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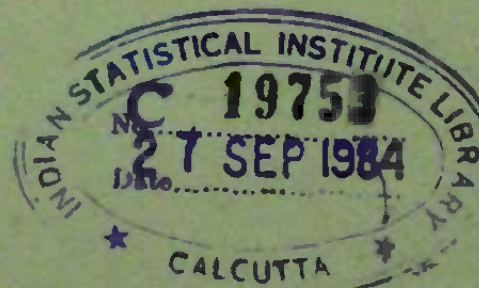
Report 1983



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ISI REVIEW COMMITTEE REPORT

1983



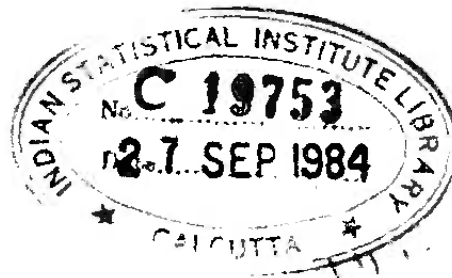
GOVERNMENT OF INDIA
MINISTRY OF PLANNING
DEPARTMENT OF STATISTICS



**INDIAN STATISTICAL INSTITUTE
REVIEW COMMITTEE**

REPORT

1983



**GOVERNMENT OF INDIA
MINISTRY OF PLANNING
DEPARTMENT OF STATISTICS**

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CHAPTER I

INTRODUCTION

1.1. I.S.I. Act, 1959

1.1.1. The Indian Statistical Institute was registered in Calcutta in 1932 as a non-profit distributing learned society under the Societies Registration Act XXI of 1860.* Twenty-seven years later, in 1959, the Government of India accorded recognition to it as an Institution of National Importance and placed it on statutory footing, through the Indian Statistical Institute Act of 1959 (LVII of 1959).

1.1.2. Section 9(1) of the aforesaid Act, provides for periodical review of the Institute. The First Review Committee was appointed in 1966, with Prof. Humayun Kabir as Chairman.

1.1.3. The Second Review Committee was appointed by the Government of India, sixteen years later, on the 27th August 1982, with Dr. S.R. Sen as Chairman. The terms of reference of the Committee are as under :

- “(i) to review the work done by the Institute and the progress made by it;
- (ii) to inspect its buildings, equipment and other assets ;
- (iii) to evaluate the work done by the Institute ; and
- (iv) to advise the Government on the following matters :
 - (a) to what extent and in what manner the research activities of the Institute should be continued or modified in areas other than development of statistical theory and techniques and their practical applications ;
 - (b) what should be the liability of the Government to finance the activities of the Institute and in what manner the Institute should increase its own financial resources ;
 - (c) in what manner the administrative set up, management and personnel policy of and financial and budgetary control in the Institute should be improved to make them more effective ;
 - (d) whether and to what extent the consultancy work done by the Institute, particularly in the fields of operational research and statistical quality control, should be operated on commercial or self-financing basis ;
 - (e) whether in the light of the experience gained so far, any amendments to the Indian Statistical Institute Act, 1959 or to its Memorandum of Association are necessary to facilitate the working of the Institute ; and

* With the enactment of the West Bengal Societies Registration Act XXVI of 1961 amended in 1964, the Institute automatically came within the purview of the latter Act.

- (f) whether the audit of the accounts of the Institute should be entrusted solely to the Comptroller and Auditor General of India under Section 20 of the Comptroller and Auditor General's (Duties, Powers and Conditions of Service) Act, 1971 by suitably amending the provisions of Section 6 of the Indian Statistical Institute Act, 1959, which in the opinion of the Central Government are of importance in connection with the work of the Institute."

A copy of the Government Notification constituting the Committee is given at Appendix I.

1.1.4. The Committee was originally asked by the Government to submit its report within a period of six months. However, at the request of the Committee, the term was extended upto the 31st August 1983. A copy of the Notification issued by the Government extending the term of the Committee is at Appendix II.

1.2. Procedure of the Committee

1.2.1. The first meeting of the Committee was held in Calcutta in October 1982. It was mainly devoted to making the members acquainted with the work and organisation of the Institute and deciding on the procedure and time-table of the work of the Committee. At this meeting the Committee constituted four sub-committees to go into the various aspects of the work of the Institute and to deal in detail with the various terms of reference of the Committee. The composition of the sub-committees is given in Appendix III. The Chairman took this opportunity to call on Shri S. Dutt, President of ISI.

1.2.2. The second meeting of the Committee was also held in Calcutta in January 1983 and was devoted to taking stock of the progress of work of the sub-committees and to meeting the heads of divisions/units of the Institute, its various committees as also a number of eminent persons who have personal knowledge of the affairs of the Institute. The third meeting of the Committee was held in Bangalore in March 1983, mainly with the object of enabling the members to inspect the Bangalore Centre of the Institute, meet the staff members of the Institute posted there and a few individuals who had offered to give evidence before the Committee. The fourth meeting was held in Delhi in May 1983. It was devoted to meeting the members of the staff of the Institute posted in Delhi. At this session the Committee also met the Chairman of the Council of the Institute, Shri P. N. Haksar, and a few other individuals, who had volunteered to give evidence before the Committee. The last four meetings were also held in Delhi in July and August 1983, primarily for analysing the evidence collected and finalising the report.

1.2.3. Prof. Ravi J. Matthai of the Indian Institute of Management, Ahmedabad fell sick and was not able to attend the last four meetings of the Committee. He had, however, completed his work as the Convener of the Organisation Sub-Committee and submitted a report to the Committee for its consideration. Prof. Matthai tendered his resignation from the Membership of the Committee on grounds of ill-health on the 26th July 1983, which was accepted by the Government with regret.

1.2.4. The task entrusted to the Committee was not an easy one, as it had to evaluate the work of a large and complex scientific institution of world repute

and stature. Moreover, the Government had asked the Committee to give advice on a number of important matters connected with the organisation resources and procedures of work in the Institute. The Committee thought that it was important to obtain the views of as large a number of people as might be willing to help the Committee in regard to various matters included in its terms of reference. The Committee, therefore, addressed a large number of eminent people both in India and abroad who were reported to have intimate knowledge of the affairs of the Institute, requesting them to favour the Committee with their views. The Committee also issued an advertisement in prominent newspapers announcing the fact that the Committee would welcome any views that any person having intimate knowledge of the work of the Institute had to give. This was done as a measure of abundant precaution since review and evaluation could not be properly done without a thorough enquiry and giving a fair opportunity to all knowledgeable people to present their views. In this way, the Committee was able to collect a very large number of letters and memoranda from various individuals and groups of people. The Committee also met a large number of people in Calcutta, Bangalore and Delhi, especially those who had expressed their desire to do so, and recