devotion will continue and will perhaps be expanded. It was a great source of encouragement to all of us that, year after year, such a large audience gathers here to listen to our story, to hear a little more about what we have been able to do, to meet some of our friends from abroad and generally to give us encouragement, and for that I express my heartfelt gratitude to you all (*applause*).

13. In his vote of thanks Sir D. N. Mitra said :

It is my pleasant duty at the close of this pleasant function to thank our President for coming to preside at this Anniversary meeting in spite of his many engagements. I also thank you, gentlemen, for joining in this function and making it a success.

14. The meeting concluded with the singing of the National Anthem.

15. *Entertainments* : After the meeting the guests were treated to tea and light refreshments. A large number of guests visited the different sections which were specially kept open in the evening. The guests were also treated to a musical programme arranged by Institute workers. It included songs and dance recitals by the students of the International Statistical Education Centre and by the well-known *Baul* singer of Bengal—Purna Das. The film *Paras Pathar* was shown after the musical programme.

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Appendix 2 : List of Office Bearers and Members of Committees

President : Sri Chintaman D. Deshmukh

Vice-Presidents : Dr. P. N. Banerjee, M.A., D.Sc.; Professor S. N. Bose, F.R.S.; Professor D.R. Gadgil, M.A., M.Litt.; Dr. Zakir Hussain, Ph.D.; Professor D. G. Karve, M.A.; Sir Shri Ram.

THE COUNCIL : 1958-59

Chairman : Sir D. N. Mitra

Vice-Chairmen : Dr. S. K. Banerji, D.Sc.; Sri K. P. Goenka; Professor K. B. Madhava, M.A., A.I.A.; Sri S. C. Ray, M.A., B.L.; Professor N. R. Sen, M.A., D.Sc.

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

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

Joint Secretaries : Sri Nihar Chandra Chakravarti, M.A.; Sri Asokananda Das, M.Sc.; Sri Pitambar Pant, M.Sc.

Members : Sri S. K. Acharyya, Bar-at-Law; Sri Ragnath Banerjee, I.A.S.; Srimati Chameli Bose, B.Sc. (Lond); Dr. N. Das, Ph.D. (Lond); Sri V. M. Dandekar, M.A.; Sri Mohanlal Ganguli, B.Sc. (Lond); Professor H. C. Ghosh, M.A., P.R.S.; Dr. Q. M. Hussain, M.A., Ph.D.; Sri D. B. Lahiri, M.Sc.; Srimati Nirmal Kumari Mahalanobis; Sri N. T. Mathew, M.A., M.Sc.; Sri Asok Mitra, I.C.S.; Sri Samar Mitra, M.Sc.; Sri D. N. Mukherjee, M.L.A.; Sri Moni Mohan Mukherjee, M.A.; Dr. U. S. Nair, M.A., Ph.D.; Dr. C. R. Rao, M.A., Ph.D.; Sri Vishnu Sahay, I.C.S.; Dr. N. Sundararama Sastry, M.A., M.Sc., Ph.D. (Lond); Sri S. C. Sen, B.A. (Cantab); Sri Sadasiv Sengupta, B.Sc. (Lond), M.Sc. (Dacca); Sri S. P. Sinha, I.A.S. *Ex-officio members* : Sri A. Ananthapadmanabha Rau, President, Mysore State Branch; Sri Srinagabhushans, B.Sc., F.T.I., Secretary, Mysore Branch; Dr. Jivraj N. Mehta, President, Bombay Branch; Sri M. A. Telang, M.A., Joint Secretary, Bombay Branch; Professor D. P. Mukherjee, Ph.D., President, Aligarh Branch; Sri A. Salim, M.A. (Dij), M.Sc. (Lond), Secretary, Aligarh Branch.

GOVERNING BODY OF THE RESEARCH AND TRAINING SCHOOL : 1958-59

Sir D. N. Mitra, Chairman (*ex-officio*); Professor P. C. Mahalanobis, Director-Secretary (*ex-officio*); Sri Baliram Bhagat, Union Deputy Minister; Sri 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. U. S. Nair, M.A., Ph.D., (*Inter-University Board*); Mr. George Barrell, Managing Editor, Capital (Private) Ltd., (*Associated Chambers of Commerce of India*); Sri G. Basu, B.A., F.C.A., F.S.A.A., F.C.I.S., F.I.C., W.A., M.L.C., J.P., (*Federation of India Chambers of Commerce and Industry*); Dr. V. G. Panse, Ph.D., (Lond), F.N.I., Statistical Adviser, Indian Council of Agricultural Research (*National Institute of Sciences of India*); Professor S. N. Sen, M.A., Ph.D. (*Indian Economic Association*); Dr. S. K. Banerji, D.Sc.; Professor S. N. Bose, F.R.S., D.Sc.; Sri Nihar Chandra Chakravarti, M.A.; Sri K. B. Madhava, M.A., A.I.A., F.N.I.; Sri Pitambar Pant, M.Sc.; Dr. C. R. Rao, M.A., M.Sc., Ph.D. (Cantab); Sir Shri Ram (Council of the Indian Statistical Institute).

COMMITTEE OF THE GOVERNING BODY

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

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COMMITTEES OF THE COUNCIL

FINANCE COMMITTEE

Sri Shehangshu Acharyya; Sri A. Das; Dr. S. C. Law, Treasurer (*ex-officio*); Professor P. C. Mahalanobis, Honorary Secretary (*ex-officio*); Sir D. N. Mitra, Chairman (*ex-officio*); Sri D. N. Mukherjee; Sri S. C. Ray; Sri Vishnu Sahay or his representative; Sri S. C. Sen; Sri S. P. Sinha, and Sri N. C. Chakravarti, Joint Secretary (*Member-Secretary*).

JOURNAL COMMITTEE

Dr. Raghu Raj Bahadur; Dr. Debabrata Basu; Professor S. N. Bose; Dr. V. S. Huzar-bazar, Professor of Statistics, Poona University; Sri D. B. Lahiri; Professor K. B. Madhava; Professor P. C. Mahalanobis, Editor, 'Sankhya' (*ex-officio*); Sri N. T. Mathew; Sri P. C. Mathew Director, Central Statistical Organization; Sri Moni Mohan Mukherjee; Dr. V. G. Panse, representative of the Governing Body of RTS; Dr. C. R. Rao; Dr. N. S. R. Sastry, representative of the Governing Body of RTS; Dr. G. R. Seth (ICAR) and Sri A. Mahalanobis (*Member-Secretary*).

EXAMINATIONS COMMITTEE

Dr. S. K. Banerji, representative of the Governing Body; Sm. C. Bose; Sri N. C. Chakravarti; Sri V. M. Dandekar; Sri M. Ganguli; Sri N. C. Ghosh; Sri D. Y. Lele; Professor K. B. Madhava; Professor P. C. Mahalanobis; Sri N. T. Mathew; Sri P. C. Mathew, I.C.S. Director, Central Statistical Organization; Sri M. Mukherjee; Sri J. K. Pandey; Sri Pitambar Pant; Dr. C. R. Rao; Dr. J. Roy; Dr. S. N. Sen (representative of the Governing Body); Sri J. M. Sen Gupta; Sri Sadasiv Sen Gupta; Sri M. A. Telang and Sri S. Raja Rao (*Member-Secretary*).

JOINT AD HOC COMMITTEE FOR ALLOCATION OF EXPENDITURE

Professor P. C. Mahalanobis, Sri N. C. Chakravarti, Dr. C. R. Rao, Sri Vishnu Sahay and Professor K. B. Madhava.

BOMBAY BRANCH

President : Dr. Jivraj N. Mohta

Vice-Presidents : Dr. N. S. R. Sastry; Sri L. S. Vaidyanathan; Sri R. G. Saraiya.

Secretary : Sri M. A. Telang

Joint Secretary : Sri V. V. Divatia

Treasurer : Dr. D. T. Lakdawala

Members of the Executive Council : Dr. R. L. N. Iyengar; Professor M. C. Chakrabarti; Sri T. P. Venkatchari; Sri P. K. Bhaumik; Dr. V. N. Patankar.

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Joint Secretary : Sri S. K. Iyengar

Treasurer : Sri H. S. Norayana Rao

Members of the Executive Committee : Sarvasri S. K. Ekambaram; K. V. Krishna Sastry; R. Natarajan; S. K. Rana; S. M. Sundara Raju; N. S. Srinivasan.

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Appendix 3 : List of Visitors¹

Australia

- ARNDT, H. W., Professor, Canberra University College (*November 1958—February 1959*).
- DENTON, D. A., Physiology Department, University of Melbourne (*October 1958*).
- EMMENS, C. W., Professor, Department of Veterinary Physiology, University of Sydney (*February 1959*).
- KINSMAN, KENNETH, Bureau of Agricultural Economics, Canberra (*July 1958*).
- WHEELRIGHT, E. L., Professor, University of Sydney (*January 1959*).

Canada

- KEYFITZ, NATHAN, Head, Sampling Division, Dominion Bureau of Statistics (*September—December 1958*). [Colombo Plan assignment.]
- NARAYANA, T. V., Asst. Professor of Mathematics, McGill University, Montreal (*July 1958*).

Ceylon

- JAYASURIYA, J. R., Professor of Economics, University of Ceylon (*August 1958*).
- KALPAJE, F. S. C. P., Department of Agriculture, University of Ceylon (*December 1958*).

Denmark

- HENRIESEN, GUNNAR, Journalist, *Jyllands Posten* (*January 1959*).
- BOSERUP, MOGENS, Research Associate, Asian Study, 20th Century Fund; accompanied by Mrs. Boserup (*December 1958*).

France

- BERGMAN, D. Agricultural Economist, Consultant, W. Bengal Government (*September 1958*).
- DEMONT, RENÉ, Professor, UN Community Development Evaluation Mission to India (*January 1959*).

Federal Republic of Germany

- HELFRICH, CARL, Radio Editor (*February 1959*).
- HORTSMANN, KURT, Chief, Population & Cultural Statistics, Federal Statistics Office, Bonn (*October 1958*).
- SCHULTZ, WALTER, D., Radio Editor (*February 1959*).
- WENTERMANN, HANS HERBERT, Radio Editor (*February 1959*).

Hungary

- JANOSSY, L., Secretary, Hungarian Academy of Sciences (*February 1959*).

India

- ASTHANA, J. P., Chairman, Standing Committee, Business Machines Co-ordination, Central Statistical Organization (*November 1958*).
- BRAGAT, B. R., Dy. Minister of Finance, Government of India (*September 1958*).
- BRATIA, AIR VICE-MARSHAL, Ministry of Defence, Government of India (*January 1959*).
- CHANDRASEKHAR, S., Director, Indian Institute of Population Studies (*November 1958*).

¹ Those, who come on behalf of international organizations like the United Nations, have been listed separately.

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- D'Costa, A., Director, Bureau of Vocational & Educational Counselling (March 1959).
DE, P. K., Principal, West Bengal Government Agricultural College (January 1959).
DESAI, MORARJI, Finance Minister, Government of India (July 1958).
KUPPUSWAMY, D., Head, Department of Psychology, Mysore University (March 1959).
KARMAKAR, D. P., Health Minister, Government of India (December 1958).
LALITA, B. D., University Grants Commission (August 1958).
LOKANATHAN, P. S., National Council of Applied Economic Research (August 1958).
MATHEW, P. C., Director, Central Statistical Organization (December 1958).
MEER, B. VANDER, Agricultural Officer, Haringhata Farm, West Bengal (August 1958).
MENON, C. R. B., Director-General, Commercial Intelligence & Statistics (December 1958).
MEWADA, H. K., Architect & Town Planner, Assam Government (May 1958).
MUDALIAR, LAKSHMANASWAMI, Vice-Chancellor, Madras University (October 1958).
NARLIKAR, V. V., Professor of Mathematics, Banaras Hindu University (August 1958).
RANGANATHAN, S. R., PADMASREE, D.Lit., F.L.A. (May 1958).
RAJNA, B. L., Lt. Col., Director, Family Planning, Ministry of Health (September 1958).
REDIA, S. L. N., Director of Monetary Research, Reserve Bank of India (November 1958).
SINGH, T. N., Member, Planning Commission, Government of India (December 1958).
ZAREER, S. HUSSAIN, Director, Regional Research Laboratory, Hyderabad (March 1959).

Indonesia

- SWIANIEWICZ, STANISLAS, Professor, Gadjah Mada University, Jogjakarta (April 1958).

Israel

- ADLER, S., F.R.S., Professor of Parasitology, Hebrew University, Jerusalem (June 1958).

Japan

- KANAMITSU, MASATSUGU, Professor of Hygiene, Sapporo Medical College (November 1958).
KANEDA, KINJI, Research Associate, Institute of Asian Economic Affairs & Professor at
Kobe City University of Foreign Studies (March 1959).
KOBAYASHI, K., Institute of Population Problems, Ministry of Welfare (September 1958).
KUSUDA, YU, Chief, Labour Productivity Section, Ministry of Labour (March 1959).
MATUSTITA, K., Director, Institute of Statistical Mathematics (April 1958).
OHKATA, K., International House of Japan (January 1959).
OHKAWA, KAZUSHI, Hitotsubashi University, Tokyo; Director, Economic Research Insti-
tute, Economic Planning Agency, Government of Japan (September 1958).

Lebanon

- SAYIGH, Y., Director, Economic Research Institute, American University of
Beirut (September 1958).

Malaya

- AZIZ, U. A., Professor of Economics, University of Malaya; accompanied by Mrs. Aziz
(September 1958).

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Netherlands

DEREKSE, J. B. D., Netherlands Central Bureau of Statistics (*March 1958-March 1959*)
[United Nations assignment.]

SANDEE, JAN, Chief, Long-term Planning Board (*October 1967-February 1969*). [United Nations assignment.]

Pakistan

BEGGEM, J., I.C.A. Fisheries Adviser (*February 1959*).

HOSSAIN, Q. M., Professor of Statistics, Dacca University (*October & December 1958*)

Philippines

ANTONIO, L. B., Chief Statistician. Manila Railroad Company (*March 1959*).

Poland

KATZ-SUCHY, J., His Excellency, Ambassador of Poland in India (*November 1958*).

LANGE, OSKAR, Chairman. Economic Council of Poland (*February 1959*).

Sweden

ASTRAND, HALVDAN, Jordbrukets Utrednings Institute, Stockholm (*August 1958*).

HOFSTEN, ERLAND v., Chief, Statistical Division, Swedish Social Welfare Board, accompanied by Mrs. Mirre Hofsten (*October 1958-May 1959*). [I. L. O. assignment.]

THORE, S. A. O. Research Econometrician, Swedish Economic Research Institute, accompanied by Mrs. Margarette Thore (*August 1958-February 1959*).

United Kingdom

AYER, F. F. B. A., Professor of Philosophy, University College, London (*June 1958*).

BERNERS-LEE, C. M., Electronic Computer Expert, Ferranti Ltd., London (*October -November 1958*). [Colombo Plan assignment]

COLLCUT, R. H., Head, Operational Research Department, British Iron & Steel Research Association (*February 1959*).

CORNER, E. J. H., F.R.S., Department of Botany, University of Cambridge (*February 1959*).

FISHER, RONALD A., SIR, F.R.S. (*March 1959*).

HUXLEY, JULIAN, SIR, F.R.S., accompanied by LADY HUXLEY (*January 1959*).

KALDOR, N., Reader in Economics, University of Cambridge, accompanied by Mrs. Kaldor (*December 1958*).

LEARMONTH, A. T. A., Department of Geography, University of Liverpool (*August 1956-September 1958*). [Colombo Plan assignment]

MOSS, LOUIS, Director of Research, Social Survey, UK (*December 1958*).

ROBINSON, JOAN (Mrs.), Department of Economics, University of Cambridge (*September 1958*).

ROBINSON, PAMELA (Miss), Lecturer of Zoology, University College, London (*December 1958 -February 1959*). [On deputation from University College]

SMITH, HENRY, Vice-Principal, Ruskin College, Oxford (*December 1967-June 1968*). [Colombo Plan assignment]

STEWART, ALIOL, Reader in Social Medicine, Oxford University (*December 1958*).

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United States of America

- ALDEN, JOHN, Boston Public Library (*May 1958*).
- AMES, C. D., Asia-Pacific Headquarters, IBM World Trade Corporation (*June 1958*).
- BARIE, JAMES, International Division, US Bureau of Budget (*June 1958*).
- BECKER, JOSEPH, A., Director of Statistics, US Department of Agriculture (*July 1958*).
- BOOZ, PAUL, E., Economist, Harvard Advisory Group in Pakistan (*February 1959*).
- BUTTERFIELD, SAMUEL, H., International Division, US Bureau of Budget (*June 1958*).
- CAOLE, FRED, Member, Governing Board, American Institute of Biological Sciences and Chairman, Department of Zoology, Tulane University (*October 1958*).
- ELFAST, ROYAL A., US Cooperation Mission to Pakistan (*May 1958*).
- FLANAGAN, JAMES, Research Scholar, Michigan University (*June 1958*).
- FLUKER, ROBERT J., Economic Counsellor, US Embassy, New Delhi (*March 1958*).
- HARRISMAN, AVERELL, Former Governor, New York State (*February 1959*).
- KAPP, WILLIAM K., Professor of Economics, Wesleyan University, Connecticut, and Visiting Professor, Gokhale Institute of Politics and Economics, Poona (*May 1958*).
- LEHMAN, Professor of Mathematics, California University, accompanied by Mrs. Lehman (*January 1959*).
- LEVINE, SOLOMON, B., Associate Professor, Institute of Labour & Industrial Relations, University of Illinois (*February 1959*).
- NIRHILANANDA, SWAMI, Head, Ramkriehna-Vivekananda Centre, New York (*February 1959*).
- POULLADA, LEON, Officer-in-charge, Economic Affairs, South Asia, US Department of State (*December 1958*).
- RANIS, Assistant to Representative Research, Ford Foundation, Pakistan (*July 1958*).
- RAILSTON, W., Scientific & Technical Advisor, Technical Co-operation Scheme (*October 1958*).
- ROSEN, GEORGE, Economist, Massachusetts Institute of Technology (*January 1959*).
- SEIDEN, ESTHER, (MISS), College of Liberal Arts, Northwestern University, Evanston, Illinois (*October 1958-March 1959*). [International Statistical Institute assignment].
- SHREWHART, W. A., formerly of Bell Telephone Laboratories, accompanied by Mrs. Shewart (*December 1958-February 1959*).
- SPAULDING, HELEN, Director, Christian Education Research (*August 1958*).
- WORSTER, CATHERINE BAUER, (Mrs.), Department of City & Regional Planning, University of California (*March 1959*).

Union of Soviet Socialist Republics

- ASHRAF, A., Interpreter (*October 1958-February 1959*).
- BULSHAKOV, V. B., Economist (*August 1958*).
- DIATLOV, J., Chief of Shop, Computer Machines Plant, Penza (*August 1958-February 1959*).
- GORSHKOV, A., Electronics Engineer (*August 1958-February 1959*).
- GULCHAR, G., Office of Trade Representative of USSR in India (*March 1959*).
- KONDRATIEV, V., Institute of World Economy and International Relations, USSR Academy of Sciences (*April 1958*).
- KOMAROV, S., Electronics Engineer (*August 1958-February 1959*).
- KRAMARENKO, IRINA (MADAME), Interpreter (*August-November 1958*).
- KONGRANHOV, V., Representative, Tass News Agency, Delhi (*October 1958*).

INDIAN STATISTICAL INSTITUTE

- LOONTJNOV, A., Electronics Engineer (*August 1958-January 1959*).
- LOCHTCHINKIN, D., Electronics Engineer (*August 1958-February 1959*).
- LURIN, L. I., Senior Economist, Central Statistical Board (*January-April 1959*).
- MANIAKIN, V. I., Member, Central Statistical Board, (*January-April 1959*).
- OREKHOV, N., Electronics Engineer (*August 1958-February 1959*).
- SARAFILANOV, I., Interpreter (*August 1958-November 1958*).
- STRUKOV, A., Chief, National Income Unit, Planning Commission, (*January-April 1959*).
- VYSOTSKY, J., Electronics Engineer (*August 1958-February 1959*).
- STUDENIKIN, V., Office of Trade Representative of USSR in India (*March 1959*).
- TARASOV, M. M., Embassy of the USSR (*November 1958*).
- TUCHKOV, B. E., Office of Trade Representative of USSR in India (*March 1959*).

People's Republic of Viet-Nam

- TOAN, KHAN, N., Vice-Minister of Education (*February 1959*).

Yugoslavia

- MIRALOVIC, K., Director, Economic Research Institute, Belgrade (*April 1958*).
- ZARUKOVICH, S. S., Professor of Statistics, University of Belgrade (*December 1958-January 1959*).

United Nations

- AGARWALA, P. O., Chief, Customs & Travel, UNTAB, New Delhi (*December 1958*).
- DEBUNNE, O., Acting Resident Representative, UNTAB, New Delhi (*April 1958*).
- GLEBOFF, NICOLAS V., Deputy Resident Representative, UNTAB, N. Delhi (*March 1959*).
- KEEN, JAMES, UNTAA Representative, New Delhi (*December 1958*).
- KUMIN, HOWARD, Statistical Training Expert (*December 1958*).
- LEONARD, WILLIAM, R., Director, UN Statistical Office (*December 1958*).
- OLIN, ULA, (Miss), Research & Planning Division, ECAFE (*December 1958*).
- PALEKAR, M. D., Visiting Lecturer, UN Statistical Office (*January 1959*).
- PEDERSON, H., ECAFE (*February 1959*).

Food & Agricultural Organization (FAO)

- ATTEN, A. (*November 1958*).
- BABBAR, M. M., accompanied by Mrs. Babbar (*March 1959*).
- CABELLO, OCTAVIO, Co-Director, UN-FAO Training Centre in Asia & Far East in Population & Agricultural Census (*August 1958*).
- SUKHATME, P. V., Director of Statistics, FAO (*December 1958*).

International Labour Organisation (ILO)

- MEYERS, ROBERT, J., Chief Statistician (*December 1958*).
- RICHARDSON, J. H., ILO Expert in Industrial Relations (*January 1959*).

Appendix 4: Tours Abroad of P. C. Mahalanobis

Professor Mahalanobis accompanied by Mrs. Mahalanobis left India on 21 April 1958 and made a short halt in Geneva where Professor Mahalanobis took part in scientific discussions. They left Geneva on 25 April for New York where they arrived on 26 April 1958. Professor Mahalanobis attended the Tenth Session of the United Nations Statistical Commission held in New York from 28 April to 14 May 1958 as the representative of India.

After the Statistical Commission was over, Professor Mahalanobis gave lectures at various scientific centres in the United States, such as the Case Institute of Technology, Cleveland, Ohio; the University of Chicago; the North-Western University, Evanston; the University of California, Berkeley; the Stanford University, California; the University of Michigan, East Lansing; the Bell Laboratories, N. J.; Harvard University, Cambridge, Mass; the Massachusetts Institute of Technology, Cambridge; the U.S. Bureau of the Census, Washington, D.C. He also took part in many group discussions in New York and Washington, D.C. The main subjects of his talks and discussions were problems of economic development of India and other underdeveloped countries, and also technical questions relating to sample surveys and operational research.

Professor and Mrs. Mahalanobis arrived at The Hague from New York on 21 June, 1958, and stayed there till 25 June. Professor Mahalanobis delivered lectures on problems of planning for economic development at the School of Social Studies at The Hague and on flood forecasts and hydrology at the Delft Technological University. They then went to London where they stayed from 26 June to 5 July, Professor Mahalanobis attending a Conversation of the Royal Society on 26 June and the Darwin-Wallace centenary celebration at the Linnean Society on 1 July. Professor Mahalanobis had many discussions in London with scientific colleagues and also at the Central Statistical Office, the office of the Economic Adviser to His Majesty's Government, the National Research Development Council and the University College of Science.

After short halts at Brussels, where they visited the Jules-Bordet Institute of Medical Research and the International Exhibition, at Geneva, Professor and Mrs. Mahalanobis reached Warsaw on 12 July where they spent about a week as guests of the Academy of Sciences. Professor Mahalanobis gave lectures and participated in discussions in the Economic Council, the Planning Commission, the Institute of Planning and Statistics, the Institute of Economics (Academy of Sciences) and the Polish Economic Society. Professor and Mrs. Mahalanobis left Warsaw on 20 July, and after halting a night at Prague, returned to Delhi on 23 July 1958.

Professor Mahalanobis left Calcutta on 1 September 1958 and arrived at Brussels on 2 September to attend a special session of the International Statistical Institute held from 3 to 8 September. Besides presiding over the meeting of the Education Committee and a plenary session, he presented a paper on "Some Indicators for the Comparison of Level of Living over Time and Regions." After a short visit to London (September 8 to 11), and a halt of one night at Munich, he reached Kitzbuhel (near Vienna) in Austria to attend the Third Pugwash Conference of Scientists (September 13 to 19) where he presented a paper

¹ This was the third of series of meetings which have come to be called after the name of the small town in Nova Scotia (Canada) where the first of them was held, Pugwash. The first meeting arose out of a public letter, the Russell-Einstein Appeal, signed by them and nine other scientists, which was issued in July, 1955. This letter directed attention to the hazards which have arisen as a result of the development of weapons of mass destruction, and suggested that there should be a meeting of scientists, representative of a wide range of political and other opinion, to make a true and independent assessment of the dangers.

The First Pugwash Conference, held in July 1957 set up a continuing committee with Lord Russell and four others as members, with instructions to call further meetings should they appear desirable. The Second Pugwash Conference was held at Lac Beauport, Quebec, from April 26 to May 10, 1958.

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on "Relaxation of Tensions through Industrialization of the Underdeveloped Countries", and presided over one session of the Conference. With other members of the Conference he went to Vienna on the 19th and attended a public meeting of the Conference which was addressed by the President of the Austrian Republic on 20 September. He reached Moscow via Prague on 21 September and halted there till the 28th. He gave lectures on problems of economic development and on mathematical statistics at the Academy of Sciences. He also had discussions with the Director and senior staff of the Central Statistical Board, the Chairman and members of the Planning Commission, the Chairman and members of the State Commission for Foreign Economic Relations, and the President and the Vice-Presidents of the Academy of Sciences and many Soviet scientists. Some of these discussions related to economic and technical aid to India and scientific and technical cooperation between India and the USSR.

In response to two invitations from Japan, one from the International House of Japan to give a series of lectures in Japan and another to participate in the United Nations Food and Agricultural Organization (UN/FAO) Regional Census Training Centre for Asia and the Far East to be held in Tokyo, Professor Mahalanobis accompanied by Mrs. Mahalanobis, arrived at Tokyo on 13 November 1968, where both of them had a very busy programme.

Professor Mahalanobis gave lectures on mathematical statistics at the Mathematical Society of Japan (Tokyo); and the Kyushu University (Fukuoka); on problems of economic development and national planning in India, at the Kyoto University (Kyoto), the International House (Tokyo); the Tokyo University, the Kyushu University, (Fukuoka); and the Hitosobashi University; on operational research at the Japanese Union of Scientists and Engineers; and on war and peace and underdeveloped countries and on the life and work of Rabindranath Tagore at the International House, Tokyo. He also gave a course of six lectures at the UN/FAO Training Centre on analysis of errors in censuses and surveys with special emphasis on the use of inter-penetrating samples.

Professor Mahalanobis took part in many group discussions on a variety of subjects, such as, economic problems with economists and social scientists at the International House, Tokyo; the International House, Kyoto; the Tokyo University; the Indian Study Group, Tokyo; the Association for Economic Research, Kyushu; the General Council of Japanese Labour Unions, Tokyo; collaboration in long-term planning and promotion of Indo-Japanese trade, with business leaders at the Kansai Club, Osaka; the Japan Management Association, Tokyo; and the Koi-Dan-REN, Association of Manufacturers, Tokyo; Indo-Japanese cooperation in science and technology at the Science Council of Japan, Tokyo; and the statistical members of the statistical courses, Tokyo; the Statistical Standards Bureau and specialists in sample surveys and agricultural statistics in Tokyo. Professor Mahalanobis held several press conferences and took part in two special discussions arranged by the Editor-in-Chief, *Asahi Shinbun-Sha* and *Chuo Koron* magazines.

Professor Mahalanobis visited the Economic Planning Bureau on three occasions where he had discussions with the members. He also had interviews with the Minister of Planning and the Minister of Foreign Affairs.

Mrs. Mahalanobis related her reminiscences of Rabindranath Tagore at a meeting organized by the Tagore Memorial Society. She also took part in a discussion on women's status and work with representative women leaders at the International House, Tokyo, and visited several centres of women's work and handicrafts. Professor and Mrs. Mahalanobis returned to Calcutta on 12 December 1968.

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

(July 1968—October 1969)

RESEARCH AND TRAINING SCHOOL

5.1. PUBLISHED PAPERS

- P1* BHADURI, R. R. (1968) : Examples of Inconsistency of Maximum Likelihood Estimates. *Sankhyā*, 20, 207.
- P2* BASU, D. (1968) : On Sampling with and without Replacement, *Sankhyā*, 20, 287.
- P3* ——— (1968) : On Statistics Independent of Sufficient Statistics, *Sankhyā*, 20, 223.
- P4 CHAKRAVARTI I. M. and RAO, C. RADHAKRISHNA (1959) : Some Small Sample Tests of Significance in Poisson Distribution and 2x3 Contingency Tables. *Sankhyā*, 21, 315.
- P5 CHANDRASEKHAR, N. : On Plant Anticoagulants. *Jour. Ind. Medical Association*, 31, 244.
- P6 ——— : A study on the Blood Proteins of Fish. *Proc. Society Biological Chemistry*, 18, 3.
- P7 DAS, B. C. (1969) : An Experimental Investigation of Mixed Rice Cultivation and Fish Culture. *Science and Culture*, 24, 437.
- P8 ——— (1959) : Comparative Effects of 3-Indolyl-Butyric Acid, 2-3-5 Tri-Indo-Bezoic Acid and B-Naphthoxy-Acetic Acid on Flower Growth and Flower Weight of the Cauliflower (Brassicaceae). *Canad. J. Bot.*, 37.
- P9 DAS, RHEA S. (1969) : A Rapid and Reliable Method for Estimating Percentile Scores of Examination Marks and Psychometric Test Scores. *Psychological Studies*, 4, 50.
- P10 DEONARAJU, K. R. (1968) : The Visits of Insects to Different Coloured Flowers of *Lantana Camara* L., *Current Science*, 27, 452.
- P11 HALDANE, J. B. S. (1968) : The Scope of Biological Statistics, *Sankhyā*, 20, 195.
- P12 ——— : The Theory of Natural Selection Today. *Nature*, 183, 710-713.
- P13 ——— : The Present Position of Darwinism. *Journal of Scientific and Industrial Research*, 17A, 97.
- P14 ——— : The Genetic Effects of Quanta and Particles of High Energy. *Science and Culture*, 24, 18.
- P15 ——— : The Theory of Evolution Before and After Bateson. *Journal of Genetics*, 56, 11.

* Papers mentioned as being under publication in earlier reports have been indicated with an asterisk

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- I 10 HALDANE, J. B. S. : The Pre-Christian Religions of Europe. *Bulletin of R. K. Mission Institute of Culture*, June 1958, 21, 1.
- I'17 ——— : The Statistical Study of Animal Behaviour. *Trans. Bose Research Institute*, XXII, 201.
- P18 ——— : (1959) : The Analysis of Heterogeneity I. *Sankhyā*, 21, 209—216.
- P19 ——— : (with SPURWAY, H.) : The Quantitative Study of Animal Behaviour in an Approximately Steady State. In *Memoriam Methodi Popov 1958*. (Publications of the Bulgarian Academy of Science).
- P20 IYENGAR, N. S. (with KRISHNA MOORTHY, S.) : On Some Econometric Models for India. *Arthaniti*, 2, 161-173.
- P21 JAIN, S. L. (1958) : Monogenea of Indian Freshwater Fishes, VII. *Bijurohookaptor*: A New Genus of Freshwater Tetraonchinal from the Gill Filaments of two Fishes from Lucknow. *J. Parasitology (USA)*, 44, 388-394.
- P22 ——— (1959) : New Species of the Genus *Urocleidus* Mueller, 1954 from the Gill Filaments of Some Indian Fishes. *J. Zoological Society of India*, X, 155-164.
- P23 ——— (1959) : Fossil Fishes from the Kota Formation of India. *Proceedings of Geological Society*, London, 26.
- P24 ——— (1958) : Head Organ Patterns Observed in some Indian Freshwater Dactylogyrids: Trematoda Monogenea. *Current Science*, 27, 449-450.
- P25 ——— (1959) : Monogenea of Indian Freshwater Fishes VIII *Sprostonia*, a New Genus of Freshwater Tetraonchinae, with the description of four new species, from the gill filaments of fishes from Lucknow. *Parasitology (Cambridge)*, 49, 153-168.
- (P) KRISHNA MOORTHY, S. (with IYENGAR, N. S.) : On Some Econometric Models for India. *Arthaniti*, 2, 161-173.
- P26 MAHALANOBIS, P. C. (1958) : Industrialisation of under-developed countries—a Means to Peace. *Bulletin of the Atomic Scientists*, XV, 1.
- P27 ——— (1958) : A Method of Fractile Graphical Analysis with some Surmises of Results. *Trans. Bose Research Institute*, XXII, 223.
- P28 ——— (1958) : Industrialisation—a key to consolidation of independence. *Sovremennyi Vostok (Contemporary East)*, No. 12, December 1958.
- P29 ——— (1959) : Unemployment. Sectional President's address, Labour Conference, Agra, January 1959. Reprinted in *The Indian Journal of Labour Economics*, Vol. 11, No. I, 1959, 30.
- P30 ——— (1959) : Next Steps in Planning. President's Anniversary Address, National Institute of Sciences of India (1959).
- P31 ——— (1959) : Study of the Problems of Industrialization in the Underdeveloped Countries. *Sovremennyi Vostok (Contemporary East)*. No. 9; September 1959, 13—15.

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- [32] MAHALANOBIS, P. C. (1959) : Problems of Economic Development in India and other Underdeveloped Countries in Relation to World Affairs. *The Bulletin of the International House of Japan, Inc.* No- 3, 1959.
- P33 ——— (1959) : *Heralding a New Epoch. A Study of Nehru.* (A Times of India Publication, 1959).
- P34* MITRA, SUJIT KUMAR (1958) : A Multifactor Test Battery. *Education and Psychology (Delhi)*, 5, 147.
- P35 ——— (1958) : A Factor Analysis of Examination Marks. *Journal of Education and Psychology (Baroda)*, 16, 382.
- P36 ——— (1959) : A Scale of Study Habits. *Psychological Studies (Mysore)*, 47, 14.
- P37* MITRA, SUJIT KUMAR (1958) : On the Limiting Power Function of the Frequency Chi-Square Test. *Ann. Math. Stat.*, 29, 1221.
- P38* RAO, C. RADHAKRISHNA (1958) : Maximum Likelihood Estimation for the Multinomial Distribution with Infinite Number of Cells. *Sankhyā*, 20, 211.
- P39 ——— (1959) : Sur une Caractérisation de la Distribution Normale Etablie d' apres une Propriété Optimum des Estimations Linéaires. *Coll. Inter. du. C.N.R.S., France*, LXXXVII, 165.
- P40 ——— (1959) : Some Problems Involving Linear Hypotheses in Multivariate Analysis. *Biom.* 46, 49.
- P41 ——— (1959) : Expected Values of Mean Squares in the Analysis of Incomplete Block Experiments and some Comments based on them. *Sankhyā*, 27, 32.
- P42 ROBINSON, PAMELA L. (1958) : Some New Vertebrate Fossils from the Panchet Series of West Bengal. *Nature*, 182, 1722.
- P43* ROY, AMAL KUMAR (1959) (with SANYAL, UTSAB ; MURNERJEE, BISWANATH ; BHATTACHARYYA, SANAT KUMAR) : A study on Liver Function Tests. *Indian Medical Forum*, X, 1959.
- P44* ROY, J. (1958) : Step-down Procedure in Multivariate Analysis. *Ann. Math. Stat.*, 29, 1177.
- P45* ——— (1959) : A class of Two Replicate Incomplete Block Designs. *Biometrics*, 16, 259.
- P46* ROY, S. K. (1959) : The Regulation of Morphogenesis in an Oleaceous Tree, *Nyctanthes Arbor-Tristis*. *Nature*. 183, 1410.
- P47 ——— (1959) : Second Flowering in *Oryza Sativa* (var indica). *Nature*, 183, 1458.
- P48 SEN, T. K. (1958) (with KUNDU, R. N.) : Development of a New Introversion Inventory, First Report, *Psychological*, 1, 267.
- (P17)* SPURWAY, H. (with HALDANE, J. B. S.) : The Quantitative Study of Animal Behaviour in an Approximately Steady State. In *Memoria Methodi Popov 1958*. (Publication of the Bulgarian Academy of Sciences).

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- F49* VARADARAJAN, V. S. (1958): On a Problem in Measure Spaces. *Ann. Math. Stat.* 29, 1275.
- F50* ——— (1958): On a Theorem of F. Riesz Concerning the form of Linear Functionals. *Fundamenta Mathematicae*, 46, 209.
- P51 VERMA, B. K. (1959): Applied Physical Anthropology for People's Health Efficiency and Safety. *The Journal of Social Research*, II, 41.

5.2. PAPERS SUBMITTED FOR PUBLICATION

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

- S1 BEHADUR, R. R.: Simultaneous Comparison of the Sign and Optimum Tests of a Normal Mean (*Hotelling Memorial Volume*).
- S2 ———: Simultaneous Comparisons of Tests (*Ann. Math. Stat.*).
- S3 ———: Some Estimates of the Binomial Distribution Function (*Ann. Math. Stat.*).
- S4 BRAHMAOUARY, R. L.: A Class of Exact Solutions of the Combined Gravitational and Electromagnetic Field Equations of General Relativity II (*Nuovo Cimento, Italy*).
- S5 CHAKRAVARTI, J. M. (with ROY, J.): On Estimating the Mean of a Finite Population (*Ann. Math. Stat.*).
- S6 CHANDRASEKHAR, N.: Minor Proteins in Human Erythrocytes (*Jour. Ind. Medical Association*).
- S7 ———: Multiple Haemoglobins in Fish (*Nature, London*).
- S8 ———: A Direct Correlation Between α -2 Globulin Concentration and Erythrocyte Sedimentation Rate in Human Blood.
- S9 DAS, B. C.: Comparative Effects of Vitamin B₁₂, Cobalt Nitrate, and Ruminant Stomach Extract on the Survival Rate of Indian Carp during the First Three Weeks of Life (*Ind. Jour. Fisheries*).
- S10 ——— (with KRISHNAMOORTHY, H.): Comparative Effects of Yeast, Vitamin B Complex and Vitamin B₁₂ on the Survival Rate of Indian Minor Carp during the First Two Weeks of Life (*Proc. Nat. Inst. Sci.*).
- S11 DAS, RHEA, S.: Efficiency of the Ishihara Plates in Distinguishing Defects of Colour Vision (*J. Psychol. Researches*).
- S12 GODAMBE, V. P.: On the Method of Maximising the Likelihood (*Ann. Math. Stat.*).
- S13 HALDANE, J. B. S.: The Non-Violent Scientific Study of Birds (*Jour. of Bombay Natural History Society*).
- S14 ———: Genetics and Medicine (*Academy of Medical Sciences, Andhra Pradesh*).
- S15 ———: Human Physiology at High Pressure (*Journal of Aero-Medical Society of the Indian Air Force*).

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- S16 HALDANE, J. B. S.: Physiological Variation and Evolution (to be published by the University of Baroda).
- S17 IYENGAR, N. S.: On the Standard Error of the Lorenz Concentration Ratio (*Sankhyā*).
- S18 ———: On a Method of Computing the Engel Elasticities from the Concentration Curves (*Econometrica*).
- S19 ———: An Extension of Dr. Prati's "Whose Cost of Living!" (*Review of Economic Studies, Oxford*).
- S20 ——— (with KRISHNAMOORTHY, S.): On Concentration of Employment in the Major Indian Manufacturing Industries (*Indian Economic Review*).
- S21 JAIN, SOHAN LAL: Some Observations on the Monogenetic Trematodes of Indian Freshwater Fishes (*Current Science*).
- S22 ———: Three New Species of Urocleidus Muller, 1934, with Proposal of its Synonymy with *Haplocladius* Muller, 1937 (*Annals of Zoology*).
- S23 ———: Monogenea of Indian Freshwater Fishes XI, three new trematodes belonging to the genus *Dactylogyrus* Diesing, 1850 (*Proc. of First All-India Congress of Zoology, Jabalpur*).
- S24 ———: Monogenea of Indian Freshwater Fishes XII, a New Dactylogyrid Trematodes from the Gill Filaments of Cyprinidae and Gobioida hosts (*Prof. Eduardo Caballero's Jubilee Volume, Mexico*).
- S25 ———: New Dactylogyrid Parasites from the Gill Filaments of Cyprinid Fishes from India (*Zeitschrift fur Parasitenkunde, Berlin*).
- S26 JOHN, STEEBA: The Distribution of Wald's Classification Statistics, when the variance-covariance matrix is known (*Sankhyā*).
- S27 ———: The Non-Null Distribution of a certain Test Statistics (*Ann. Math. Stat.*).
- S28 ———: On the Evaluation of the Probability Integral of the Multivariate *t*-distribution (*Sankhyā*).
- S29 ———: On Errors in Discrimination (*Ann. Math. Stat.*).
- S30 ———: On the Evaluation of the Probability Integral of the Multivariate Normal Distribution (*Sankhyā*).
- S31 KALRA, P. N. (with SHARMA, K. N.): An Empirical Investigation of Job Analysis Reliability, Methods and Results (*J. Psychol. Researches*).
- S30) KRISHNAMOORTHY, H. (with DAS, B. C.): Comparative Effects of Yeast, Vitamin B complex and Vitamin B₁₂ on the Survival Rate of Indian Minor Carp during the first two weeks of life (*Nat. Inst. Sci.*).
- S32 KRISHNAMOORTHY, S. (with THORE, STEW A. O.): Accelerator Theory in Education (*Indian Economic Review*).
- (S20) ——— (with IYENGAR, N. S.): On Concentration of Employment in the Major Indian Manufacturing Industries (*Indian Economic Review*).
- S33 LEARMONTH, A. T. A. (with PAL, M. N.): A Method of Plotting Two Variables on the Same Map, using Isoleths (*Erde Kunde Geographisches Institute der Universität, Bonn.*).

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- S34 ——— : (with RAMOHANDRAN, R.): Note on the Attempt to Map Quantitatively Progress in Community Development and National Extension Blocks in Mysore State.
- S35 MITRA, SUJIT KUMAR : Some Remarks on the Missing Plot Analysis (*Sankhyā*).
- (S33) PAL, M. N. (with LEARMONTH, A. T. A.): A Method of Plotting Two Variables on the Same Map, using Isopleths (*Erde Kunde Geographisches Institute der Universität, Bonn.*).
- S36 PARTHASARATHY, K. : On Testing the Mean Function of a Discrete Linear Process (*Sankhyā*).
- (S34) RAMOHANDRAN, R. (with LEARMONTH, A. T. A.): A Note on the Attempt to Map Quantitatively, Progress in Community Development and National Extension Blocks in Mysore State.
- S37 RANGA RAO, R. (with VARADARAJAN, V. S.): A limit Theorem for Densities (*Sankhyā*).
- S38 REGIONAL SURVEY UNIT, IMRUP AND OPERATIONAL RESEARCH ASSOCIATION, BANGALORE : Haulage of Iron Ore from Bellary to Karwar, Optimum Capacity of the Harwar-Hubli Road.
- S39 ROY, J. (with ROY, S. N.): A Note on Testability in Normal Model I ANOVA and MANOVA (*Bull. Cal. Math. Soc.*).
- (S5) ROY, J. (with CHAKRAVARTI, I. M.): On Estimating the Mean of a Finite Population (*Ann. Math. Stat.*).
- S40 SETHURAMAN, J.: Some Limit Distributions Connected with Fractile Graphical Analysis (*Sankhyā*).
- S41 SHARMA, K. N. : A Review of Industrial Supervision and its Dimension (*Psychol. Studies*, 4).
- (S31) ——— (with KALRA, P. N.): An Empirical Investigation of Job Analysis Reliability, Methods and Results (*J. Psychol. Researches*).
- S42 SPURWAY, H. (with CALLAN, H. G.): The Vigour and Male Sterility of Hybrids between the species *Triturus Valgaris* and *I. Helveticus* (*Journal of Genetics*).
- (S37) VARADARAJAN, V. S. (with RANGA RAO, R.): A Limit Theorem for Densities (*Sankhyā*).

5.3. PAPERS READ AT CONFERENCES (AS YET UNPUBLISHED)

- C1 BEAT, L. S. (with DESPANDE) : Chandanpuri Valley—A Study in Geomorphology and Landuse (*Indian Council of Geographers, Delhi : Bombay Geographical Journal*).
- C2 ——— (with RAO, V. L. S. P.): Role of Geographers in Landuse Planning—Rural and Urban (*Indian Council of Geographers*).
- C3 ——— : Planning Regions in Mysore State: The Need for Readjustment of District Boundaries (*Indian Institute of Public Administration, Mysore Branch*).
- C4 CHATTERJEE, S. : A Method for Developing Stick-figure Items from Non-verbal Tests (*46th session of Ind. Sci. Cong.*).
- C5 ——— : The Relation between Manifest and Inventoried Interest of College Freshmen (*46th session of Ind. Sci. Cong.*).
- C6 ——— : (with SEN, T. K.): Development of Differential Aptitude Test Battery : a pilot study (*46th session of Ind. Sci. Cong.*).

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- C7 DAS, B. C. : A Comparative Investigation of the Growth Rate and of the Biochemistry of the Blood Proteins of the Indian Carp (*46th session of Ind. Sci. Cong.*).
- C8 DAS, RHEA S. : The Historical Development and Significance of Binocular Vision for the Theory of Colour Vision (*46th session of the Ind. Sci. Cong.*).
- C9 ——— : Quantitative Assessment of Attitudes for Social Research and National Planning (*Indian Sociological Conference, 4th session*).
- C10 DASGUPTA, S. : A Note on Weighting Response Categories (*46th session of the Ind. Sci. Cong.*).
- C11 KUMAR, A. (with SPURWAY, H.) : On Variation Under Domestication (Read at Sectional meeting on Genetics, Darwin-Wallace and Linnaeus Bi-centenary Congress, Singapore, December 1958).
- C12 MITRA, SHIB KUMAR : Series Completion Test : a test of reasoning (*46th session of the Ind. Sci. Cong.*).
- C13 ——— : Proposal of a Psychological Study of the Indian Philosophy of Life (*6th Madras Psychological Conference, 1959 : Abstract of Madras Psychological Society, 16*).
- C14 ——— : A Theoretical Model for the Psychology of Casteism (*4th session of Indian Sociological Conference*).
- C15 ——— : Problems of Psychometrics in India (*Conference of Psychologists in India, Delhi*).
- C16 PAL, M. N. (with RAO, V. L. S. P.) : Method of Classification of Towns (*46th session of the Ind. Sci. Cong.*).
- C17 RAO, C. R. : Some Comments on the Maximum Likelihood Method of Estimation (*Statistical Conference of the Royal Statistical Society held at St. Andrews, Scotland*).
- C18 ——— : Fiducial Bands and Goodness of Fit Polynomial Regression when the Variables are correlated (*International Biometric Conference held at Ottawa, Canada*).
- C19 ——— : Experimental Desigus with Restricted Randomization (*International Statistical Conference held at Brussels*).
- C20 RAO, V. L. S. P. : Urban Survey for Regional Planning, the need for approach (*Institute Planners at Jaipur : Journal of the Institute of Town Planners*).
- (C2) ——— (with BHAT, L. S.) : Role of Geographers in Landuse Planning-Rural and Urban (*Indian Council of geographers, Delhi : Bombay Geographical Journal*).
- C21 ——— : Planning Regions in Mysore State : the Need for Readjustment of District Boundaries (*Indian Institute of Public Administration, Mysore Branch*).
- (C16) ——— : (with PAL, M. N.) : Method of Classification of Towns (*46th session of the Ind. Sci. Cong.*).
- (C22) ROY, J. : Tests of Symmetry of Multivariate Normal Population and Non-Parametric Generalisations (*46th session of the Ind. Sci. Cong.*).
- C23 ROY, S. K. : Some Preliminary Results on the Genetics of Indian Cattle and Buffaloes. (*Darwin-Wallace Centenary, Singapore*).
- C24 ——— : Variation of Leaves and Flowers on the Same Plant (*Darwin-Wallace Centenary, Singapore*).
- C25 SEN, T. K. : Correction for Guessing in Items Analysis (*46th session of the Ind. Sci. Cong.*).
- (C6) SEN, T. K. (with CHATTERJI, S.) : Development of Differential Aptitude Test Battery : a pilot study (*46th session of the Ind. Sci. Cong.*).

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- C26 SETHURAMAN, J. (with SOKHATMB, B. V.): Joint Asymptotic Distribution of U-statistics and Order Statistics (*16th session of Ind. Sci. Cong.*).
- C27 SPURWAY, H.: Breathing Behaviour in Aquatic Vertebrates (Freshwater Ecology Sectional meeting, Darwin-Wallace Centenary, Singapore).
- (C11) ——— (with KUMAR, A.): On Variation Under Domestication (*Sectional meeting on Genetics, Darwin-Wallace Centenary and Linnaeus Bi-centenary Congress held at Singapore*).

5.4. WORKING PAPERS, NOTES AND REPORTS

- W1 BASU, D. (with MITRA, SHIB KUMAR): Validity of Selection on the basis of Objective Tests (a report on the selection of trainees for the Two-year Statistician's Course at the ISI).
- W2 BASUMALLIK, T.: Reliability of Essay Type Examination: A Review of Studies (mimeographed) Psychometric Studies Research Report No. R59-01.
- W3 BHAT, L. S.: Rice Land—potential in Malnad (Mysore State).
- W4 ——— (with RAO, V. L. S. P.): Technical Note on the Main Findings from the Regional Survey in Mysore State.
- W5 JAIN, SOHAN LAL: Some Fishes from Kota Beds
- W6 ———: Some Fishes from Lamenta Beds.
- W7 LEARMONTH, A. T. A. (with TEAM OF WORKERS AND COLLABORATORS: An Atlas of Resources, Mysore.
- W8 ———: Regional Synthesis, Mysore.
- W9 MUKHERJEE MANJULA: Mathematics Knowledge Tests: Graduate Level.
- W10 MATTHAI, A.: Manual on Basic Principles of Lot-sampling.
- W11 MITRA, SHIB KUMAR (with SANGAL, S. P.): Vellore-Ludhiana Medical College Admission Tests in 1958 (mimeographed) Psychometric Studies Technical Report No. T59-01.
- (W1) ——— (with BASU, D.): Validity of Selection on the Basis of Objective Tests (a report on the selection of trainees for the Two-year Statistician's Training Course of the ISI).
- W12 PAL, M. N.: Population Studies in Mysore State.
- W13 ———: Rainfall in Mysore State.
- W14 ——— (with RAMCHANDRAN, R. and RAO, V. L. S. P.): Brief Note on Dandakaranya.
- W15 RAMCHANDRAN, R.: Error in Mapping by Isoleth and Choropleth Method.
- W16 ——— (with RAO, V. L. S. P.): Delimitation of Physical and Economic Regions suitable for NSS Stratification.
- (W14) ——— (with PAL, M. N. and RAO, V. L. S. P.): Brief Note on Dandakaranya.
- W17 RAO, V. L. S. P.: Urban Survey—Mysore State.
- (W4) ——— (with BHAT, L. S.): Technical Note on the Main Findings from the Regional Survey in Mysore State.
- (W14) ——— (with PAL, M. N. and RAMCHANDRAN, R.): Brief Note on Dandakaranya.
- (W16) ——— (with RAMCHANDRAN, R.): Delimitation of Physical and Economic Regions suitable for NSS Stratification.
- W18 ROBINSON, PAMELA L. (with CHOWDHURY, T. and SMITH, A.): Geology of the Angrez-palli Outlier, Andhra Pradesh.

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- (W18) ROY CHOWDHURY, T. (with ROBINSON, PAMELA L. and SMITH, A.): Geology of the Angrez-palli Outlier, Andhra Pradesh.
- W10 ROY CHOWDHURY, T.: Reptilian Fauna of the Maleri beds.
- (W11) SANGAL, S. P. (with MITRA, SHYAM KUMAR): Vellore-Ludhiana Medical College Admission Tests in 1958 (Mimeographed). Psychometric Studies Technical Report No. T69-01.

5.5. SPECIAL LECTURES AND ADDRESSES DELIVERED BY STAFF

- L1 HALDANE, J. B. S.: The Theory of Natural Selection To-day (Presidential address to the Darwin-Wallace Centenary and Linnaeus Bi-centenary Congress, Singapore, December 1958).
- L2 ———: A Biologist Looks at Tropical Agriculture (Evening lecture at the OBI TIONG HAM HALL of the University of Malaya, December 1958).
- L3 ———: Human Physiology at High Pressure (Medical College, Singapore, December 1958).
- L4 ———: The Non-violent Scientific Study of the Birds (Bombay Natural History Society, January 1959).
- L5 ———: Physiological Variation and Evolution (Saysaji Rao Memorial lectures at Baroda University, January 1959).
- L6 ———: Human Physiology at High Pressure (Sixth Annual meeting of the Aero-medical Society of the Indian Air Force, Delhi, February 1959).
- L7 ———: Genetics and Medicine (Subba Rao Memorial Lectures (two) held under the auspices of the Andhra Pradesh Academy of Medical Sciences at Hyderabad and Guntur, April 1959).
- L8 ———: On Darwin and Wallace, Trivandrum (June 1959).
- L9 ———: On Classics, Calcutta (December 1958).
- L10 ———: The Universe (at the RTS of the ISI, March 1959).
- L11 ———: The Study of Animal Populations (Institute of Demography, Bombay, June 1960).
- L12 ———: The Study of Animal Populations (Delhi University, August 1959).
- L13 ———: The Mathematical Theory of Natural Selection (Delhi University, August 1959).
- L14 ———: The Pre-Christian Literatures of Europe (Delhi University, August 1959).
- L15 ———: Opportunities for Biological Research in Kashmir (University of Kashmir, Srinagar, June 1959).
- L16 MAHALANOBIS, P. C.: A Course of Lectures at the UN-FAO Training Centre on the analysis and interpretation of data collected by the National Sample Survey on Agriculture, Consumption, Population and Livestock and the use of Fraetile Graphical Analysis.
- L17 ———: Talk on "The Need of Scientific and Technical Man-power for Economic Development", broadcast from All-India Radio, 23 September 1959.
- L18 RAO, C. R.: Progress of Researches in Mathematical Statistics in India during the past fifty years (Golden Jubilee Celebration of the Calcutta Mathematical Society, December 1958).
- L19 ———: Industrial Experimentation (Statistical Quality Control Conference, Calcutta, December 1958).
- L20 SPURWAY, H.: On Fish Breathing Behaviour (Marine Biological Institute, Trivandrum, June 1958).

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5.6. LIST OF MANPOWER AND TECHNICAL STUDIES¹

no.	title
<i>Studies on Man-power</i>	
1.	A Report on the Coverage and Quality of Information Regarding Engineers in the National Register of Technical Personnel (April 1957).
2.	A Preliminary Study of the Pattern of Engineering Employment in Manufacturing Industries in India (May 1957).
3.	A Preliminary Study of Employment of Engineers in Electricity Supply Undertakings—Present Position and Basis for Estimating Future Requirements (July 1957).
4.	A Preliminary Study of Training and Employment of Agricultural Graduates in India (August 1957).
5.	Engineers in India : Number and Distribution, 1955 (October 1957).
6.	A Preliminary Study of Chemists and Chemical Technologists in India : 1955 (November 1957).
7.	A Preliminary Study of Physicists in India, 1955 (March 1958).
8.	Approach to Manpower Planning (April 1958).
9.	Educated Persons in India, 1955 (May 1958).
10.	Occupational Pattern in Manufacturing Industries : India 1956 (May 1958).
11.	A Study of Geologists in India : 1955 (July 1958).
12.	A Study of Biologists in India : 1955 (July 1958).
13.	A Preliminary Report on Wastage in Technical Education (May 1959).
14.	A Preliminary Report on Wastage in Agricultural Education (June 1959).
15.	Doctors in India : A Statistical Study, 1955 (August 1959).
16.	Scientists in India : A Statistical Study, 1955 (July/August 1959).
<i>Technical Studies</i>	
17.	A Study of Economic Co-efficients for Organized Industries in India.
18.	A Study of Economic Co-efficients for Small-Scale Industries in India.

Economic and statistical researches into the problems of underdeveloped economies were undertaken in 1958-59 in collaboration with Trevor Swan (Australia) and I.M.D. Little (UK) who came to India on assignments from the Centre for International Studies, Massachusetts Institute of Technology. A number of able economists have been associated with the Delhi Unit, among whom may be mentioned Tarapada Choudhuri, Jagdish Bhagwati and Vinod Prakash. H. W. Arndt (Australia) and Amartya Kumar Sen also worked for some time with this Unit in 1958 and 1959.

¹ Reports prepared by the Perspective Planning Division of the Planning Commission in collaboration with the Indian Statistical Institute (Delhi Unit).

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5.7. PUBLISHED PAPERS

1. BISWAS, A. K. : On the Marxian notion of value. *Arthaniti*, 11, 3.
2. ——— : Demand for imports under planning : some theoretical considerations. *Economic Weekly*, X, 19.
3. DAS GUPTA, S. : Production and circulation lags and capital co-efficient. *Economic Weekly*, X, 24.
4. IYENGAR, N. S. and KRISHNA MOORTHY, S. : On some econometric models for India, *Arthaniti*, 11, 2.
5. PIPLAI, T. : Freight transportation in relation to India's industrial growth. *Indian Railways*, September, 1958.
6. ——— : Some gaps in the railway plan. *Economic Affairs*, Annual, 1959.

5.8. PAPERS COMPLETED FOR PUBLICATION OR READ AT CONFERENCES

1. IYENGAR, N. S. : On the standard error of the Lorenz concentration index. Submitted to *Sankhyā*.
2. ——— : On a method of computing the Engel elasticities from the concentration curves. Submitted to *Econometrica*.
3. KANSAL, S. M. : On the deflation of the national income in India by the final expenditure approach. Read at the First Indian Conference on Research in National Income, Calcutta (June 1958).
4. MUKHERJEE, M. : On the appropriateness of the price average to be used for obtaining the value of output in agriculture. Read at the First Indian Conference on Research in National Income, Calcutta (June 1958).
5. NAQVI, S. : The rate of growth of Chinese economy. Submitted to *Economic Affairs*.
6. PRAKASH, V. : An estimate of stock of precious metals in India. Read at the First Indian Conference on Research in National Income, Calcutta (June 1958).
7. THORE, STEN A. O. and KRISHNA MOORTHY, S. : Accelerator theory in education. Submitted to the *Indian Economic Review*.

5.9. WORKING PAPERS AND NOTES

(Working paper numbers/dates of release are given in brackets)

1. AHMED, MAHFOOZ : On the level of wages during Akbar's rule (140/7 October 1958).
2. ——— (with NEOGY, K.) : The small scale industry in India in 1954-55 (163/21 April 1959).
3. BHATTACHARYA, G. C. (with SOM, R. K. and NAMROODINI, N. K.) : Type study on peak period in harvesting of *Aman* paddy, West Bengal, December 1954 to January 1955 (123/19 May 1958).
4. BISWAS, A. : Inter-industry transactions and national income (121/7 May 1958).
5. ——— : Estimation of increase in the demand for food and cereals during the Third Five Year Plan Period (167/22 May 1959).
6. BOSE, D. K. : Expenditure consumption curves for some selected consumer items (116/5 April 1958).

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7. CHAKRAVERTI, A. K. : Role of imports in the economy (estimation of technological import requirements) (130/2 October 1958).
8. ——— (with PANDE, S. B.) : On estimation of gross and net earnings of road transports in India (1954-55) (166/20 May 1959).
9. CHATTERJEE, ANIL : A note on employment and hours at work in selected services and occupations from NSS dated 141/27 October 1958).
10. ——— : Trends in labour productivity and wages in fourteen manufacturing industries (1946 to 1953) (160/2 April 1959).
11. ——— : Factor shares in national income of India, 1956-57 (171/15 June 1959).
12. CHATTERJEE, G. S. (with PAUL, G.) : Per capita consumption of food in terms of calories in the rural sector of India—An analysis (131/23 August 1958).
13. CHATTERJEE, I. : Studies on the economics of livestock industry in Indian agriculture, I (142/21 November 1958).
14. ——— : Studies on the economics of livestock industry in Indian agriculture II (154/12 March 1959).
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17. ——— : Indian's imports in the years 1949-50 to 1958 (169/30 May 1959).
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19. CHOWDHURY, P. N. : On some aspects of cost of production in Kalyanari (129/12 August 1959).
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22. DEV, B. : A note on production and cost structure of non-coal minerals in India (1954) (148/9 February 1959).
23. GHOSH, KALI CHARAN : Note on village and small industries in India—Analysis of the causes of decline and suggestions for reorganisation (135/9 September 1958).
24. IYENGOAR, N. S. : On the standard error of the Lorenz concentration index (133/4 September 1958).
25. ——— : On a method of computing the Engel elasticities from the concentration curves (146/28 January 1959).
26. ——— (with KRISHNA MOORTHY, S.) : On some econometric models for India (149/12 February 1959).
27. ——— (with KRISHNA MOORTHY, S.) : On concentration of employment in the major Indian manufacturing industries (170/15 June 1959).
28. KANRAL, S. M. : On the deflation of the national income in India by the final expenditure approach (117/21 April 1958).
29. KRISHNA MOORTHY, S. (with IYENGOAR, N. S.) : On some econometric models for India (149/12 February 1959).

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30. ——— (with IYENGAR, N. S.) : On concentration of employment in the major Indian manufacturing industries (170/15 June 1959).
31. ——— (with THORE, STEN A. O.) : Accelerator theory in education (144/14 January 1959).
32. LANGE, OSKAR : Output-investment ratio and input-output analysis (159/28 March 1959).
33. ——— : Economic planning and management in the Socialist economy of Poland (174/17 August 1959).
34. MANIAKIN, V. : Organisation of investment statistics in the USSR (151/18 February 1959).
35. ——— : Instructions on preparing statistical reports on construction (157/19 March 1959).
36. ——— : Statistics of agricultural output (165/1 May 1959).
37. MAITRA, T. : On the variations in prices between States of India (175/20 August 1959).
38. MITRA, SAMARENDRANATH (with SOM, R. K.) : A type of expenditure consumption curves (132/20 August 1958).
39. MUKHERJEE, G. P. (with DAS, PRANBANDHU) : How far "size" affects "productivity" of the industrial unit—A study of the India's major industries (153/7 March 1959).
40. MUKHERJEE, M. : On the appropriateness of the price average to be used for obtaining the value of output in agriculture (119/25 April 1958).
41. ——— : Mahalanobis Model and Price Changes (164/20 April 1959).
42. ——— : A note on the distribution of households by size classes of personal income (172/22 June 1959).
43. ——— : A note on the magnitude of the incremental net-output investment ratio in periods of rising and falling national income (176/7 September 1959).
44. ——— : A particular formulation of correlation in space (178/30 September 1959).
45. ——— : On the effect of changes in expenditure distribution on consumer demand (179/20 October 1959).
46. NAMBOODIRI, N. K. (with SOM, R. K. and BHATTACHARYA, G. C.) : Type study on peak period in harvesting of *Aman* paddy, West Bengal, December 1954 to January 1955 (123/19 May 1958).
47. NARAYAN, A. V. : A study of industrial groups for the year 1946-53 on the basis of C.I.M. (census of Indian manufactures) data (130/18 August 1958).
48. NBOOY, K. (with AHMED, MAHFOOZ) : The small scale industry in India in 1964-55 (163/21 April 1959).
49. PANDE, S. B. (with CHAKRAVERTI, A. K.) : On estimation of gross and net earnings of road transport in India (1954-55) (166/20 May 1959).
50. PAUL, G. (with CHATTERJEE, G. S.) : Per capita consumption of food in terms of calories in the rural sector of India—An analysis (131/23 August 1958).
51. ——— : Tables of Equivalents (161/9 April 1959).
52. PRIPAL, TAPAN : Industrial growth and railway freight transportation behaviour (134/6 September 1958).
53. ——— (with CHATTERJEE, N. K.) : Draft of a new classification of activities and commodities (152/23 February 1959).

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54. ———: Input-output structure in Indian Railways during 1954-55 and 1956-58 (177/24 September 1959).
55. PLANNING UNIT (CHATTERJEE, N. K., NAQVI, S., NARAYAN, A. V., AHMAD, M., and FITLI, T.) in collaboration with RUDOLPH, J.: A starting point for long range planning in India (136/15 September 1958).
56. PRAKASH, V.: An estimate of stock of precious metal (118/21 April 1958).
57. ROY, B.: A note on the relation between harvest period and annual average price (137/16 September 1958).
58. ROY, P. (with ROY, S.): Pattern of consumer expenditure: A historical study (162/13 April 1959).
59. ——— (with ROY, S.): Trends in industrial and agricultural real wages in India, 1888 to 1922 (168/30 May 1959).
60. ROY, S.: A note on the consumption pattern (138/23 September 1958).
61. ——— (with ROY, P.): Pattern of consumer expenditure: A historical study (162/13 April 1959).
62. ——— (with ROY, P.): Trends in industrial and agricultural real wages in India, 1888 to 1922 (168/30 May 1959).
63. RUDOLPH, J.: Planning and economic laws (124/20 May 1958).
64. SANDEE, J.: A long term planning model for India (116/17 April 1958).
65. ———: A demonstration planning model for India (120/29 April 1958).
66. ———: Economic data collected by NSS (122/12 May 1958).
67. SANYAL, A. K.: A note on production and utilisation of coal and costs of coal mining (1954-55) (143/4 December 1958).
68. SARKAR, DHIRENDRA NATH: A note on the productivity of the Ambar Charkha 147/5 February-1959).
69. SMITH, HENRY: The place of the private sector in the Indian economy (126/27 June 1958).
70. ———: A note on the distributive trades in India (127/30 June 1958).
71. ———: Private industry in Indian economic development (128/1 July 1958).
72. SOM, R. K. (with BHATTACHARYA, G. C. and NAMBOODIRI, N. K.): Type study on peak period in harvesting of *Amia* paddy, West Bengal, December 1954 to January 1955 (123/10 May 1958).
73. ——— (with MITRA, SAMARENDRANATH): A type of expenditure consumption curves (132/29 August 1958).
74. STRUKOV, A. P.: On the preparation of balance of the national economy for planning in the USSR (150/17 February 1959).
75. ———: Balance method and its role in the economic planning (115/15 March 1959).
76. ———: National Income estimates in the USSR (150/15 March 1959).
77. ———: The main methodological principles of planning of construction (158/19 March 1959).
78. THORE, STEN A. O. (with KRISHNA MOORTHY, S.): Accelerator theory in education (144/14 January 1959).

NATIONAL SAMPLE SURVEY

5.10. REPORTS

serial no.	title
<i>A. Published Reports</i>	
1.	The National Sample Survey General Report No. 1 on the First Round (October 1950-March 1951), <i>December 1952.</i>
2.	The National Sample Survey Report No. 2. Tables with notes on the Second Round (April-June 1951), <i>December 1953.</i>
3.	The National Sample Survey Report No. 3. Tables with notes on the Third Round (August-November, 1951), <i>March 1954.</i>
4.	The National Sample Survey Report No. 4. Survey of persons in the "Live-Register" of Delhi Employment Exchange (August-September 1953), <i>ad hoc March 1954.</i>
5.	The National Sample Survey Report No. 5. Technical Papers on some aspects of the development of the sample design. <i>March 1954.</i>
6.	The National Sample Survey Report No. 6. Survey of Faridabad Township (March-April, 1954). <i>December 1954.</i>
7.	The National Sample Survey Report No. 7. Couple fertility. Second Round (April-June, 1951) and Fourth Round (April-June 1952). <i>December 1955.</i>
8.	The National Sample Survey Report No. 8. Report on Preliminary Survey of Urban Unemployment (September 1953). <i>ad hoc March 1956.</i>
9.	The National Sample Survey Report No. 9. Sample Survey of Displaced Persons in the Urban Area of Bombay State (July-September 1953). <i>ad hoc October 1957.</i>
10.	The National Sample Survey Report No. 10. First Report on Land Holding. (Rural Sector; July 1954-March 1955). <i>February 1958.</i>
11.	The National Sample Survey Report No. 11. Report on Sample Survey of Manufacturing Industries, 1950. <i>September 1958.</i>
12.	The National Sample Survey Report No. 12. A Technical Note on Age Grouping. <i>October 1958.</i>
13.	The National Sample Survey Report No. 13. Report on Small Scale Transport Operation (7th round, October 1953-March 1954). <i>November 1958.</i>
14.	The National Sample Survey Report No. 14. Some Characteristics of the Economically Active Population. (Fourth to Seventh rounds; April 1952-March 1954). <i>March 1959.</i>
15.	The National Sample Survey Report No. 15. Report on Sample Survey of Manufacturing Industries, 1951. <i>December 1958.</i>
16.	The National Sample Survey Report No. 16. Report on Sample Survey of Employment and Unemployment (May-November 1955). <i>May 1959.</i>
17.	The National Sample Survey Report No. 17. Calcutta Employment Survey. (September 1953). <i>May 1959.</i>
18.	The National Sample Survey Report No. 18. Tables with Notes on Fourth Round Consumer Expenditure Survey (April-September 1952). <i>September 1959.</i>

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serial no.	title
<i>B. Reports awaiting publication or submitted to Government</i>	
19.	The National Sample Survey Draft Report No. 18. Sample Survey of Live-stock Census, 1956.
20.	The National Sample Survey Draft Report No. 19. Pattern Consumer Expenditure Second to Seventh Rounds (April 1951-March 1954).
21.	The National Sample Survey Draft Report No. 20. Report on Small Scale Manufacturing: Household Enterprise (October 1953-March 1954).
22.	The National Sample Survey Draft Report No. 21. Report on Small Manufacturing Establishments, Ninth Round (May-November 1955).
23.	The National Sample Survey Draft Report No. 22. Notes on Investigators Time Records, Eighth Round (July 1954-April 1955).
24.	The National Sample Survey Draft Report No. 23. Tables with Notes on the Load Utilization Survey and Crop-Cutting Experiments, Tenth Round (December 1955-May 1956).
25.	The National Sample Survey Draft Report No. 24. Report on Sample Surveys of Manufacturing Industries 1952.
26.	The National Sample Survey Draft Report No. 25 (parts 1 & 2). Some Aspects of Costs of Cultivation (major crop), Fifth to Seventh Rounds (October 1952-March 1954).
27.	The National Sample Survey Draft Report No. 26. Some Basic Information about Sample Villages, Ninth Round (May-November 1955).
28.	The National Sample Survey Draft Report No. 29. Report on Sample Survey of Manufacturing Industries 1953.
29.	The National Sample Survey Draft Report No. 30. Report on Operational Land Holdings. Rural Sector (July 1954-March 1955).
30.	The National Sample Survey Draft Report No. 31. Report on Wages, Employment, Income and Indebtedness of Agricultural Labour Households, Eleventh and Twelfth Rounds, (August 1956-August 1957).
31.	The National Sample Survey Draft Report No. 32. Tables with notes on Consumer Expenditure of Agricultural Labour Households, Eleventh and Twelfth Rounds (August 1956-August 1957).
32.	The National Sample Survey Draft Report No. 33. Report on the Ownership Aspects of Land Holdings, Rural Sector, (July 1954-March 1955).
33.	The National Sample Survey Draft Report No. 34. A Preliminary Report on Housing Conditions, Seventh Round (October 1953-March 1954).
34.	The National Sample Survey Draft Report No. 35. Tables with Notes on Household Transport Operations, Eighth to Ninth Rounds (July 1954-May 1956).
35.	The National Sample Survey Draft Report No. 36. Preliminary Estimates of Birth and Death Rates and of Rate of growth of Population, Rural Sector (June 1955-July 1956).
36.	The National Sample Survey Draft Report No. 37. Report on Household Retail Trade, Seventh to Ninth Rounds (October 1953-September 1955).

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serial no.	title
37.	The National Sample Survey Draft Report No. 38. Report on Sample Survey of Manufacturing Industries, 1954.
38.	The National Sample Survey Draft Report No. 39. Tables with Notes on Employment and Unemployment Survey (December 1955-May 1956).
39.	The National Sample Survey Draft Report No. 40. Some Results of the Land Utilisation Survey and Crop-cutting Experiments, Thirteenth Round (September 1957-May 1958).
40.	The National Sample Survey Draft Report No. 41. Some Aspect of Cost of Cultivation of Minor Cereals Crops, Pulses, Sugarcane.
41.	The National Sample Survey Draft Report No. 42. Tables with Notes on Consumer Expenditure Survey, Ninth Round, May-September 1955.
42.	The National Sample Survey Draft Report No. 43/1 Tables with notes on employment and unemployment 11th and 12th Rounds.
43.	The National Sample Survey Draft Report No. 44/1. Tables with notes on employment and unemployment 13th Round.

5.11. OTHER PUBLISHED PAPERS

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- NSS/P2. BOSE, D. K. (1959) : Marketable surplus in Co-operative farming, *Economic Weekly*, 11, April 1959.
- NSS/P3. CHATURVEDI, H. K. (1958) : Level of living of the Indian workers, *The Indian Journal of Labour Economics*, 1, No. 3
- NSS/P4. DAS GUPTA, AJIT (1959) : Types and measures of migration, *International Population Conference*, Vienna.
- NSS/P5. DATTA, DAMODAR CH. (1958) : Housing situation in India, *The Calcutta Municipal Gazette*, Vol. LXVII, No. 16, February.
- NSS/P6. ——— (1959) : Future demand for Power: A method of estimation, *Indian Journal of Power & River Valley Development*. Vol. IX, No. 8, August.
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- NSS/P8. ——— (1959) : 19th Century democracy and the capitalist economy, *Calcutta Review*, July.
- NSS/P9. MUKHERJEE, G. P. (1958) : Our industrial progress since Independence—A bird's eye view, *Economic Affairs*, Vol. III, No. 9, September.
- NSS/P10. ——— (1959) : Effect of location on the productivity aspect of jute textile industry of India, *Economic Affairs*, Vol. IV, No. 2, February.
- NSS/P11. ——— and BANERJEE, N. D. (1959) : Structure of Indian industries. I., *Economic Affairs*, Vol. IV, No. 7 July.
- NSS/P12. ——— (1959) : Structure of Indian industries. II, *Economic Affairs*, Vol. IV, No. 8, August.
- NSS/P13. MURTHY, M. N. and NANJAMMA, N. S. (1959) : Almost unbiased ratio estimates based on interpenetrating sub-sample estimates, *Sankhyā*, 21, 381-392.
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- NSS/P16. SOM, R. K. (1958) : Changing population growth rates : its effect on per capita national income, *Economic Weekly*, 1 November 1958, 1397.
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- NSS/P20. ——— and DAS, N. C. (1959) : On recall lapse in infant death reporting, *Sankhyā*, 21, 205.

5.12. PAPERS PRESENTED AT CONFERENCES OR SUBMITTED FOR PUBLICATION

- NSS/C1. CHATTERJEE, B. (1959) : Agricultural labour, enterprise and land reforms in India, (Professor Brijnarsain Memorial Volume to be edited by Dr. Gyan Chand).
- NSS/C2. ——— and SEN, A. (1958) : National accounts and secondary inflation. (First Indian Conference on National Income.) To be published in *Arthaniti*, Journal of the Department of Economics, Calcutta University.
- NSS/C3. LAHIRI, D. B. (1958) : On sampling in underdeveloped countries. (Conference of Asian Statistics, Bangkok, December 1958.)
- NSS/C4. ——— (1959) : Some points regarding the initiation of large scale sample surveys, meeting of working group of experts on sampling methods (ECAFE, Bangkok, September 1959.)
- NSS/C5. MURTHY, M. N. (1959) : Variance and confidence interval, *Sankhyā*.
- NSS/C6. ——— (1959) : A note on probability sampling. (Indian Science Congress, 1960.)
- NSS/C7. NANJAMMA, N. S. (1959) : Studies on different methods of selecting plots within a village for estimating crop acreage. (Indian Science Congress, 1960.)
- NSS/C8. SOM, R. K. and PILLAI, B. T. (1958) : Approaches to the measurement of the economically active population. (First Indian Conference on Research in National Income.)
- NSS/C9. SOM, R. K. (1959) : Population trends and problems in India. (Seminar on India's Population Problem and Economic Development, Institute for Research in Economic and Social Growth, University of Delhi.)
- NSS/C10. ——— and SEN GUPTA, S. (1959) : Survey on opinion on optimum number of children and attitude towards family planning. *Scientific Journal of Family Planning*, D.H.G.S. Government of India.

5.13. WORKING PAPERS AND NOTES

- NSS/W.1. JOSHI, K. : A note on the nature of the basic data on Large Industrial Establishments in India.
- NSS/W.2. DAS, RHRA and MITRA, S. B. : Evolution of the NSS 11th Round Training and Discussion Conference of July 1956.
- NSS/W.3. MAJUMDAR, M. : Growth of urban Delhi.

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- NSS/W.4. SARKAR, B. N. : Concept of household membership in National Sample Survey.
- NSS/W.5. SARKAR, D. N. : Baranagar : a demographic study I. Growth of population and population characteristics.
- NSS/W.6. MURTHY, M. N. and SETHI, V. K. : Self-weighting design at tabulation stage.
- NSS/W.7. SOM, R. K., PILLAI, B. T., DE, A. K. and MUKHERJEE, H. L. : A note on the testing of experimental census questionnaire of Adachi-Machi, Japan.
- NSS/W.8. DUTT MAJUMDAR, D. K. : Reliability of NSS estimates of milk and milk products.
- NSS/W.9. SANYAL, S. K., SONHA, S. K. and SARA, R. P. : Some suggestions for agricultural census 1960.
- NSS/W.10. SOM, R. K. and DE, A. K. : Rates of birth, deaths, and growth from the National Sample Survey rounds, 1953-59.
- NSS/W.11. DE, A. K. : Rates of births occurred in the household premises : NSS 13th Round (rural) : September 1957-May 1958.
- NSS/N.1. SENGUPTA, J. M. : On perimeter bias in sample cuts of small size.
- NSS/N.2. ———— On the use of motor vehicles in crop cutting surveys.
- NSS/N.3. SENGUPTA, J. M. and ROY, A. : Some studies on the estimated rates of food consumption based on household interviews with varying lengths of reference period.
- NSS/N.2. SENGUPTA, J. M., DUTTA, N. C. and ROY, S. : Experimental land utilisation surveys in cadastrally unsurveyed areas through direct plot to plot observation, Bihar 1956-57.

Appendix 6 : Electronic Computer Division

6.1. LIST OF COMPUTER PROGRAMMES

sr. no.	type of problem	sponsoring authority	numerical method and check	programmed by
1.	Selection of random numbers for systematic sampling.	NSS	—	Amal Roy
2.	Fourier analysis of constants determined for each of 18 sets of data (Time : 3 hrs. each set).	The Indian Association for the Cultivation of Science, Calcutta.	—	A. Ghosh
3.	Problems on elasticity in the form of 7×7 determinant. (Solving time : $1\frac{1}{2}$ hrs.).	The Indian Institute of Science, Bangalore.	—	-do-
4.	Five Tables of Functions	Research & Training School (ISI)	—	P. K. Mitra
5.	Seven function (algebraic and trigonometrical) analysis of each set for 600 sets of data on cosmic-ray ("Air-shower") expt. (Time : 2 mins. each set).	Physical Research Institute, Ahmedabad.	—	M. K. Paul
6.	Inversion of a matrix of order 34.	Planning Division ISI.	Orthogonalisation of column vectors & iteration.	P. K. Mitra

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sr. no.	type of problem	sponsoring authority	numerical method and check	programmed by
7.	Evaluation of Fermi-Thomas Equation : $\frac{d^2\psi}{dx^2} = -\frac{\psi^{3/2}}{x^{3/2}} \left[1 + \lambda \frac{\psi}{x} \right]^{3/2}$ for $x = .42(.04).06(.001).001$ (0.001).0001	Tata Institute of Fundamental Research, Bombay.	Step by step integration without using the first difference.	M. K. Paul
8.	Determination of latent roots of real symmetric matrices of orders : 6, 12, 16, 22 and 28.	Andhra University, Waltair.	Jacobi's method; invariance of the trace and norm under similar transformation.	-do-
9.	Determination of latent vectors of real symmetric matrices of orders : 6, 12, 16, 22 and 28.	-do-	1) Method of finite step calculation based on galey Hamilton theorem. 2) An iterative method applicable to real symmetric matrices.	-do-
10.	Computation of a trajectory of a missile with tabulated air-resistance function. Time for 135 steps at half sec. interval points : 2 1/4 hrs.	Ministry of Defence, T.D.E., Kirkee.	Modified Runge-Kutta Method : Check by difference table.	-do-
11.	Problems on systematic sampling.	NSS	—	-do-
12.	Determination of standard deviations for a large number of sets of data.	-do-	—	-do-
13.	Scrutiny of statistical data and rejection of doubtful ones by standard deviation test. Also finding the time mean.	-do-	—	A. Ray
14.	Preparation of correlation matrices of large orders.	Psychometry Unit, RTS 181.	—	P. K. Mitra
15.	Solution of a set of recursion relations.	The Jute Research Institute, Calcutta.	—	-do-
16.	Roots of a 9th degree equation with two variable parameters.	Prof. J. B. S. Haldano.	Modified Newton-Raphson method with provision for checking branch-points; convergence check for iteration.	-do-
17.	Determination of latent roots and vectors of real symmetric matrices of orders 4, 6, 8 and 8.	Saha Institute of Nuclear Physics, Calcutta University.	Jacobi's method; invariance of the trace and norm under similar transformation.	M. K. Paul

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sr. no.	type of problem	sponsoring authority	numerical method and choek	programmed by
18.	Determination of latent roots and vectors of real symmetric matrices of orders 12, 16 and latent roots of 22.	Andhra University.	-do-	-do-
19.	Determination of latent roots of a real symmetric matrix of order 7.	Banaras Hindu University.	-do-	-do-
20.	Linear programming problem by Simplexing Method.	Mr. J. Sandoo, Planning Division, ISI.	Simplexing Method.	P. K. Mitra
21.	Inversion of a matrix of order 12.	M/s. Hindusthan Aircraft, Bangalore.	Pivotal Condensation Method.	-do-
22.	Calculation of critical values for a non-parametric test.	RTS ISI.	Method based on Finite Geometry.	M. K. Paul
23.	Problem on orthogonal Latin Squares.	Dr. (Miss) E. Seiden RTS.		Dr. (Miss) E. Seiden.
24.	Iterative solution of non-linear simultaneous equations for finding the maximum likelihood estimates of O-A-B Blood group gene-frequencies.	Biometry, RTS ISI		M. K. Paul
25.	Least Square solutions of 32 linear equations involving 9 variables. A flood prediction Problem.	Dr. N. K. Bose, Flood Research Unit, ISI.	Matrix Multiplication and Sweep-out Method.	P. K. Mitra
26.	A step by step integration of the non-linear differential equation.	Tata Institute of Fundamental Research, Bombay.	Method of Runge and Kutta.	M. K. Paul

$$\frac{d^2\theta}{dx^2} = \frac{\phi(3/2)}{x^{\frac{1}{2}}} \left[1 + \lambda \left\{ 2 \frac{d}{dx} - x \left(\frac{d\theta}{dx} \right)^2 \right\} \right]^{1/2}$$

for different values of parameter.

6.2. LIST OF SUBROUTINES AVAILABLE IN THE PROGRAMME LIBRARY : HEC-2M :

1. Evaluation of the n-th root of a proper fraction.
2. Multiplication of two square Matrices upto an order of 18.
3. Evaluation of the Eigen Values of Real Symmetric Matrices upto an order of 28.
4. Calculation of the Eigen Vectors of a Real Symmetric Matrix by a finite iteration process with predetermined eigen values.
5. Inversion of Matrix upto order 16 by the pivotal condensation method.
6. Solution of Linear Equations upto a maximum of 22 variables.
7. Linear Programming by Simplexing Method for a maximum of 500 elements.
8. Calculation of the Square Root of a number.
9. Computation of sin x and cos x by the method of Chebyshev's polynomials.
10. Multiplication of Rectangular Matrices (with sum check) of orders $m \times n$ and $n \times p$ where $mn+np = 750$.

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6.3 DEVELOPMENTAL RESEARCH IN ELECTRONICS AND WORKSHOP

Direct print-unit for HEC-2M : The HEC-2M arrived with a punch-output unit to get the information in a form suitable for direct "re-feeding" of the computer which is often required in a long computation work. Later it was felt that for certain types of work a direct print output would be advantageous and would save the cost of punched cards. An adding and listing machine was purchased for a small sum, and incorporating some ingenious mechanical devices, it was possible to actuate the printing mechanisms of the adding and listing machine directly from the computer. The preliminary experiments were entirely successful and a complete printing unit is now being fabricated in the Development Workshop. This printing mechanism is expected to have 50 per cent higher speed than a tabulator, and would be a much smaller and compact unit.

Fully transistorised arithmetical and logical circuits : Work was started for developing fully transistorised arithmetical and logical circuits for a large-scale data processing machine, and an all transistorised shift register was successfully developed. Work on other circuits was in progress.

Analogue machine for the statistical analysis of telemetered data : Some preliminary investigation was started on the telemetering of physical data to explore possibilities of statistical analysis in a central computing station of data from seismographs, rain gauges etc., received through telemetering from observation posts situated far away. A Milne-Shaw seismograph which was kindly lent by Meteorological Department was installed, and a transducer for converting the minute displacements of the boom of the seismograph into electrical signals was designed and partly completed. This transducer is based on the variation of capacity actuated by the small displacement of the boom of the seismograph, which resulted in a shift in the frequency of a high frequency oscillator. The frequency shift in turn is converted into voltage-signals. A high-power transmitter was constructed from disposal surplus materials. Further investigation is in progress.

Development Workshop : Work was continued on the construction of desk calculators, and certain difficulties were overcome.

The punched card "sorter" having proved entirely successful, preliminary studies were made regarding the possibility of other mechanized processing equipment. Progress was slow because there was some uncertainty whether it would be possible to undertake batch production.

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 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 slips (called the Y-sample, after Mr. M. W. M. Yeats, 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 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. Dasgupta 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 Dasgupta (8). Further, notable contributions in this field have been made by D. B.

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Lahiri, A. Dasgupta and R. K. Som. In this connexion the work 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. Dasgupta(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 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. 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. Haldrane 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 and four in 1958-59 have been trained. In the current year one student has joined this course.

REFERENCES

1. MAHALANOBIS, P. C. (1937): The need of a sample survey of the growth of population in India, *Sankhyā*, 3.
2. LAHIRI, D. B. (1957): Studies in population sampling, Volume 1, Indian Statistical Institute, 1957.

(This report is based on the experimental study on 1041 census slips of Hazaribagh district (Bihar) carried out at the instance of the Government of India).

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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. POTTI, 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, 1958.
(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 employed 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 analysed 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.)

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9. LANINI, 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.
(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., BISWAS, S. and CHAKRABORTY, B. (1959) : A pilot health survey in West Bengal, 1955, *Sankhyā*, 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.)
16. 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., MALAKER, 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 these 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, 1957-58.
(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.)

Appendix B: Library, Central Records and Museum

Due to the use of a portion of the library for residential purposes for Professor and Mrs. J. B. S. Haldane and the consequent shortage of accommodation, the main reading room had to be closed down in September 1958 and the periodicals reading room with a seating accommodation for only 16 readers, functioned as the only reading room. Service centres were maintained at the city office at 9B Esplanade East and at Giridih.

Special Collections : Books in Russian, Japanese and Chinese languages were received through exchange agreements with learned institutions in those countries.

The collection of photo-duplicated material now consists of 248 microfilm rolls running to over 2072 feet and containing 21,984 exposures and 8,359 pages of paper prints. The number of publications in these three languages were 693,168 and 21 respectively at the end of the year.

News Clippings : Cuttings relating to statistics and economic planning in India from the important dailies and periodicals were processed and indexed. The clippings from 24 representative Indian dailies numbered 1074, bringing the total to 28,414; 1360 relevant articles were indexed from newspapers and other periodicals.

Circulating Library : 1167 workers used the circulating library which acquired 1048 Bengali, 282 English and 40 Hindi books, bringing the total to 9867 volumes. The stock was rotated among the different branches. Books issued from Calcutta and Giridih totalled 26,916 and 4897 respectively. 143 new members were enrolled compared to 260 in the previous year. About 88% of the books issued from the Calcutta centre were on fiction.

Records Unit : 332 office files and miscellaneous papers were classified and indexed. Completely processed papers now number 14,354 files. 30,000 sheets of provincial and district maps of India, sent by the Giridih Office, were arranged. The damaged maps were repaired with the help of *Kalyanari*.

Photographic Unit : Documentary work consisted of 1727 frames of microfilms, 2203 prints from microfilm and 2146 photoostat prints. The Unit took 730 photographs of important functions, visitors, guests and workers and made 1747 bromide enlargements. 300 feet of cine-film were also exposed. Other work included the preparation of 62 albums for presentation, 170 acetates, 52 lantern slides, 40 colour picture-slides and 119 photo reproductions.

Museum : The Museum was started in charge of the Library in the middle of 1956 with the object of preserving original documents, papers, correspondence, manuscripts, photographs and other materials of permanent or historical value. Letters and other original materials received from internationally known scientists, and public men are also preserved in this section. Collection of primary material proceeded satisfactorily, and processing work was steadily pursued during the year under review.

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Appendix 9: Medical Welfare Unit

The Medical Welfare Unit which is now in its fifteenth year was set up on a modest scale in February 1946. Since the shifting of the Institute's headquarters from Calcutta to Baranagar, the Unit has been making steady progress under Dr. R. Maitra, Medical Officer. The benefits of the Unit, which are available to the workers and members of their families as well as students and guests, include free consultation and service, visit to residences at subsidized fees and the supply of medicines on a cost basis. The number of workers seeking medical aid has been increasing steadily, as will be evident from the accompanying Table.

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. The anti-malarial measures, which had so far been confined to the Institute workers at Baranagar, were extended to cover the entire field staff also.

Expansion : A substantial expansion of the present medical facilities is being considered and the first step has already been taken by the appointment, during the year under review, of Dr. B. Goswami, a senior physician, as a consultant to the Unit and of two Medical Officers, Dr. S. C. Sen and Dr. A. Banerjee. The scheme of expansion includes additions and alterations 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.

Girdih : Regular medical aid, is also provided to workers at Girdih. The medical unit is in charge of Dr. N. K. Das who works on a part-time basis assisted by a full-time compounder. During the year under review, 3036 prescriptions were served and there were 355 home visits. A 50% rebate was allowed on medicine supplied to workers. A Health Home for workers was constructed at Girdih in 1958.

year	number of				value of medicines supplied
	patients	home visits	consultations, injections, etc.	prescriptions	
(1)	(2)	(3)	(4)	(5)	(6)
<i>Baranagar</i>					
1946-47	900	207	197	703	Rs. 469
1951-52	2953	385	441	2512	.. 1283
1954-55	7449	740	688	7241	.. 7877
1955-56	8819	830	757	9079	.. 10332
1956-57	10803	1114	1196	10911	.. 13497
1957-58	15139	1695	3300	18210	.. 18553
1958-59	23138	1765	7239	25186	.. 28256
<i>Girdih</i>					
1953-54	—	254	n.a.	1,552	.. 1,476
1954-55	—	293	n.a.	1,492	.. 1,930
1955-56	—	377	n.a.	9,073	.. 5,455
1956-57	—	436	1,270	2,374	.. 2,815
1957-58	—	556	4,344	3,606	.. 5,348
1958-59	—	355	5,841	5,036	.. 4,928

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Appendix: 10

10.1. INTERNATIONAL STATISTICAL EDUCATION CENTRE, CALCUTTA

Twelfth Term : July 1958-April 1959

List of trainees : Against each country is shown within brackets the number of applications received followed by a list of trainees admitted. All foreign trainees excluding three from Iran got Colombo Plan Fellowships. Trainees from Iran were awarded Government of India Fellowships.

Burma (1)

1. U. Maung Maung Tin, *Central Statistics and Economics Department, Rangoon*

Ceylon (3)

2. L. D. Mylvaganam, *Directorate of Census and Statistics, Colombo*
3. S. Joseph, *Jaffna College, Undergraduate Department of Mathematics, Vaddukottai*

India (10)

4. K. P. Singh, *Central Bureau of Economics and Statistics, Government of Bihar, Patna*
5. M. L. Malla, *Statistics Division, Directorate of Hydrology and Statistics, Central Water and Power Commission, New Delhi*
6. Ft. Lt. K. K. Chadha, *Equipment Officer, Hq. Operational Command, Palam, New Delhi*

Indonesia (6)

7. S. Boediarso, *Central Bureau of Statistics, Djakarta*
8. Ghozally, *Central Bureau of Statistics, Djakarta*
9. R. Prijono, *Central Bureau of Statistics, Djakarta*
10. S. Pranoto, *Central Bureau of Statistics, Djakarta*
11. Rasanawi, *Central Bureau of Statistics, Djakarta*

Iran (3)

12. Miss Galia Karapatian, *General Department of Public Statistics, Tehran*
13. M. Ravanpey, *General Department of Public Statistics, Tehran*
14. N. Sardari, *General Department of Public Statistics, Tehran*

Japan (2)

15. Noboru Maschida, *International Relations Unit, Statistical Standards Bureau, Tokyo*
16. Kiichio Saito, *Statistics Section, Ministry of Education, Tokyo*

Malaya (1)

17. Lee Yoke Heng, *Department of Agriculture, Kuala Lumpur*

Philippines (9)

18. Miss Angelita A. Coats, *Office of Statistical Standards, National Economic Council, Manila*
19. Dominador S. Gomez, *Office of Statistical Standards, National Economic Council, Manila*

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20. L. R. Baltazar, *Agricultural Economics Division, Dept. of Agriculture and Natural Resources, Manila*
21. I. C. Belarmino, *Agricultural Economics, Division Dept. of Agriculture and Natural Resources, Manila*
22. Miss Socorro R. Noble, *Bureau of Census and Statistics, Manila*
23. Romulo M. Alberto, *Bureau of Census and Statistics, Manila*
Singapore (1)
24. C. S. Nair, *Labour Department, Singapore*
Thailand (3)
25. Prasert Shwanachoti, *Instructor in Mathematics, Chulachomklao, Royal Military Academy, Bangkok*
26. M. L. Somsakdi Choomsai, *Instructor in Mathematics, Chulachomklao, Royal Military Academy, Bangkok*
27. Miss Wathi Naiyaphinit, *Mathematics Department, Chulalongkorn University, Bangkok*

Examinations: Following examinations were held: Pre-training Test (Knowledge of Mathematics, Statistics and Economics). Periodical Tests: Statistical Organization; Numerical Analysis; Mechanical Tabulation; Calculus; General Principles of Statistics; Probability, Frequency Distributions, Index Numbers; Sample Surveys; Projects Official Statistics: National Income; Tests of Significance. Final examination: Testing of Hypotheses; Family Budget; Sample Surveys; Tests on Subjects of specialisation.

Calendar: Number of working days, including CSO and Giridih Field training: 187

Lectures:	28 July 1958—13 December 1958
Field training at Giridih	16 December 1958—24 December 1958
General lectures, including specialisation courses	26 December 1958—11 March 1959
Training at CSO, Delhi	16 March 1959—3 April 1959.

10.2.1. OFFICERS ON DEPUTATION

The list below gives in order the names of officers on deputation, the deputing authority, subject and duration of special training at the Institute.

1. Sri Nirmal Chandra Sarkar, *Census Operations, Government of West Bengal:* population and vital statistics and sampling methods (July-September 1958).
2. Sri V. S. Narasimhaechar, *Central Mining Research Station, Dhanbad:* sampling and size analysis of air borne dust (March 1959).
3. Sri Prabhu Narain, *Institute of Social Sciences, Kashi Vidyapeeth, Varanasi:* sample surveys (applied) (March 1959).
4. Sri Uday Pratap Singh, *Assistant Professor of Mathematics, University of Gorakhpur:* Maximum likelihood estimates (May 1959).
5. Mrs. Nira Chatterjee, *Lecturer, Maharaja Bir Bikram College, Agartala, Tripura:* performance tests of intelligence in tribal and non-tribal children of Tripura (May 1959).

10.2.2. STATISTICAL OFFICERS 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, shown against each name.

1. P. R. Acharya, *Directorate of Education, Rajasthan* (6 months).
2. M. V. Aphale, *Bureau of Economics and Statistics, Bombay* (9 months; National income and regional income estimation).
3. B. S. D. Bajjal, *Central Water & Power Commission, New Delhi* (9 months; sampling theory).
4. R. N. Biswas, *Directorate General of Commercial Intelligence and Statistics, Calcutta* (9 months; machine tabulation).
5. John Chandy, *Coir Board, Kerala State* (9 months; sampling theory).
6. S. N. Chaturvedi, *Registrar General's Office, India, Ministry of Home Affairs, New Delhi* (9 months; census and vital statistics).
7. J. R. Chowdhury, *Directorate of Statistics, Assam* (9 months; economic statistics).
8. S. R. Chowdhury, *Statistical Department, Government of Assam* (9 months; economic statistics).
9. H. Dutt Majumdar, *Ministry of Irrigation & Power, Hirakud Dam Project, New Delhi* (6 months).
10. S. B. Iyer, *Director of Statistics, Kerala State* (9 months; agricultural statistics).
11. S. Jayaraman, *Neyveli Lignite Corpn. (Private), Ltd., Madras* (6 months).
12. P. N. Joshi, *Directorate of Economics and Statistics, Himachal Pradesh* (9 months; agricultural statistics).
13. C. Madappa, *Department of Statistics, Mysore State* (9 months; finance statistics).
14. Shripad Naik, *Directorate of Economics and Statistics, Madhya Pradesh* (9 months; planning statistics).
15. S. S. Sachdev, *Ministry of Irrigation and Power, New Delhi* (6 months).
16. P. K. Seth, *Directorate of Economics and Statistics, Himachal Pradesh* (9 months; economics and statistics).
17. S. K. Sinha, *Bureau of Economics and Statistics, Government of Orissa* (9 months; national and regional income computation).
18. Surinder Singh, *Ministry of Home Affairs, Government of India, New Delhi* (9 months; sampling theory).
19. V. V. Tambane, *Textile Commissioner's Office, Ministry of Commerce & Industry, Bombay* (6 months).
20. S. D. N. Verma, *Directorate of Central Bureau of Economics and Statistics, Bihar* (9 months; sampling theory).
21. V. Y. Wyawahare, *Salt Commissioner's Office, Ministry of Commerce & Industry, Bombay* (6 months).
22. Miss Santosh Wasan, *Central Statistical Organisation, Government of India, New Delhi* (6 months).

Examinations : Examinations were held on the following subjects : Numerical Mathematics; Presentation of Data; Descriptive Statistics; Economics Probability; Tests of Significance; Design of Experiments; Sample Surveys; Project work.

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10.3. RESEARCH SCHOLARS AND ADVANCED STUDENTS

(with fields of research)

1. S. S. Anant, M.A. (Psychology), (Punjab), *Industrial Psychology*.
2. Tapan Kumar Basu Mullick, M.A. (Psychology), (Calcutta), *Psychometry*.
3. R. L. Brahmachary, B.Sc. (Dacca), *Theoretical Physics and Biology*.
4. Pradyot Kumar Bhattacharyya, M.Sc. (Stat), (Calcutta), *Statistical Inference*.
5. K. P. Bhattacharyya, M.A. (Psychology), (Calcutta), *Industrial Psychology*.
6. B. S. Bhagaliwal, M.A., L.T. (Psychology), (Agra), *Industrial Psychology*.
7. Someah Dasgupta, M.Sc. (Stat), (Calcutta), *Psychometry*.
8. K. R. Drouamraju, M.Sc. (Bot), (Agra), *Genetics*.
9. V. P. Godambe, M.Sc. (Stat), Ph.D. (Stat), (London), *Statistical Inference*.
10. D. D. Joshi, M.A. (Math), Dis. Stat., D.Sc. (Stat), (Paris) *Information Theory*.
11. S. John, M.Sc. (Stat), (Travancore), *Multivariate Analysis*.
12. H. Krishnamurti, B.A. (Hons), (Math) (Madras), *Biometric Methods*.
13. R. Ranga Rao, M.A. (Math), (Madras), *Mathematical Statistics*.
14. Sudhin Roy, M.Sc. (Stat), (Cal.), *Multivariate Analysis*.
15. K. N. Sharma, M.A., L.T. (Psychology), (Agra), *Market Research*.
16. J. Sethuraman, M.A. (Stat), (Madras), *Statistical Inference*.
17. V. S. Varadarajan, M.A. (Stat), (Madras), *Probability*.

10.4. THREE-YEAR ADVANCED STATISTICIAN'S COURSE

10.4.1. THIRD YEAR

The list of the trainees, together with the fields of specialisation and in-service training and the Institution attended (if other than Indian Statistical Institute, Calcutta) for training is given below :—

Planning

- | | |
|--|---------------------------------------|
| 1. S. Krishnamurty, B.Sc. (Hons), (Travancore) | 4. T. Maitra, M.Sc. (Calcutta) |
| 2. M. K. Mani, B.Sc. (Hons), (Madras) | 5. V. Subbarao, B.A. (Hons), (Madras) |
| 3. S. B. Pande, M.Sc. (Lucknow) | 6. T. V. Grace, M.A. (Madras) |

Planning (Bureau of Economics and Statistics, Bombay)

- | | |
|---|----------------------------------|
| 7. A. V. Ramasundar, B.Sc. (Hons), (Nagpur) | 8. B. B. Chaubey, M.Sc. (Nagpur) |
|---|----------------------------------|

Techno-Economic Surveys (National Council of Applied Economic Research, New Delhi)

- | | |
|---------------------------------------|--|
| 9. S. Ramaswamy Iyer, M.Sc. (Banaras) | 10. R. Ramanathan, B.A. (Hons), (Madras) |
|---------------------------------------|--|

Applied Economics (Indian Institute of Economics, Hyderabad)

11. K. Adinarayana Murty, M.A. (Osmania)

Organization of Large-scale Sample Surveys

- | | |
|---|--|
| 12. K. J. Neelaratne, M.A. (Banaras) | 15. M. Srigirikumar, B.A. (Hons), (Travancore) |
| 13. M. Suryanarayana Murty, M.A. (Banaras) | |
| 14. P. B. Thisagarajan, B.A. (Hons), (Madras) | 16. J. Sudarsana Rao, B.Sc. (Hons), (Andhra) |
| | 17. G. Parthasarathy, B.A. (Hons), (Madras) |

¹ joined in November 1958; ² left in November 1958; ³ left in December 1958.

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Demography (Indian Statistical Institute, Calcutta)

18. C. A. Sehadri, B.A. (Hons), (Madras) 20. A. Sinha, M.Sc. (Allahabad)
19. G. Sugunakumari M.Sc. (Madras) 21. B. V. L. Narasimha Rao, B.A. (Hons),
(Madras)

Statistical Quality Control (SQC Unit, Calcutta)

22. Ram Mohan Arora, M.A. (Lucknow) 24. M. Perrajara, M.Sc. (Andhra)
23. B. S. Chandramurty, M.Sc. (Banaras) 25. M. N. Sapsa, M.Sc. (Nagpur)

Statistical Quality Control (SQC Unit, Delhi)

26. Surendra Kumar Jain, M.Sc. (Rajputana)

Statistical Quality Control (SQC Unit, Baroda)

27. N. S. Mani, B.Sc. (Hons), (Mysore)

Statistical Quality Control (SQC Unit, Bombay)

28. R. Natarajan, M.Sc. (Travancore) 29. K. Srinivasan, B.A. (Hons), (Madras)

Biometric Problems

30. V. T. Korde, M.Sc. (Nagpur)

Industrial Statistics

41. Sahana Chatterjee, M.Sc. (Agra)

Mathematical Statistics

32. B. Ramaohandran, B.A. (Hons), (Madras) 33. K. R. Parthasarathy, B.A. (Hons),
(Madras)

Psychometric Methods

34. Manjula Mukherjee, M.Sc. (Calcutta)

Statistical Methods in Sociological Research

35. N. M. Ramen, B.Sc. (Hons), (Madras)

10.4.2. SECOND YEAR

(Trainees promoted to the second year class in August 1969 listed according to the subject of specialisation during the Second year).

Planning and Econometrics

1. Chaman Lal Bamroo, M.A. (Lucknow) 6. K. Rajaraman, B.A. (Hons), (Madras)
2. Pushpa Jain, B.A. (Hons), (Delhi) 7. K. K. Rao, B.Sc. (Hons), (Andhra)
3. Prem Nath Kapoor, M.A. (Punjab) 8. Paras Nath Singh, M.Sc. (Banaras)
4. P. K. Kumaran, B.Sc. (Hons), (Travancore) 9. Mangat Ram Saluja, M.A. (Delhi)
5. R. Narayanan, B.A. (Hons), (Madras) 10. K. Madhava Sharma, B.A. (Hons),
(Andhra)

Statistical Quality Control

11. Dev Swarup Ahluwalia, B.A. (Hons), (Delhi) 14. Dharam Prakash, M.Sc. (Allahabad)
12. Aridaman Kumar Jain, B.Sc. (Hons), (Delhi) 15. Arza Keshava Rao, B.Sc. (Hons),
(Andhra)
16. N. Srinivasan, B.Sc. (Hons), (Madras)
13. K. S. Ramachandramurty, B.A. (Hons), (Andhra) 17. L. Satyanarayana, M.Sc. (Andhra)
18. Nanak Chand Tyagi, M.Sc. (Banaras)

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Genetics & Demography

19. P. Bhaskararao, M.A. (Andhra) 20. R. Thyagarajan, B.A. (Hons), (Madras)

Trainees admitted directly to the second year of the Two-year advanced course after a qualifying test (listed according to subject of specialisation).

Statistical Quality Control

1. S. M. Ali, M.Sc. (Lucknow)

Planning and Economics

2. N. Vasanthalakshmi, B.Sc. (Hons), 3. R. Kuppuswamy, B.Sc. (Hons), (Madras)
(Madras) 4. R. K. K. Thawani, M.Sc. (Nagpur)

Genetics & Demography

5. S. D. Jaykar, M.Sc. (Lucknow)

Examinations : The mid-term examination was held on the following general subjects: Design of Experiments; Multivariate Analysis; Sample Surveys; Statistical Methods; and the following special subjects: Planning and Econometrics; Statistical Quality Control and Industrial Statistics; Genetics and Health Statistics.

The final examination was held on the following general subjects:—Statistical Methods; Design of Experiments; Sample Surveys; Official Statistics; Sophistication, and the following special subjects: Planning and Econometrics; Quality Control; Operational Research and Industrial Management; Genetics and Demography.

Calendar : Total number of working days including training at the Central Statistical Organization and field training at Giridih, excluding examinations : 220

Lectures	4 August 1958 to 14 November 1958
First terminal examination	17 November 1958 to 27 November 1958
Field training at Giridih	29 November 1958 to 6 December 1958
Vacation	7 December 1958 to 4 January 1959
Lectures	5 January 1959 to 6 May 1959
Training at the Central Statistical Organization	7 May 1959 to 29 June 1959

10.4.3. FIRST YEAR

List of trainees admitted in August 1958 (degree and university are noted against each).

1. Hardip Singh Ahluwalia, M.A. (Punjab) 9. Rajagopal Jagannathan, B.A. (Hons),
(Madras)
2. Kamal Kumar Banerjee, M.Sc. (Patna) (Madras)
3. H. Raghavendra Bhat, M.A. (Madras) 10. Ganesh Kalyanasundaram, B.A. (Hons),
(Madras)
4. Ras Behari Deb Sharma, M.A. (Patna) (Madras)
5. Jyotirindra Narayan Goswami, M.A. 11. Tekumalla Krishnamurthi, B.A. (Hons)
(Banaras) (Madras)
6. P. N. Ganapathisubramanian, B.A. (Hons) 12. T. Krishnan, B.A. (Hons), (Madras)
(Madras) 13. Pushpam P. Koola, M.Sc. (Travancore)
7. R. Ganapathy, M.A. (Madras) 14. Rajendra Prasad Mehra, M.Sc. (Agra)
8. Ilindra Haragopal, M.A. (Agra) 15. Rebecca Mukherjee, M.Sc. (Calcutta)

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- | | |
|--|---|
| 16. Kothandrama Swaminatha Nataraajan, B.A. (Hons), (Madras) | 22. Thogarrathi Venkata Hanumantha Rao, B.A. (Hons), (Andhra) |
| 17. V. Lakshmi Narasimhan, B.A.(Hons) (Andhra) | 23. T. S. Govinda Rau, M.Sc. (Madras) |
| 18. Chagantya Parthasarathy, B.A. (Hons), (Andhra) | 24. Chollammal Ramaswami, B.A. (Hons) (Madras) |
| 19. Davuluri Ramakotiaish, B.A. (Hons), (Andhra) | 25. Gudimolla Sitaramacharyu, B.A. (Hons), (Venkateswara) |
| 20. Koneru Sarveswara Rao, M.Sc. (Banaras) | 26. V. Balasubramania Sarma, M.A. (Madras) |
| 21. Yermal Raghunandan Rau, M.A. (Madras) | 27. M. Thiraviam, B.A. (Hons), (Madras) |
| | 28. S. A. Meegama |

Student Seminar : As a part of their training, the first year trainees are required to undertake, in small groups, small-scale statistical investigations which involve collection of data using a proper design, statistical analysis and preparation of a report. A board of examiners examine the reports submitted and conduct a viva. List of topics for investigation, trainees in the different groups (with degrees and universities) are as follows :—

Statistical Study of Incidence of Words and Word Length in the Works of P. O. Wodehouse

- | | |
|---|---|
| 1. P. P. Ganapathysubrahmanian, B.A. (Hons), (Madras) | 2. G. Kalayanasundaram, B.A. (Hons), (Madras) |
| | 3. N. Raghavendra Bhat, M.A. (Madras) |

Socio-Economic Conditions as Determinants of Performance and Behaviour of Students of Secondary Schools

- | | |
|---|--|
| 4. Rajendra Prasad Mehra, M.Sc. (Agra) | 6. Miss Pushpam P. Koola, M.Sc. (Travancore) |
| 5. Mrs. Rebecca Mukherjee, M.Sc. (Calcutta) | 7. I. Haragopal, M.A. (Agra) |
| | 8. M. Thiraviam, B.A. (Hons), (Madras) |

Employees' Reaction to a Welfare Measure by the Employer with Special Reference to Providing Transport to Workers

- | | |
|---|--|
| 9. Miss C. Ramaswami, B.A. (Hons) (Madras) | 13. V. Balasubramanian Sarma, M.A. (Madras) |
| 10. R. Ganapathy, M.A. (Madras) | 14. R. Jagannathan, B.A. (Hons), (Madras) |
| 11. K. S. Nataraajan, B.A. (Hons), (Madras) | 15. G. Sitaramacharyulu, B.A. (Hons), (Venkateswara) |
| 12. S. A. Meegama, B.A., (Ceylon) | |

Distribution of Systolic and Diastolic Blood Pressures

- | | |
|--|--|
| 16. T. Krishnan, B.A. (Hons), (Madras) | 18. T. Krishnamurti, B.A. (Hons), (Madras) |
| 17. T. S. Govinda Rau, M.Sc. (Madras) | 19. Y. Raghunandan Rau, M.A. (Madras) |

Skill of Indian Artisans in Producing Standardised Tools

- | | |
|-----------------------------------|--|
| 20. K. K. Banerjee, M.Sc. (Patna) | 22. K. Sarbeswara Rao, M.Sc. (Banaras) |
| 21. R. B. Debesarma, M.A. (Patna) | 23. J. N. Goswami, M.A. (Banaras) |

Economics of a Shave

- | | |
|------------------------------------|---|
| 24. H. S. Ahluwalia, M.A. (Punjab) | 25. V. L. Narasimhan, B.A. (Hons), (Andhra) |
| | 26. D. Ramakotiah, B.A. (Hons), (Andhra) |

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Prediction of Scores in Examinations on the Basis of Head Measurements

27. C. Parthasarathy, B.A. (Hons), (Andhra) 28. T. V. Hanumantha Rao, B.A. (Hons), (Andhra)

Examinations: Periodical examinations were held on the following subjects: Probability; Numerical Mathematics; Descriptive Statistical Methods; Analysis of Variance; Estimation; Public Finance; Economic Statistics; Vital Statistics. The preliminary examination was held on the following subjects: Probability; Descriptive Statistics; Numerical Mathematics; General Economics; Public Finance; Statistical Orientation; Statistical Methods. The final examination was held on the following subjects: Economic Statistics; Vital Statistics; Public Finance; Indian Economics; Probability and Inference; Statistical Methods; Sophistication; Project Work.

<i>Calendar:</i> Total number of working days, excluding preparatory holidays: 25	
Lectures	4 August 1958 to 15 November 1958
Preliminary examinations	19 November 1958 to 29 November 1958
Vacation	30 November 1958 to 28 December 1958
Lectures	29 December 1958 to 6 June 1959
Preparatory holidays for examination	5 June 1959 to 13 June 1959
Final examination	15 June 1959 to 29 June 1959.

10.5. SHORT-TERM STATISTICIAN'S COURSES

10.5.1. JUNIOR COURSE: MARCH-SEPTEMBER, 1958 SESSION (Total number of working days: 84)

Examinations: Examinations were held on the following subjects: Official Statistics; Data Processing; Numerical Mathematics; Economic Statistics; Descriptive Statistics; Probability; Sample Surveys, Tests of Significance, Design of Experiments; Statistical Quality Control; Estimation.

List of successful trainees: 52 students were originally admitted, out of which 35 satisfied the minimum attendance requirements, and the following 14 were awarded certificates of successful completion of the course.

- | | |
|---|---|
| 1. Manik Chandra Ambali, B.Sc. | 8. Devendra Kumar Debnath, B.Sc. (Hons) |
| 2. Subrata Banerjee, B.Sc. (Cal) | 9. Parthasarathi Ghosh, B.Sc. (Cal) |
| 3. Sunil Kumar Bhattacharyya, B.Sc. (Cal) | 10. Pritam Bal Garg, M.Sc. (Agra) |
| 4. Tspaharan Bhattacharyya, M.Sc. (Cal) | 11. Nagendra Kumar Mondal, B.A. (Cal) |
| 5. Shyam Prasad Brahma, B.E. (Cal) | 12. Rakhal Chandra Roy |
| 6. Salil Kumar Chowdhury, B.Sc. (Hons.) (Cal) | 13. Bibhaa Chandra Sasmal, B.Sc. (Cal) |
| 7. Ashim Kumar Dutta, B.Sc. (Cal) | 14. Jitendra Kumar Verma, M.Sc. (Agra) |

10.5.2. SENIOR COURSE: MARCH-SEPTEMBER 1958 SESSION (Total number of working days: 69)

Examinations: Examinations were held on the following general subjects: Linear Estimation and Tests of Linear Hypotheses; Estimation, Statistical Quality Control and the following special subjects: Design of Experiments; Sample Surveys; Testing of Hypotheses; Statistical Quality Control.

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List of successful trainees : 18 students were originally admitted, out of which 10 satisfied the minimum attendance requirements and the following 7 were awarded certificates of successful completion of the course.

- | | |
|--|---|
| 1. Shankar Narayan Bhattacharyya, B.Sc.
(Cal) | 4. Asim Kumar Mukherjee, B.Sc. (Cal) |
| 2. Asok Kumar Guhathakurta, B.Sc. (Cal) | 5. G. Munuswamy Naidu |
| 3. Dulal Mukherjee, B.Sc. (Cal) | 6. Mrinal Kanti Samanta |
| | 7. Chandra Prakash Thareja, M.Sc. (Lucknow) |

10.5.3. JUNIOR COURSE : SEPTEMBER 1958-MARCH 1959 SESSION

(Total number of working days : 92)

Examinations : Two periodical examinations were held on Economic Statistics and Probability respectively. In the final examination the following subjects were covered : 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 and Economic Statistics. Papers V and VI : Practical.

List of successful trainees : 51 students were originally admitted, out of which 35 satisfied the minimum attendance requirements and the following 10 were awarded certificates of successful completion of the course.

- | | |
|--|---|
| 1. Rajaram Bhalchandra Bhale, B.Sc. (Poona) | 5. Jagrup Chand Gupta, B.A. (Punjab) |
| 2. Chandrasekhar Sadashib Deshpande, B.E.
(Poona) | 6. R. V. Narasimhan, B.A. (Madras) |
| 3. Nani Gopal Dutta B.Sc. (Cal) | 7. Gopal Lall Paul, B.Sc. (Hons) |
| 4. Rajendra Kumar Goswami, B.A. (Punjab) | 8. M. S. Prasanna, M.S., B.Sc. (Mysore) |
| | 9. N. Chinnam Raju, B.Sc. (Andhra) |
| | 10. Akholla Someswara Sarma, B.Sc. (Andhra) |

10.5.4. SENIOR COURSE : SEPTEMBER 1958-MARCH 1959 SESSION

(Total number of working days : 68)

Examinations : There were 7 papers in the final examination : Paper I : Algebra, Linear Estimation, Analysis of Variance and Multivariate Analysis; Paper II : Estimation, Tests of Hypothesis, Sampling Distribution; Paper IV : Statistical Quality Control; Paper V : Design of Experiments; Papers III, VI and VII : Practical.

List of successful trainees : 10 students were originally admitted, of which 6 satisfied the minimum attendance requirements, and the following five were awarded certificates of successful completion.

- | | |
|----------------------------------|---|
| 1. Samir Kumar Basu, B.Sc. (Cal) | 3. Mrityunjay Samanta, Hon. B.Sc. (Cal) |
| 2. Pritam Pal Garg, M.Sc. (Agra) | 4. Bibhas Chandra Sasmal, B.Sc. (Cal) |
| | 5. Jitendra Kumar Verma, M.Sc. (Agra) |

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10.6. ONE-YEAR EVENING COURSE IN STATISTICS, NEW DELHI

(in collaboration with the Central Statistical Organization)

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

1. Krishan Lal Ahuja, M.Sc. (*Khadi & Village Industries Commission*)
2. M. R. Ali, M.A. (*Ministry of Community Development*)
3. R. K. Bhargava, M.Sc. (*Directorate General of Posts & Telegraphs*)
4. P. P. Chawla, M.A. (*Ministry of Rehabilitation*)
5. Iswar Dayal, M.Sc. (*Economic Adviser's Office, Ministry of Commerce & Industry*)
6. Bodh Raj Gulati, M.A. (*Ministry of Education*)
7. Hari Prashad Gupta, M.A. (*Northern Railways*)
8. Ram Kishore Gupta, M.A. (*Directorate General of Civil Aviation*)
9. Dharam Das Jain, M.Sc. (*Delhi Polytechnic*)
10. Jnanendra Prasad Jain, M.Com. (*Ministry of Defence*)
11. Asvini Khmar Jagota, M.A. (*Planning Commission*)
12. Suresh Chandra Johri, M.A. (*Ministry of Defence*)
13. Raj Kumar Kapoor, M.Sc. (*Ministry of Defence*)
14. S. P. Kumar, M.A. (*Planning Commission*)
15. Jagdish Kumar, M.A. (*Economic Adviser's Office, Ministry of Commerce & Industry*)
16. Brijesh Behari Lal, M.A. (*Registrar General's Office, Ministry of Home Affairs*)
17. Brij Mohan Mahajan, M.A. (*Planning Commission*)
18. Miss Rekha Mazumdar, M.A. (*Department of Company Law Administration*)
19. Surinder Nath Narang, M.Sc. (*National Buildings Organisation*)
20. Ranbir Rai, M.A. (*Office of the Accountant General, Central Revenue*)
21. S. M. Shah, M.A. (*Planning Commission*)
22. Shriv Charan Sharma, M.A. (*Delhi Road Transport Authority*)
23. Suresh Chandra Sibal, M.A. (*Collectorate of Customs & Central Excise*)
24. Birendra Singh, M.A. (*Town Planning Organisation*)
25. Ram Lubhaya Sodhi, M.A. (*Planning Commission*)
26. P. C. Subramanian, B.A. (*Ministry of Finance*)
27. K. Sundararajan, B.A. (*Cabinet Secretariat*)
28. Prem Nath Raneja, M.Sc. (*Ministry of Irrigation & Power*)

10.7. COMPUTER'S TRAINING COURSE : JUNIOR & SENIOR

List of Trainees (degree & university are noted against each name)

JUNIOR CLASS (MORNING) : MARCH-SEPTEMBER 1958

1. Bima Kumar Debnath, I.Sc. (Cal)
2. Samir Kumar Basu, I.Sc. (Cal)
3. Samir Kumar Sarkar, I.A. (Cal)
4. Atul Krishna Paul, B.Sc. (Cal)
5. Ranjit Kumar Dey, B.A. (Cal)
6. Birendra Nath Sinha, B.Sc. (Cal)
7. V. G. Thomas, I.Sc. (Travancore)
8. Debdas Bhattacharjee, B.Sc. (Cal)
9. Kehitish Chandra Saha, I.Sc. (Cal)
10. Pramatha Nath Roy, B.Sc. (Cal)
11. Abhaya Nanda Samanta, B.Sc. (Cal)

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JUNIOR CLASS (EVENING)

- | | |
|--|---------------------------------------|
| 1. Sunil Kumar Majumder, B.Sc. (Cal) | 8. Bibhuti Bhushan Mitra, B.A. (Cal) |
| 2. Arnab Kumar Sarkar, B.Sc. (Cal) | 9. Sukhamoy Majumder, B.Sc. (Cal) |
| 3. Nirmalendu Sengupta, I.Sc. (Cal) | 10. Anup Ghosh, I.Sc. (Cal) |
| 4. Satyanarayan Chakravarti, B.Sc. (Cal) | 11. K K George, I.Sc. (Cal) |
| 5. Biswanath Bhattacharjee, B.Sc. (Cal) | 12. Sekhar Sen, I.Sc. (Cal) |
| 6. Jajneswar Chakravorti, I.Sc. (Cal) | 13. Byomkesh Chatterjee, B.Com. (Cal) |
| 7. Amalendu Chatterjee, I.Sc. (Cal) | 14. Jawaharlal Dhar, I.Sc. (Cal) |

SENIOR CLASS (EVENING) : MARCH-SEPTEMBER 1958

- | | |
|--|---|
| 1. Nripendra Chandra Sarkar, I.Sc. (Cal) | 7. Samiran Dasgupta, B.A. (Cal) |
| 2. Murari Mohan Bhattacharjee, I.Sc. (Cal) | 8. Krishna Narayan Mandal, B.Sc. (Cal) |
| 3. Ashim Kumar Dalal, B.Sc. (Cal) | 9. Barindra Nath Pal, I.Sc. (Cal) |
| 4. Susanta Kumar Mukherjee, I.Sc. (Cal) | 10. Jiban Kumar Chattopadhyaya, B.Sc. (Cal) |
| 5. Sitaram Tibrewal, I.Sc. (Cal) | 11. Dilip Banerjee, I.Sc. (Cal) |
| 6. Manzarul Hassain, B.Com. (Cal) | 12. Tapanesh Ray, I.Sc. (Cal) |
| | 13. Probbhat Kumar Khan, B.Sc. (Cal) |

JUNIOR CLASS (MORNING) : SEPTEMBER 1958-MARCH 1959

- | | |
|---|--|
| 1. Prasanta Kumar Mazumdar, I.Sc. (Cal) | 10. Indubhusan Mukherjee, B.Sc. (Cal) |
| 2. Anil Kanta Ram, I.Sc. (Cal) | 11. Pradyut Kumar Ghosh, I.Sc. (Cal) |
| 3. Tapan Kumar Banerjee, I.Com. (Cal) | 12. Balkrishna Sharma, I.Sc. (Punjab) |
| 4. Nirmal Kanti Hore, B.Com. (Cal) | 13. Pankaj Kumar Poddar, B.Sc. (Cal) |
| 5. Sisir Kumar Banerjee, I.Sc. (Cal) | 14. Nanduri Chinnam Raju, B.Sc. (Andhra) |
| 6. K. K. Menon, B.A. (Madras) | 15. Dilip Kumar Ghosh, I.Sc. (Cal) |
| 7. Sankar Roy, B.Sc. (Cal) | 16. Barendra Narayan Goswami, I.Sc. (Cal) |
| 8. Ajoy Roy, B.Sc. (Cal) | 17. D. K. Ghosh, B.Com. (Cal) |
| 9. Dilip Kumar Dhar, B.Sc. (Cal) | 18. Gobinda Chandra Mukherjee, B.Sc. (Cal) |
| | 19. Jadab Chandra Sarkar, B.A. (Cal) |

JUNIOR CLASS (EVENING)

- | | |
|--|--|
| 1. Indrani Bandopadhyay, I.Sc. (Cal) | 11. Shyam Singh Arora, B.Sc. (Cal) |
| 2. Koeshab Chandra Das, I.Com. (Cal) | 12. Gajadhar Mistry, I.Sc. (Cal) |
| 3. Rabindra Nath Kundu, I.Sc. (Cal) | 13. Praoun Kumar Mukherjee, B.Com. (Cal) |
| 4. Harendra Kumar Mazumdar, B.Sc. (Cal) | 14. Paritosh Majumdar, I.Sc. (Cal) |
| 5. Ajit Kumar Ghosh, I.Sc. (Cal) | 15. Binoyendra N. Bandopadhyay, I.Com. (Cal) |
| 6. K. N. Hariharan, B.Com. (Cal) | 16. Mathew Siddon Dutta, B.Sc. (Dacca) |
| 7. Durgaprasad Sarkar, I.A. (Cal) | 17. Bhaaskar Proasad Ghosh, B.Sc. (Cal) |
| 8. Sudhanu Ranjan Sengupta, B.Com. (Cal) | 18. Malay Chand Chatterjee, B.Sc. (Cal) |
| 9. Kamalendu Roy Sirkar, I.A. (Cal) | 19. Balai Das Bandopadhyay, M.Com. (Cal) |
| 10. Ramgopal Bhattacharyya, I.Sc. (Cal) | 20. Debeswar Mukherjee, I.Sc. (Cal) |

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10.8. NUMBER OF TRAINEES IN DIFFERENT COURSES FROM 1932 TO 1959

(Year given as academic year, June-July)

Course	1932-50	1950-51	1951-52	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	Total
I. INDIAN TRAINEES											
1. Research & Advanced Studies	25	2	3	2	8	9	12	13	12	17	103
2. One/Two/Three Year Professional Statistician's											
2.1. first year	100	12	13	16	13	16	30	33	28	27	288
2.2. second year	7	9	8	17	17	16	18	20	32	25	169
2.3. third year	—	—	—	—	—	—	—	18	25	35	78
3. Officer's Training	—	—	—	—	—	—	18	25	19	22	84
4. Short-term Statistician's											
4.1. Junior											
first 6 months	—	—	—	—	—	—	55	52	53	35	195
2nd 6 months	—	—	—	—	—	—	32	53	49	36	169
4.2. Senior											
first 6 months	—	—	—	—	—	—	—	12	10	22	
2nd 6 months	—	—	—	—	—	—	—	12	8	6	28
4.3. Evening course in New Delhi (started in March 1958)	—	—	—	—	—	—	—	—	40	41	81
5. Officers on deputation	30	3	5	13	8	8	6	6	1	5	85
6. Computer's Training											
6.1. Junior											
first 6 months	—	—	31	24	32	30	42	45	25	229	
2nd 6 months	—	—	31	30	25	35	30	45	39	39	274
6.2. Senior											
first 6 months	—	—	—	13	15	17	12	19	13	89	
2nd 6 months	—	—	—	16	16	16	19	20	15	102	
7. ISEC											
7.1. Regular courses											
first 8/9 months	—	—	10	7	15	5	10	3	3	83	
7.2. 2nd 6 months	—	3	12	5	12	—	—	—	—	32	
8. Other special courses	—	—	—	—	—	—	—	82	37	18	135
total (Indian)	162	29	82	124	143	162	269	442	442	369	2224
II. FOREIGN TRAINEES											
1. Research & Advanced Studies	1	—	1	—	—	1	1	—	1	1	6
2. Training in special fields	—	25	—	—	—	—	—	7	5	8	45
3. ISEC											
3.1. Regular courses											
1st 6/9 months	—	—	26	27	18	12	6	18	15	24	145
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	280
total (all)	163	69	137	176	173	175	276	467	463	405	2504

Note: In addition about 2500 technical apprentices and others were trained through participation in projects during the years 1932 to 1959.

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10.8.1. NUMBER OF CANDIDATES REGISTERED FOR DIFFERENT EXAMINATIONS

Centre	September 1958			March-April 1959	
	Statistician's Diploma	Computer's Certificate	Field Survey Certificate	Statistician's Diploma	Computer's Certificate
(1)	(2)	(3)	(4)	(5)	(6)
Calcutta	50	120	3	34	50
New Delhi	52	11	—	52	3
Bombay	25	—	—	14	—
Bangalore	4	1	2	8	10
Poona	8	—	—	14	—
Girdih	—	13	2	—	8
Lucknow	7	—	—	—	—
Total	146	145	7	122	71

N.B. Field Survey Certificate examinations were not held in March 1959.

Appendix 11 : List of Successful Candidates in Professional Examinations

(Roll numbers are mentioned within brackets after the name)

11.1. STATISTICIAN'S DIPLOMA EXAMINATIONS, SEPTEMBER 1958

A. GENERAL PAPERS

Paper I (Theoretical)

- | | |
|---|---|
| 1. Sarvangala Iahwara Bhat (B5), B.A.
(Banaras) | 8. Krishan Lal Kohli (D49), B.A. (Punjab) |
| 2. Sumantra Chhotubhai Desai (B20), M.A.
(Bombay) | 9. Medhukar Vithal Purohit (B18), B.Com.
(Bombay) |
| 3. Gajanan Shankar Deshpande (B10), B.So.
(Bombay) | 10. Palanki Hanumantha Rao (B18), B.A.
(Andhra) |
| 4. Jagdish Narain Garg (D43), M.A. (Delhi) | 11. Shankar Narasinha Sawaikar (B17),
B.Com. (Bombay) |
| 5. Ram Kishore Gupta (D24), M.A. (Delhi) | 12. Balakrishna Sarvethum Tellicherikar
Shenai (B4), M.A. (Bombay) |
| 6. Devendra Hajwla (D7), B.So. (Agra) | 13. Jagan Nath Taneja (D26), M.A. (Punjab) |
| 7. Pawan Jumar Jain (D4), M.Sc. (Agra) | |

INDIAN STATISTICAL INSTITUTE

Paper II (Theoretical)

1. Gopal Krishna Boveja (D3), M.A. (Punjab)
2. Parijat Kumar Bhattacharya (C28), B.Sc. (Cal)
3. Sumantrai Chhotubhai Desai (B20), M.A. (Bombay)
4. Brij Mohan Mahajan (D13), M.A. (Punjab)
5. G. Munaswamy Naidu, (C44), B.A. (Andhra)
6. Chhaki Lal Prajapat (L4), M.Sc. (Agra)
7. Srich Chandra Basu Ray (C3), B.Sc. (Cal)
8. V. R. Rajagopala Sarma (C24), M.Sc. (Kerala)
9. Rameshchandra Viswanath Thaker (B19) B.Com. (Gujerat)
10. Rajendra Kumar Tripathi (L17), M.Sc. (Allahabad)
11. T. S. Veliah (B4), B.Sc. (Madras)

Paper III (Theoretical)

1. Manghe Morandmal Ahuja (D23), M.A. (Punjab)
2. Sumantrai Chhotubhai Desai (B20), M.A. (Bombay)
3. Nikhil Ranjan Dhar (C13), B.Sc. (Cal)
4. Bhagwati Prasad Dyundi (D35), B.A. (Allahabad)
5. Jagadiah Narain Garg (D43), M.A. (Delhi)
6. Tarun Kumar Gupta (D37), M.Sc. (Gauhati)
7. Govind Bajirao Joshi (B16), M.Sc. (Bombay)
8. Brij Mohan Pal Khullar (D19), M.A. (Punjab)
9. Brij Mohan Mahajan (D13), M.A. (Punjab)
10. Shireeram Geneeh Pande (B9), M.Sc. (Bombay)
11. Surendra Kumar Soni (C28), M.Sc. (Rajputana)
12. Chandra Prakash Thareja (C43), M.Sc. (Lucknow)
13. Rajendra Kumar Tripathi (L7), M.Sc. (Allahabad)
14. T. S. Veliah (B4), B.Sc. (Madras)
15. Rajpal Singh Verma (D8), M.Sc. (Aligarh)

Paper VI (Practical)

1. Monoj Chatterjee (C10), B.A. (Cal)
2. Amslendu Sen Gupta (C38), B.Sc. (Cal)
3. Upadrasa Muralikrishna (C49), B.Sc. (Andhra)
4. Mohan Vinayak Pathak (P1), M. Com (Poona)
5. Shankar Narasinha Sawaikar (B17), B.Com (Bombay)

Paper VII (Practical)

1. Srich Chandra Basu Ray (C3) B.Sc. (Cal)
2. Kulter Singh Bedi (D6), M.A. (Punjab)
3. Pritam Pal Garg (C16), M.Sc. (Agra)
4. Govind Bajirao Joshi (B16), M.Sc. (Bombay)
5. Sudhansu Kumar Majumdar (D22), B.Sc. (Calcutta)
6. Sham Sundar Narula (D45), B.A. (Punjab)
7. Chhaki Lal Prajapat (L4), M.Sc. (Agra)
8. Narayan Kalyan Ugar (D44), B.Sc. (Poona)

TWENTYSEVENTH ANNUAL REPORT : 1958-59

B. SPBOLAL PAPERS

Papers IV and V (Theoretical)

Sample Survey (Theory)

1. Nikhil Ranjan Dhar (C13), B.Sc. (Cal.).

Sample Survey (Applied)

- | | |
|--|---|
| 1. Suraj Bandyopadhyay (C36), B.A. (Cal.) | 6. Sudhansu Kumar Majumdar (D22), B.Sc. (Cal) |
| 2. Kanwar Manmohan Singh Bedi (C31), M.A. (Punjab) | 7. Ranajit Kumar Naha (C8), B.Sc. (Cal.) |
| 4. Sudarshan Kumar Dhall (D2), B.A. (Punjab) | 8. G. Munaswamy Naidu (C44), B.A. (Andhra) |
| 4. Ram Kishore Gupta, (D24), M.A. (Delhi) | 9. Gopinath Saha (C37), B.A. (Cal.) |
| 5. Bal Ram Kohli (D38), M.A. (Punjab) | 10. Arup Ratan Sarkar (C4), B.Sc. (Cal.) |

Statistical Quality Control

- | | |
|--|--|
| 1. Mangho Morandmal Ahuja (D23), M.A. (Punjab) | 8. Asim Kumar Mookherjee (C27), B.Sc. (Cal.) |
| 2. Rabindra Nath Banerjee, (C20), B.Sc. (Cal.) | 9. G. Munaswamy Naidu (C44), B.A. (Andhra) |
| 3. Kanwar Manmohan Singh Bedi (D31), M.A. (Punjab) | 10. Shreeram Ganesh Pande (B9), M.Sc. (Bombay) |
| 4. Ranjan Kumar Bhattacharyya (C12), B.Sc. (Cal.) | 11. Gantum Sanyal (C9), B.Sc. (Cal.) |
| 5. Pran Bandhu Das (C19), B.Sc. (Cal.) | 12. Ravi Prakash Sawhney (D50), M.A. (Punjab) |
| 6. Jagdish Narain Garg (D43), M.A. (Delhi) | 13. Chandra Prakash Thareja (C43), M.Sc. (Lucknow) |
| 7. Vasant Trimbak Jumde (P8), B.Sc. (Poona) | |

Design of Experiments (Applied)

- | | |
|--|---|
| 1. Shrikant Atmaram Alavani (B7), B.Sc. (Bombay) | 2. Kharg Bahadur Singh (D16), M.A. (Punjab) |
|--|---|

Probil Analysis

1. Ramkant Govind Khazanie, (B8), M.Sc. (Bombay).

Mathematical Theory of Sampling Distributions

- | | |
|---|---|
| 1. Sris Chandra Roy (C31), M.Sc. (Dacca) | 3. Narayan Kalyan Ugar (D44), B.Sc. (Poona) |
| 2. Bharat Singh Sharma (D20), M.A. (Agra) | |

Genetics

- | | |
|---|--|
| 1. Ramkant Govind Khazanie (B8), M.Sc. (Bombay) | 2. Sham Sunder Narula (D46), B.A. (Punjab) |
|---|--|

INDIAN STATISTICAL INSTITUTE

Economic Statistics

1. Shashikant Dattatray Mathure (B25), M.Sc. (Bombay) 2. Narayan Mahabaleshwar Palekar (B15)
M.Sc. (Bombay)

Papers VIII & IX (Practical)

Sample Survey (Theory)

1. Jsgadiash Narsin (D48), M.Sc. (Lucknow).

Design of Experiments (Applied)

1. Sham Sundar Narula (D45), B.A. (Punjab) 2. Jugal Kishore Sharma (D33), B.Sc. (Delhi)
3. Chandra Prakash Thareja (C43), M.Sc. (Lucknow)

Sample Surveys (Applied)

1. Sukumar Chakravarti (C5), B.A. (Cal.) 2. Nirmal Kanti Das Gupta (C2), B.Sc. (Cal.)

Mathematical Theory of Sampling Distributions

1. *V. R. Rajagopala Sarma (C24), M.Sc. (Kerala) 2. Narayan Kalyan Ugar (D44), B.Sc. (Poona)

Genetics

1. *Sham Sundar Narula (D45), B.A. (Punjab)

Statistical Quality Control

1. *Rabindranath Banerjee (C2), B.Sc. (Cal.) 7. Ashok Kanchanlal Parikh (B24), B.Com. (Gujrat)
2. Pran Bandhu Das (C19), B.Sc. (Cal.) 8. Subir Kumar Roy (C3), B.Sc. (Cal.)
3. Dharam Vir Gulati (D34), M.A. (Punjab) 9. Shanti Sagar Tandon (D32), M.A. (Punjab)
4. Vasant Trimbak Jumde (P6), B.Sc. (Poona) 10. Rameshchandra Visvanath Thaker (B19)
B.Com. (Gujerat)
5. Asim Kumar Mookherjee (C27), B.Sc. (Cal.) 11. *Chandra Prakash Thareja (C43), M.Sc. (Lucknow)
6. *G. Munaswamy Naidu (C44), B.A. (Andhra) 12. T. S. Veliah (BB4), B.Sc. (Madras)

Economic Statistics

1. Anant Raghavendra Kulkarni (P5), B.A. (Bombay) 3. Shashikant Dattatray Mathure (B25)
M.Sc. (Bombay)
2. Sudhansu Kumar Majumdar (D22), B.Sc. (Cal.) 4. Narayan Mahabaleshwar Palekar (B15)
M.Sc. (Bombay)
5. Ashok Kanchanlal Parikh, (B24), B.Com. (Gujerat)

* Indicates Distinction in Practical Paper.

TWENTYSEVENTH ANNUAL REPORT : 1958-59

11.2. COMPUTER'S CERTIFICATE EXAMINATION, SEPTEMBER 1958

Part IA Section I

- | | |
|--|--|
| 1. Balkrishna Aggarwal (D3), I.Sc. (Punjab) | 7. Atul Krishna Pal (C4), B.Sc. (Cal.) |
| 2. Hari Bhushan Dutta (C81), I.Com. (Cal.) | 9. Somesh Chandra Saha (C75), B.Sc. (Cal.) |
| 3. Netaji Chandra Dutta (C10), I.Sc. (Cal.) | 10. Shyamal Kanti Sengupta (C30), B.Sc. (Cal.) |
| 4. *Partha Sarathi Ghosh (C85), B.Sc. (Cal.) | |
| 5. Rameswar Kundu (C116), B.Sc. (Allahabad) | 11. Raj Kumar Single (D5), B.A. (Punjab) |
| 6. Pronab Kumar Moulik (G13), B.A. (Cal.) | 12. Sushil Prakash Vohra (D10), Higher Secondary (Delhi Board) |

Part IA Section II

- | | |
|--|--|
| 1. Balkrishna Aggarwal (D3), I.Sc. (Punjab) | 12. Kalpathy Ramaier Krishnamoorthy (D7), I.Sc. (Mad.) |
| 2. Balbir Krishan Bhatia (D4), B.A. (Punjab) | 13. Rameswar Kundu (C116), B.Sc. (Allahabad) |
| 3. Nidhir Chakravarti (C56), Matric (Cal.) | 14. Krishna Narayan Mandal (Cal.) |
| 4. Deb Kumar Chatterjee (C6), B.Com. (Cal.) | 15. Viswa Nath Prasad (C113), B.Com. (Cal.) |
| 5. Giridhar Chatterjee (G3), Matric (Patna) | 16. Md. Ayub Quais (G1), Matric (Bihar Board) |
| 6. Chittaranjan Das (G12), Matric (Dacca) | 17. Pramatha Nath Roy (C40), B.Sc. (Cal.) |
| 7. Arun Kumar Dasgupta (C96), I.A. (Cal.) | 18. Raj Kumar Single (D5), B.A. (Punjab) |
| 8. Shyamalendu Ganguli (C89), B.Sc. (Cal.) | 19. Provat Kumar Sinha (G4), Matric (Patna) |
| 9. Kunja Behari Ghosh (C29), B.Com. (Cal.) | 20. Sita Ram Tibrewal (C40), B.Com. (Cal.) |
| 10. Partha Sarathi Ghosh (C85), B.Sc. (Cal.) | |
| 11. Sudhangshu Bimal Ghosh (C80), B.Sc. (Cal.) | |

Part IB Section I

- | | |
|---|--|
| 1. Deb Kumar Chatterjee (C6), B.Com. (Cal.) | 3. Santosh Kumar Ghosh (C81), B.Sc. (Cal.) |
| 2. Suresh Ranjan Debnath (C92), S.F. (W.B. Board) | 4. Ram Chandra Mitra (C97), I.Sc. (Cal.) |

Part IB Section II

- | | |
|---|---|
| 1. Shib Shadhan Banerjee (C59), I.Sc. (Cal.) | 5. Biswanath Ghosh (C16), B.Sc. (Cal.) |
| 2. Nirmal Krishna Chaudhuri (C36), B.Sc. (Cal.) | 6. Somesh Chandra Saha (C75), B.Sc. (Cal.) |
| 3. Sakti Kumar Chowdhury (G7), I.Sc. (Cal.) | 7. Bibhas Chandra Sasmal (C7), B.Sc. (Cal.) |
| 4. Nagendra Chandra Das (C76), B.A. (Cal.) | 8. Sanat Kumar Sen (G2), Matric (Bihar Board) |

Part IC Section I

- | | |
|---|---|
| 1. Badal Basu Mallick (C63), B.A. (Cal.) | 5. Parimal Mukhopadhyaya (C73), I.Com. (Cal.) |
| 2. Debabrata Chanda (C62), B.Com. (Cal.) | 6. Kalidas Neogy (C95), B.Sc. (Cal.) |
| 3. Biswadhan Chatterjee (C57), (Cal.) | 7. Subodh Kumar Palit (G5), Matric (Patna) |
| 4. Amarendra Nath Ghosh (C60), I.Sc. (Cal.) | 8. Tinkari Pal (C51), Matric (Cal.) |

* Indicates Distinction in Practical Paper.

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Part IC Section II

- | | |
|---|---|
| 1. Sunil Kumar Bhattacharyya (C100), B.Sc. (Cal.) | 4. Parimal Mukhopadhyay (O73), I.Com. (Cal.) |
| 2. Selli Kumar Das (C86), I.Sc. (Cal.) | 5. Subodh Kumar Palit (G6), <i>Matric</i> (Patna) |
| 3. Amarendra Nath Ghosh (C80), I.Sc. (Cal.) | |

11.3. STATISTICAL FIELD SURVEYS CERTIFICATE EXAMINATION,
SEPTEMBER 1958

Part I Section C: 1. Sudhir Kumar Das Gupta (C1), I.A. (Calcutta).

Part 2 Section A: 1. *M. V. Suryanarayana Sastry (BB₁), B.A. (Mysore).

Part 2 Section B: 1. M. V. Suryanarayana Sastry (BB₂), B.A. (Mysore).

11.4. STATISTICIAN'S DIPLOMA EXAMINATION, MARCH—APRIL 1959

A. GENERAL PAPERS

Paper I (Theoretical)

- | | |
|---|---|
| 1. Ranbir Rai Bagga (D34), M.A. (Punjab) | 8. Banwari Lal (D25), M.A. (Agra) |
| 2. Sharad Jagannath Bedekar (P13), B.Com. (Bombay) | 9. Asim Kumar Mookherjee (C5), B.Sc. (Cal.) |
| 3. Kanwar Manmohan Singh Bedi (D43), M.A. (Punjab) | 10. Jagdishchandra Waman Pande (P10), M.Sc. (Poona) |
| 4. Panna Shurvirial Diwan (B12), B.Sc. (Bombay) | 11. Mekhan Lal Razdan (P12), M.A. (Agra) |
| 5. Bodh Raj Gulati (D42), M.A. (Punjab) | 12. N. Purbhottam Reddy (D7), B.A. (Osmania) |
| 6. Kulbir Chander Handa (D3), B.A. (Punjab) | 13. Lekh Raj Kad (D31), M.A. (Punjab) |
| 7. Chandrashekhar Shankar Joshi (C31), M.Sc. (Nagpur) | 14. Kripa Shankar (D6), M.Sc. (Agra) |
| | 15. Umrao Singh (D17), M.Sc. (Rajputana) |
| | 16. Lal Singh (D40), M.A. (Punjab) |

Paper II (Theoretical)

- | | |
|--|--|
| 1. Shrikant Atmaram Alavani (B7), B.Sc. (Bombay) | 10. Madhukar Vithal Purohit (B8), B.Com. (Bombay) |
| 2. Kuldar Singh Bedi (D13), M.A. (Punjab) | 11. N. Purbhottam Reddy (D7), B.A. (Osmania) |
| 3. Kanwar Manmohan Singh Bedi (D43), M.A. (Punjab) | 12. Samir Ranjan Guha Roy (C12), B.Sc. (Cal.) |
| 4. Nikhil Ranjan Dhar (C26), B.Sc. (Cal.) | 13. Shankar Narasinha Sawalkar (B10), B.Com. (Bombay) |
| 5. Avelino Jose Romanus Gonsalves (B4), B.Sc. (Bombay) | 14. Kripa Shankar (D6), M.Sc. (Agra) |
| 6. Ram Kishore Gupta (D37), M.A. (Delhi) | 15. A. Muthu Subramanian (BB ₂), B.A. (Hons), (Madras) |
| 7. Arun Prabhakar Kulkarni (P4), M.Com. (Poona) | 16. Chandra Prakash Thareja (C29), M.Sc. (Lucknow) |
| 8. Tilak Raj Mahajan (D4), M.A. (Punjab) | 17. Narayan Kalyan Ugar (P3), B.Sc. (Poona) |
| 9. Asim Kumar Mookherjee (C5), B.Sc. (Cal.) | |

* Indicates Distinction in Practical Paper.

Paper III (Theoretical)

- | | |
|--|---|
| 1. Raghunath Shankar Abhyankar (B14),
B.Sc. (Poona) | 5. Ram Kishore Gupta (D37), M.A. (Delhi) |
| 2. Rabindra Nath Banerjee (C34), B.Sc.
(Cal.) | 6. Chandrasekhar Shankar Joshi (C31),
M.Sc. (Nagpur) |
| 3. Chuni Gopal Bhattacharya (C33), B.Sc.
(Cal.) | 7. Banwari Lal (D25), M.A. (Agra) |
| 4. Dharam Vir Gulati (D30), M.A. (Punjab) | 8. Asim Kumar Mookherjee (C5), B.Sc. (Cal.) |
| | 9. Makhan Lal Razdan (P12), M.A. (Agra) |
| | 10. Jugal Kishore Sharma (D6), B.Sc. (Delhi) |
| | 11. Umrao Singh (D17), M.Sc. (Rajputana) |

Paper VI (Practical)

- | | |
|---|--|
| 1. Samir Kumar Basu (C7), B.Sc. (Cal.) | 9. Krishan Lal Kohli (D27), B.A. (Punjab) |
| 2. Pran Bandhu Das (C27), B.Sc. (Cal.) | 10. Brij Mohan Mahajan (D32), M.A.
(Punjab) |
| 3. Asoke Kumar Dasgupta (C12), B.Sc.
(Cal.) | 11. Sourindra Mohan Mukherjee (C18), B.Sc.
(Cal.) |
| 4. Jagdish Narain Garg (D9), M.A. (Delhi) | 12. Shreeram Ganesh Pande (B3), M.Sc.
(Bombay) |
| 5. Chandu Lal Gupta (D33), M.A. (Punjab) | 13. N. Purshottam Reddy (D7), B.A.
(Osmania) |
| 6. Pawan Kumar Jain (D15), M.Sc. (Agra) | 14. Kripa Shankar (D6), M.Sc. (Agra) |
| 7. Chandrasekhar Shankar Joshi (C31),
M.Sc. (Nagpur) | |
| 8. Brij Mohan Pal Khullar (P5), M.A.
(Punjab) | |

Paper VII (Practical)

- | | |
|---|--|
| 1. Ved Prakash Aggarwal (P7), M.A. (Punjab) | 6. Gurrankonda Munaswamy Naidu (C30),
B.A. (Andhra) |
| 2. Pran Bandhu Das (C27), B.Sc. (Cal.) | 7. N. Purshottam Reddy (D7), B.A. (Osma-
nia) |
| 3. Nikhil Ranjan Dhar (C28), B.Sc. (Cal.) | 8. Tilak Raj Talwar (D29), M.A. (Benarsee
(Poona) |
| 4. Jagdish Narain Garg (D9), M.A. (Delhi) | |
| 5. Arun Prabhakar Kulkarni (P4), M.Com. | |

B. SPECIAL PAPERS

Papers IV & V (Theoretical)

Economic Statistics

1. Raghunath Shankar Abhyankar (B14),
B.Sc. (Poona)
2. Chandrasekhar Shankar Joshi (C31)
M.Sc. (Nagpur)
3. Sudhanu Kumar Majumdar (D10), B.Sc.
(Cal)

Design of Experiments (Applied)

1. Chhakkil Lal Prajapat (D51), M.Sc. (Agra)
2. Surendra Kumar Soni (C22), M.Sc.
(Rajputana)
3. Chandra Prakash Thareja (C29), M.Sc.
(Lucknow).
4. Shroeram Ganesh Pande (B3), M.Sc. (Bombay)

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Statistical Quality Control

1. Shankar Narayan Bhattacharjee (C20), B.Sc. (Cal.)
2. Parijat Kumar Bhattacharya, (C6), B.Sc. (Cal.)
3. Akhil Nath Bhattacharyya (C4), B.Sc. (Cal.)
4. Pritam Pal Garg (C23), M.Sc. (Agra)
5. Ram Kishore Gupta (D37), M.A. (Delhi)
6. Brij Mohan Mahajan (D32), M.A. (Punjab)
7. Shanmukh Shivappa Kelwadi (B6), B.A. (Karnatak)
8. Sharadchandra Moreshtar Phadke (B2), B.Sc. (Bombay)
9. Chhakkilal Prajapat (D61), M.Sc. (Agra)
10. Madhukar Vithal Purohit (B8), B.Com. (Bombay)
11. Shankar Narasinha Sawaikar (B10), B.Com. (Bombay)
12. S. Balasubramania Sharma (BB4), B.Sc. (Travancore)

Sample Surveys (Applied)

1. Gopal Dev Ahluwalia (D49), M.A. (Delhi)
2. Ranbir Rai Bagga (D34), M.A. (Punjab)
3. Kular Singh Bodi (D13), M.A. (Punjab)
4. Shankar Barayan Bhattacharjee (C20), B.Sc. (Cal.)
5. Amarendra Nath Ghosh (C28), B.Com. (Cal.)
6. Krishnan Lal Kohli, (D27), B.A. (Punjab)

Sample Survey (Theory)

1. Jagdish Narain Garg (D9), M.A. (Delhi)
2. Kharg Bahadur Singh (D10), M.A. (Punjab)

Papers VIII and IX (Practical)

Statistical Quality Control

1. Ranbir Rai Bagga (D34), M.A. (Punjab)
2. Akhil Nath Bhattacharyya (C4), B.Sc. (Cal.)
3. Jagdish Narain Garg (D9), M.A. (Delhi)
4. Pritam Pal Garg (C23), (Agra)
5. Bodh Raj Gulati (D42), M.A. (Punjab)
6. Ram Kishore Gupta (D37), M.A. (Delhi)
7. Madhukar Vithal Purohit (B8), B.Com. (Bombay)
8. Shankar Narasinha Sawaikar (B10), B.Com. (Bombay)
9. A. Muthu Subramanian (BB2), B.A. (Hons), (Madras)

Mathematical Theory of Sampling Distributions

1. Y. Shiva Rao (D6), M.A. (Punjab)

Sample Survey (Applied)

1. Ranbir Rai Bagga (D34), M.A. (Punjab)
2. Suraj Bandyopadhyay (C11), B.A. (Cal.)
3. Pran Bandhu Das (C27), B.Sc. (Cal.)
4. Dharam Vir Gulati (D30), M.A. (Punjab)
5. Ram Kishore Gupta (D37), M.A. (Delhi)
6. Gurratkonda Munaswamy Naidu (C30), B.A. (Andhra)
7. Amalendu Sengupta (C16), B.Sc. (Cal.)

Sample Survey (Theory)

1. Nikhil Ranjan Dhar (C28), B.Sc. (Cal.)
2. Vasant Trimbak Junde (P9), B.Sc. (Poona)

TWENTYSEVENTH ANNUAL REPORT : 1958-59

11.5 COMPUTER'S CERTIFICATE EXAMINATION, MARCH 1959

Part IA Section I

- | | |
|--|---|
| 1. Biswanath Bhattacharyya (C29), B.Sc.
(Cal.) | 6. Harendra Kumar Mazumdar (C40), B.Sc.
(Cal.) |
| 2. Shibendra Chandra Bhattacharjee (G2),
I.Sc. (Cal.) | 6. Prasun Kumar Mukherjee (C5), B.Com.
(Cal.) |
| 3. M. Gurusathan (BB6), Dip. in Elect.
Eng. (Mysore) | 7. Ajoy Roy (C45), B.Sc. (Cal.) |
| 4. Hoaur Sitaramarao Krishnarao (BB7),
I.Sc. (Mysore) | 8. Pramatha Nath Roy (C44), B.Sc.
(Cal.) |

Part IA Section II

- | | |
|---|---|
| 1. Shibendra Chandra Bhattacharjee (G2)
I.Sc. (Cal.) | 3. Harendra Kumar Mazumdar (C40), B.Sc.
(Cal.) |
| 2. Sachi Ranjan Ganguly (C33), I.Com.
(Cal.) | 4. Prasun Kumar Mukherjee (C5), B.Com.
(Cal.) |
5. M. R. Venugopala Rao (BB3), B.Sc. (Mysore)

Part IB Section I

- | | |
|--|---|
| 1. *Manindra Chandra Basu (C31), B.Sc.
(Cal.) | 5. Harendra Kumar Mazumdar (C40), B.Sc.
(Cal.) |
| 2. Monohar De (C19), B.Sc. (Cal.) | 6. Md. Muslim (G7), Matric (Patna) |
| 3. Ganesh Chandra Guria (C16), B.Sc. (Cal.) | 7. Ranajit Kumar Ray (C18), I.Com. (Cal.) |
| 4. M. Gurusathan (BB6), Dip. in Elect.
Eng., (Mysore) | 8. Somesh Chandra Saha (C25), B.Sc. (Cal.) |
9. Durga Prasad Sarkar (C12), B.Sc. (Cal.)
10. Arun Kumar San, (C17), B.Sc. (Cal.)

Part IB Section II

- | | |
|---|---|
| 1. Rabindra Nath Basu (C36), B.Sc. (Cal.) | 7. Harendra Kumar Mazumdar (C4), B.Sc.
(Cal.) |
| 2. Gopal Chandra Biswas (C21), B.Sc. (Cal.) | |
| 3. Kalipada Chakravarti (C27), Matric (Cal.) | 8. Ram Chandra Mitra (C32), I.Sc. (Cal.) |
| 4. Deb Kumar Chatterjee (C15), B.Com.
(Cal.) | 9. Prasun Kumar Mukherjee, (C5), B.Com.
(Cal.) |
| 5. Monoharan De (C19), B.Sc. (Cal.) | 10. *Atul Krishna Paul (C13), B.Sc. (Cal.) |
| 6. Sachi Ranjan Ganguly (C33), I.Com.
(Cal.) | 11. Haro Krishna Paul (C37), B.A. (Cal.) |
12. Durga Prasad Sarkar (C12), B.Sc. (Cal.)

Part IC Section I

- | | |
|---|---------------------------------------|
| 1. Deb Kumar Chatterjee (C15), B.Com.
(Cal.) | 2. Biswanath Ghosh (C2), B.Sc. (Cal.) |
|---|---------------------------------------|

Part IC Section II

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| 1. Debabrata Chanda (C34), B.Com. (Cal.) | 2. Somesh Chandra Saha (C25), B.Sc. (Cal.) |
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* Indicates Distinction in Practical Paper.

INDIAN STATISTICAL INSTITUTE

11.6. SUMMARY OF RESULTS IN EXTERNAL EXAMINATIONS FOR ALL PAPERS, FROM 1951 TO 1959

A. STATISTICIAN'S DIPLOMA EXAMINATION

Paper	Year								Total		
	1951-52	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59			
General Papers	I	R	43	59	65	69	62	133	67	63	650
		A	24	37	43	45	43	72	61	47	371
		P	6	9	4	8	18	29	20	13	107
	%	25	24	9	18	43	40	33	28	28	
	II	R	38	47	50	46	41	62	57	30	389
		A	18	27	33	28	21	39	50	24	246
		P	7	9	17	10	9	21	18	11	102
	%	39	33	52	36	43	54	36	46	43	
	I	R	31	42	45	44	42	77	40	33	354
		A	16	22	29	28	25	43	23	29	214
		P	6	9	10	11	4	11	15	15	81
	%	38	41	34	39	16	26	68	63	38	
	VI	R	22	22	37	34	23	42	56	45	281
		A	15	19	32	31	19	37	61	41	245
		P	3	1	5	15	2	12	18	5	61
	%	20	5	18	48	11	32	35	12	25	
	VII	R	22	22	34	31	24	41	52	23	249
		A	15	19	29	27	20	38	47	21	216
P		3	4	4	4	4	6	11	8	44	
%	20	21	14	15	20	16	23	38	30		
Special Papers	IV	R	19	13	23	23	27	66	64	64	289
		A	14	9	20	20	22	41	68	45	227
		P	13	4	17	14	7	19	32	20	158
	%	93	44	85	70	32	48	57		68	
	V	R	19	12	23	19	27	37	45	29	211
		A	14	8	18	14	22	23	41	27	167
		P	12	22	9	7	15	14	24	14	97
	%	86	25	50	50	88	61	59		56	
	VIII	R	13	9	13	14	23	37	48	35	192
		A	10	8	13	13	21	29	39	34	167
		P	4	4	2	3	7	9	14	16	59
	%	40	50	15	23	33	31	36		35	
	IX	R	13	3	16	20	23	33	39	35	182
		A	10	3	15	17	20	31	34	34	164
		P	3	2	6	6	9	12	3	10	51
	%	30	67	40	35	45	39	9		21	
	All Papers	R	217	229	306	300	292	548	488	337	2897
		A	136	162	232	223	212	353	401	302	2011
P		57	44	74	78	75	133	155	112	725	
%	42	29	32	35	35	38	39	37	36		

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

(b) Since 1956-57 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		
IA(I)	R	123	59	87	37	144	234	139	50	843
	A	93	54	80	34	124	205	130	44	734
	P	48	19	31	16	88	105	84	12	403
	%	52	35	52	47	71	51	70	27	55
IA(II)	R	131	76	78	51	182	320	203	70	1091
	A	98	88	87	48	138	280	194	80	951
	P	28	28	10	11	38	71	48	20	252
	%	29	38	15	23	28	25	25	33	27
IB(I)	R	87	88	79	52	132	243	168	65	894
	A	87	57	65	49	108	215	162	59	782
	P	4	4	9	2	27	22	54	4	128
	%	6	7	14	4	25	10	33	7	18
IB(II)	R	88	63	72	47	130	275	144	74	893
	A	61	52	60	43	99	233	136	64	748
	P	12	9	7	0	9	60	14	8	119
	%	20	17	12	0	9	26	10	13	16
IC(I)	R	34	34	31	19	43	135	87	40	433
	A	34	22	28	12	34	123	85	37	386
	P	6	3	5	2	1	59	22	8	86
	%	18	9	18	16	3	32	26	12	22
IC(II)	R	32	30	28	20	37	95	89	33	342
	A	23	29	22	14	29	87	66	30	300
	P	4	6	6	10	16	47	19	5	113
	%	17	21	27	71	55	54	29	17	38
All Papers	R	505	330	353	226	648	1302	800	332	4496
	A	376	293	302	200	530	1143	763	294	3901
	P	102	87	68	41	179	344	241	49	1091
	%	27	23	23	20	34	30	32	17	28

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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G. 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		
IA	R	323	10	9	37	98	72	18	4	571
	A	210	7	6	32	58	54	17	1	385
	P	88	1	4	9	22	31	6	-	161
	%	42	14	67	39	38	57	35	-	42
IB	R	323	18	10	36	98	86	22	3	596
	A	208	13	7	32	55	64	20	1	398
	P	44	4	5	15	18	6	9	-	131
	%	21	31	71	47	33	56	45	-	33
IC	R	169	13	8	30	92	79	20	3	404
	A	85	9	5	21	50	58	16	1	245
	P	24	3	4	9	10	36	9	1	96
	%	28	33	80	43	20	62	56	100	39
2A	R	29	1	10	25	92	123	25	2	307
	A	17	1	9	19	66	88	24	2	226
	P	4	0	4	10	23	32	13	1	87
	%	24	0	44	63	35	36	54	60	39
2B	R	28	3	12	29	93	131	36	3	334
	A	17	3	11	24	67	99	30	3	254
	P	0	0	5	14	13	18	2	1	63
	%	0	0	45	68	19	18	7	33	21
All Papers	R	862	45	49	167	472	491	121	15	2212
	A	535	33	38	128	290	363	107	8	1508
	P	160	8	22	67	86	163	39	3	528
	%	10	24	58	45	29	42	36	38	35

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

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

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Appendix 12 : LIST OF SCIENTIFIC AND TECHNICAL STAFF*

1. Mahalanobis, Prasanta Chandra (*Director*), B.Sc. (Hon. Physics, *Cal.*), B.A. (Math. and Physics, *Cantab*), M.A. (*Cantab*), D.Sc. (*Hony.*), F.N.I., F.R.S., Hony. President, International Statistical Institute; Foreign Member, USSR Academy of Sciences.

1. RESEARCH AND TRAINING SCHOOL

1.1. STATISTICS (*General theory and methods*)

2. Rao, C. Radhakrishna (*Professor and Head of the Division of Theoretical Research and Training*), M.A. (Math., Stat.), Ph.D. (Stat., *Cantab*), F.N.I.; Member, International Statistical Institute; Fellow, Institute of Mathematical Statistics.
3. Haldane, John Burdon Sanderson (*Research Professor*), B.A. (Classics, *Oxon*), M.A. (*Oxon*), M.A. (*Cantab*), D.Sc. (*Hony.*), D. de L'Univ. (*Paris*), LL.D. (*Hony.*), Hony. Dr. (*Poitiers*), Hony. F.N.I., F.R.S.; Foreign Member, USSR Academy of Sciences; Hony. Member, Genetical Society; Member, Royal Danish Academy of Science; Member, Humboldt Academy, Berlin.
4. Bahadur, Raghu Raj, M.A. (Math.), Ph.D. (Stat., *North Carolina*), F.N.I., Fellow, Institute of Mathematical Statistics.
5. Basu, Debabrata, M.A. (Math.), A.I.S.I., D.Phil. (Stat., *Cal.*)
6. Chakravarti, Indra Mohan, M.Sc. (Stat.), A.I.S.I., D.Phil. (Stat., *Cal.*)
7. Chaudhuri, Tarapada, M.A. (Math., Stat., Econ.), B.T., Ph.D. (Econ., *London*)
8. Dhar, Samarendra Kumar, B.Sc. (Stat.)
9. Laha, Radha Govinda, M.Sc. (Stat.), D.Phil. (Stat., *Cal.*)
10. Matthai, Abraham, M.Sc. (Stat.), A.I.S.I., D.Phil. (Stat., *Cal.*)
11. Mitra, Sujit Kumar, M.Sc. (Stat.), Ph.D. (Stat., *North Carolina*)
12. Ramakrishnan, Chittur Sivaramakrishnan, M.A. (Math.), ISI Training, A.I.S.I.
13. Roy, Jogabrata, M.Sc. (Stat.), A.I.S.I., D.Phil. (Stat., *Cal.*)

1.2. BIOMETRY

14. Das, Bhupendra Chandra (*Head*), M.Sc. (Physiol.), Ph.D. (Physiol., *Illinois*).
15. Roy, Subodh Kumar, M.Sc. (Botany).
16. Spurway, Helen, Haldane (Mrs.), B.Sc. (Zool., *London*) Ph.D. (Genet., *London*)
17. Verma, Brijesh Kumar, M.Sc. (Anthrop.)

1.3. PSYCHOMETRY RESEARCH SERVICE

18. Mitra, Shib Kumar (*Head*), M.A. (Psych.), Ph.D. (Psych., *Chicago*).
19. Chatterjee, Shibapada, M.A. (Psych.)
20. Das, Rhea, S. (Mrs.), M.A. (Psych.), Ph.D. (Psych., *Illinois*).

1.4. DEMOGRAPHY

21. Poti, S. Janardan (*Head*), M.A. (Math.), S.M. (Public Health, *Harvard*).
22. Malakar, Chitta Ranjan, M.Sc. (Stat.)
23. Raman, M. V., M.A. (Econ.)

* A list of foreign scientists and external lecturers from India who participated in the teaching and research activities is given in section 12 of the report, pp. 24-26.

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1.5. SOCIOLOGY

24. Mukherjee, Ramkrishna (*Head*), M.Sc. (Anthrop.), Ph.D. (Anthrop., *Cambr.*)
25. Pakrasi, K. B., M.Sc. (Anthrop.) 28. Chattopadhyay, Kumarananda, M.Sc. (Anthrop.)

1.6. REGIONAL SURVEYS

27. Rao, V. L. S. P. (*Head*), M.Com., D.Phil. (Geog., *Cal.*)
28. Bhat, L. S., M.Sc. (Geog.) 29. Pal, M. N., M.Sc. (Stat.)

1.7. GEOLOGICAL STUDIES

30. Jain, Sohan Lal, M.Sc. (Zool.), Ph.D. (Zool., *Lucknow*) 31. Roy Chowdhury, Tapan Kumar, M.Sc. (Geol., *Cal.*)

1.8. FLOOD RESEARCH

32. Bose, N. K. (*Head*), M.Sc. (Math.), Ph.D. (Math., *Cal.*) 33. Dutta, S. K., M.Sc. (Math.), Ph.D. (Math., *London*)

SENIOR RESEARCH SCHOLARS

34. Bhattacharyya, Pradyot Kumar, M.Sc. (Stat.) 38. John, Sleebs, M.Sc. (Stat.)
35. Dasgupta, Someb, M.Sc. (Stat.) 39. Ranga Rao, Ramaswamy Iyer, M.A. (Math.)
36. Dronamraju, K. R., M.Sc. (Botany) 40. Sethuraman, Jayaram, M.A. (Stat.)
37. Godambe, Vidyadhar Prabhakar, M.Sc. (Stat.), Ph.D. (Stat., *London*) 41. Varadarajan, Veeravalli Seshadri, M.A. (Stat.)

2. PLANNING DIVISION

2.1. CALCUTTA UNIT

- *42. Mukherjee, Moni Mohan (*Head*), M.A. (Econ.); Member, International Association for Research into Income and Wealth; Member, Indian Conference for Research in National Income.
43. Bhattacharjee, Durgaprasad, B.A.
*44. Biswas, Ajit Kumar, M.A. (Econ.); A.M. (Boston); Member, Indian Conference for Research in National Income
*45. Chakravarti, Ashish Kumar, M.Sc. (Stat.); Member, Indian Conference for Research in National Income
*46. Chatterjee, Anil Kumar, M.A. (Econ.)
47. Chatterjee, Gaurishankar, M.A. (Math.)
48. Chatterjee, Indubhusan, M.Sc. (Agri.)
49. Chatterjee, Nirmal Kanti, M.A. (Econ.)
50. Dey, Banamali, M.A. (Commerco)
*61. Iyengar, N. S., M.A. (Math.), ISI Training.
*52. Krishnamoorthy, S., M.A. (Math.), ISI Training.
53. Lahiri, Ranjit Kumar, M.A. (Econ.)
54. Maitra, Taresh, M.Sc. (Math.), ISI Training.
55. Mani, M. K., M.Sc. (Stat.), ISI Training
*56. Mazumdar, Harendra Kumar, M.A. (Econ.), M.S.S. (Econ. & Soc., *The Hague*); Ph.D. (*Rotterdam*); Research Member, Netherlands Economic Institute (from October 1959).
57. Naqvi, S., M.A. (Econ.)
58. Narau, A. V., B.A. B.L.
59. Piplai, Tapan, M.A. (Econ.)

* Part time teacher in Research and Training School

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- | | |
|---|--|
| 60. Roy, Bina, Mrs., M.A. (Econ.) | 63. Sarvadhikari, Prabhat, M.Sc. (Physics),
(M.A. (Econ.)), (Part-time) |
| 61. Roy, Smritindu, M.A. (Econ.) | |
| 62. Rudra, Asok, B.Sc., Ph.D. (London), <i>lien</i> | 64. Sinha, Mihir, M.A. (Econ.) |

2.2. DELHI UNIT

- | | |
|---|--|
| *65. Pant, Pitambar (Head), M.Sc. (Physics), Chief, Division of Perspective Planning,
Planning Commission. | |
| 66. Ahmed, Mahfooz, M.A. (Econ.) | 71. Kansal, S. M., M.A. (Math.), ISI Training |
| 67. Bhagwati, Jagdish, M.A. (Econ. <i>Cantab</i>)
(from October 1959). | 72. Katragadda, G., I.So., B.E. (Elec.) |
| 68. Chandrasekhar, K. A. | 73. Sanyal, Amar, MrSc., M.S. (Eng.) (left
in 1959) |
| (7) Chaudhuri, Tarapada, M.A. (Math.,
Stat. & Econ.), Ph.D. (Econ., <i>Lond.</i>) | 74. Upadhyay, P. K., M.A. (Econ.), Ph.D.
(Econ.) |
| 69. Grace, T. V. (Miss), M.A. (Math.), ISI
Training | *75. Vinod Prakesh, M.A. (Math.), ISI
Training |
| 70. Gulati, D. V. | 76. Verma, R. K. |

3. NATIONAL SAMPLE SURVEY

- | | |
|--|--|
| 77. Lahiri, Debabrata (Chief of NSS), M.Sc. (Math.), F.N.I., Member, International Statis-
tical Institute; Member, International Population Union. | |
| †78. Sen, Satyabrata (Consultant), B.A. (Hons., Econ.), B.Com., (Birmingham), <i>lien</i> . | |
| 79. Dasgupta, Ajit Kumar (Head of division), M.Sc. (Math.), F.I.A., <i>lien</i> . | |
| 80. Ganguli, Mohanlal (Head of division), B.Sc. (Stat., London). | |
| 81. Choah, Nimai Charan (Head of division), M.A. (Econ.) | |
| (42) Mukherjee, Moni Mohan (Head of division), M.A. (Econ.) | |
| 82. Sen Gupta, Jitendra Mohan (Head of division), B.Sc. | |
| 83. Rao, Saligram Raja (Dy. Head of Division), B.Sc., A.I.S.I. | |
| 84. Aikatt, Jiban Krishna, M.Sc. (Math.), ISI Training | 97. Chakravarti, Surapati, B. Sc., M.A.
(Comp. Phil.) |
| 85. Banerjee, Saibal, M.Sc. (Stat.) | 98. Chakravarti, Bibhuti |
| 86. Banerjee, Usha Nath, M.A. (Econ.) | 99. Chakravarty, Dipak, B.A., Statistician's
Diploma. |
| 87. Barori, Chittaranjan | 100. Chaturvedi, Har Kumar, B.Sc., A.H.
B.T.I. |
| 88. Bhattacharjee, Sitangsu, M.A. (Econ.) | 101. Chowdhury, Haribhajan, B.A., Comp.
Cert. I. |
| 89. Bhattacharjee, Baisi Chandra, M.A.
(Econ.) | 102. Chowdhury, Prasanta, M.Sc. (Math.) |
| 90. Bhattacharjee, Gopal, M.Com., Comp.
Cert. I. | 103. Chatterjee, Bodhayan, M.A. (Econ.) |
| 91. Bhattacharjee, Sudhir, B.A. (Hons.,
Econ.) | 104. Das, Madhusudhan, M.Sc. (Stat.) |
| 92. Bose, Debkumar, M.A. (Econ.) | 105. Das, Nitai, M.Sc. (Math.) |
| 93. Bose, Shyamsundar, B.Com., Comp.
Cert. I. | 106. Das, Prabir Kumar, M.Sc. (Stat.) |
| 94. Bhoumic, Nirmalendu, M.Sc. (Math.) | 107. Das, Jagadish Chandra, M.Sc. (Math.,
Stat.) |
| 95. Chatterjee, Amiyamaya, M.Sc. (Math.) | 108. Dasgupta, Birendra Mohan, M.A.
(Econ.) |
| 96. Chatterjee, Pranaya Kumar, M.Sc.
(Chem.) | 109. Dasgupta, Amiya Kumar, M.Sc. (Math.) |

* Honorary, part-time.

† Part-time.

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110. Dasgupta, Nirmal, B.Sc., Statisticians' Diplomas
111. Dey, Ajoy Kumar, M.Sc. (Stat.)
112. Datta, Manoranjan, M.Sc. (Math.)
113. Datta, Roy Bijan Kumar, M.Sc. (Stat.)
114. Dey, Nalini Kanta, B.A.
115. Dutta, Damodar, M.Sc. (Stat.), *hon.*
116. Dutta, Naresh Chandra, M.Sc. (Stat.)
117. Dutta, Keshab Chandra, M.A. (Stat.)
118. Dutta Majumdar, Deb Kumar, M.Sc. (Stat.)
119. Eswaran, M. S. K., B.A.
120. Ganguly, Amalendu Narayan, M.Sc. (Stat.)
121. Ganesan, R. S., B.Sc. (Stat.), ISI Training
122. Ghosh, Prasanta Kumar, M.Sc. (Stat.)
123. Ghosh, Dharendra Nath, M.Sc. (Stat.)
124. Ghosh, Subhendu Narayan, M.Sc. (Math.)
125. Goswami, Sushil Kumar, M.A. (Stat.)
126. Guha, Susanta Ranjan, M.A. (Econ.), M.Com.
127. Gupta S. S., M.Sc. (Stat.)
128. Haldar, Ajit Kumar, M.Sc. (Stat.)
129. Haldar, Sambhu Nath, B.Com., Comp. Cert. I.
130. Home, Haripada, M.A. (Eng.)
131. Jacob, Paul, M.A. (Math.)
132. Joshi, Kalpana, B.A.
133. Kar, Krishna Kishore, M.A. (Econ.)
134. Kumar, K. M.A. (Math.) ISI Training
135. Mitra, Samarendra Nath, M.Sc. (Stat.),
136. Mitra, Chittaranjan, M.A. (Econ.)
137. Maitra, Priyatosh, M.A. (Econ.), M.A. (Pol. Sc.)
138. Mazumdar, Murari Mohan, M.Sc. (Math.)
139. Mukherjee, Hiralal, M.Sc. (Stat.)
140. Mukherjee, Sambidanda, M.A. (Math.)
141. Mukherjee, Santī Ranjan, M.A. (Econ.)
142. Mukherjee, Girija Prasad, M.Sc. (Math.)
143. Murthy, M. N., M.A. (Stat.), ISI Training
144. Nair, N. Gopala Krishna, M.Sc. (Math.), ISI Training
145. Nair, K. G. Chandrasekharan, M.A. (Stat.)
146. Nanjamma, Nabibarindra Subbiah (Miss), M.A. (Stat.), ISI Training
147. Panesar, Baldeo Kaji, M.A. (Econ.) ISI Training
148. Pant, Damodar, M.Com., LL.B.
149. Poddar, Keshav Chandra
156. Pillai, B. T., M.Sc. (Stat.)
151. Pillai, S. Bhaskara, M.Sc. (Stat.)
152. Pramanik, Nemai Chandra, M.Sc. (Stat.)
153. Rao, Divakar, M.Sc. (Math.), ISI Training
154. Roy, Amar Sundar, M.Sc. (Stat.), ISI Training
155. Roy, Ajit Kumar, M.Sc. (Math.)
156. Roy, Rajendra Chandra, Comp. Cert. I. A.B.C. 2
157. Roy, Jyoti Prasanna, M.Sc. (Math.)
158. Roy Chowdhury Ardhendu, B.Sc. (Hons., Stat.)
159. Saha, Rama Prasad, M.Sc. (Stat.)
160. Sangal, S.P., M.Sc. (Math.), ISI Training
161. Sankaranarayanan, K. Chandra, M.Sc. (Stat.)
162. Sarkar, Birendra Nath, M.Sc. (Stat.)
163. Sarkar, Dbirendra Chandra, Comp. Cert. I.
164. Sanyal, Salil K., M.Sc. (Math.)
165. Sastri, G. A., M.Com., LL.B.
166. Sen, Asoke, M.A. (Econ.)
167. Sen, Taraknath, M.Sc. (Math.)
168. Sen Gupta, Suranjan, M.A. (Math.)
169. Sinha, Sunil Kumar, M.Sc. (Math.) ISI Training
170. Sinha, Anil Kumar, B.A., I.C.W.A., F.S.A.A.
171. Som, Ranjan Kumar, M.A. (Stat.); Member, International Population Union
172. Sharma, S. M. Umakanta, M.Sc. (Stat.)
173. Sharma, V. R. R., M.Sc. (Math.)
174. Swamy, V. S., M.Sc. (Math.), ISI Training
175. Taluqdar, Jitendra Nath, Comp. Cert. I.
176. Venkateswaralu, G., M.Sc. (Stat.)

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4. LIBRARY

- | | |
|---|--|
| 177. Saha, Jibananda (<i>Head</i>), B.A., Dip. Lib., Training in Special Librarianship (Columbia Univ.) | |
| 178. Banerji, Sarat Chandra, B.Sc., (Hons. Math.), Dip. Lib. | 187. Mukherjee, Subhas, B.Com., Certificate in Librarianship |
| 179. Basu, Sunit Kumar, B.Sc., Certificate in Librarianship | 188. Rej, Debabrata, B.A., (Hons. Math.), Linguist (Russian) |
| 180. Bhaduri, Rama, B.A., Dip. Lib. | 189. Roy, Biswajit, M.A. (Eng.), Dip. Lib. |
| 181. Chatterjee, Aruna, B.A., Dip. Lib. | 190. Roy, Subinoy, B.Sc. |
| 182. De, Birendra Chandra, B.A., Dip. Lib. | 101. Roy, Sudhindra Kumar, Certificate in Librarianship |
| 183. Dutta, Premosri, Certificate in Librarianship | 192. Roy Chowdhuri, Jyotiprakash, B.A. Linguist (Chinese) |
| 184. Ghose, Nirmalendu, Certificate in Librarianship | 193. Saha, Kalyan, Certificate in Librarianship |
| 185. Narayan Ranga Nathan, Certificate in Librarianship | 104. Sanyal, Ranjit Kumar, Certificate in Librarianship |
| 186. Niyogi, Manoj Kumar, B.A., Dip. Lib. | |
| | 195. Sinha, Brojo Kishore, Photographer. |

5. ELECTRONIC COMPUTER DIVISION

5.1. ELECTRONIC COMPUTER

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|--|--|
| 196. Mitra, Samarendra Kumar (<i>Head</i>), M.Sc. (Chem.), UNESCO Fellow in Electronic | |
| 197. Nadler, Morton (<i>Design specialist</i>) | 203. Dutta Majumdar, Dwijesh, M.Sc. (Tech.) |
| 198. Basu, Sailajaksha, M.Sc. (Tech.) | 204. Kamat, D. S., M.Sc. (Physics) |
| 199. Biswas, Hara Prasad, M.A. (Econ. & Stat.) | 205. Mitra, Prabhat Kumar, B.Sc. (Physics) |
| 200. Bose, Soumendra Mohan | 206. Paul, Mrinal Kanti, M.Sc. (App. Math.) |
| *201. Chatterjee, Jnan Sharan, M.Sc. (Physics), A.M.I.E.E., Ph.D. | 207. Ray, Amaresh, B.Sc. (Math.) |
| 202. Chaudhuri, Debdas, M.S. M.E.E. (Elec.) | 208. Sen, Ajoy Kumar, B.E. (Elec.) |
| | 209. Sen, Ashis Kumar, M.Sc. (Tech.) |
| | 210. Sinha Roy, Prabhat Kumar, M.Sc. (Tech.) |

5.2. DEVELOPMENT WORKSHOP

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|---|---|
| 211. Bhattacharjee, Satya Prasanna (<i>Head</i>), M.Sc. | |
| 212. Banerjee, Gurudev, B.E., A.M.I.E. (<i>India</i>) | |
| 213. Chatterjee, Bimalendu, B.Sc. | 215. Sen, Siba Prasad, B.Sc., B.M.E., A.M.I.E. (<i>India</i>) |
| 214. Mukherjee, Hara Kumar, B.M.E., A.M.I.E. (<i>India</i>) | 216. Viswanathan, H., B.Sc. |

* Head of the Department of Electrical Engineering, Jadavpur University, part-time.

INDIAN STATISTICAL INSTITUTE

6. STATISTICAL QUALITY CONTROL

6.1. CALCUTTA

- | | |
|---|---|
| 217. Dutta, K. N., B.Sc. | 222. Paluskar, V. D., B.Sc. |
| 218. Guha S. N. M.Sc. (Stat.) | 223. Pasha, S. H., B.Sc. (Hons. Stat.) |
| 219. Murthy, K. G. K., B.Sc. (Hons. Stat.) | ISI Training |
| ISI Training. | 224. Prasad, C. R., B.A. (Hons. Math.), |
| 220. Munshi, M., B.A. (Hons. Math.) | ISI Training. |
| 221. Narasimhan, R. G., B.Sc., Statistician's | 225. Sarkar, B. K., B.M.E. |
| Diploma, ISI. | |

6.2. BOMBAY

- | | |
|--|-------------------------------------|
| 226. Bopardikar, A. P., M.Sc. (Stat.) | 229. Hanumantha Rao, P., B.A. |
| 227. Bhanumurthy, K., M.A. (Math.) | 230. Nair, R. R., M.Sc. (Stat.) |
| ISI Training. | 231. Sivaramkrishnan, P. V., B.Sc., |
| 228. Gopalskrishnan, P., B.A. (Hons. Math.), | ISI Training |
| ISI Training. | |

6.3. DELHI

- | | |
|---|------------------------------------|
| 232. Mathew, N. T., M.A. (Math.), M.Sc. (Stat.) | |
| 233. Hariharan, G., B.A., A.I.S.I., | 234. Nankana, A. N., M.A. (Math.), |
| | ISI Training. |

6.4. BANGALORE

- | | |
|---|--|
| 235. Ekambaram, S. K., M.A. (Canlab), | 237. Setty, C. A., B.E. (Mech.) |
| B.Sc. (Hon.) | 238. Srinivasan, N. S., M.Sc. (Stat.) |
| 236. Srinagabhushana, B.Sc., F.T.I., F.T.A. | 239. Sundararaju, S. M., B.Sc. (Hons.) |

6.5. COIMBATORE

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|---------------------------------------|----------------------------------|
| 240. Anantha Rao, R., M.Sc. (Stat.) | 242. Narayana, V., M.Sc. (Stat.) |
| 241. Desikan, G. V. S., B.Sc. (Tech.) | 243. Ranganna, Y., B.Sc. |

6.6. BARODA

- | | |
|-----------------------------------|---------------------------------------|
| 244. Chowdhuri, S., B.Sc. (Hons.) | 246. Krishnakumar, K., B.Sc. |
| 245. Mehta, S. J., M.Sc. (Stat.) | 247. Ramamurthi, K. G., M.Sc. (Stat.) |

¹ Head, Army Statistical Office; Honorary, part-time.

² Head, Dept. of Statistics, University of Mysore; Honorary, part time.

³ Principal SKF Technological Institute, Bangalore; Honorary, part time.

TWENTYSEVENTH ANNUAL REPORT : 1958-59

Appendix 13 : Distribution of Staff as on 31 March 1959

Division	staff	helpers	total
(1)	(2)	(3)	(4)
1. Research & Training School, and ISEC	67	17	84
2. Planning Division	95	12	107
2.1 Calcutta	67	10	87
2.2 Delhi	38	2	40
3. National Sample Survey	665	178	843
3.1 Calcutta	538	143	679
3.2 Giridih	117	33	150
3.3 Delhi ¹	12	2	14
Electronic Computer Division			
4.1 Computer	28	5	33
4.2 Development Workshop	66	10	76
5. SQC	37	9	46
5.1 Calcutta	11	1	12
5.2 Delhi	3	1	4
5.3 Bangalore	4	1	5
5.4 Baroda	5	1	6
5.5 Coimbatore	5	2	7
5.6 Bombay	9	3	12
6. IMRUP	10	6	16
7. Library	39	26	65
8. Administration			
8.1 Estate office ²	40	213	253
8.2 Welfare	32	63	95
8.3 General	95	55	150
9. Field Branch			
9.1 West Bengal	188	60	248
9.2 Bombay	13	2	15
total	1375	656	2031

¹ Excluding staff of sanctioned strength up to 100 employed through the Army Statistical Office.

² Including workers on daily wages.

INDIAN STATISTICAL INSTITUTE

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Joint Secretary : Sri S. K. Iyengar

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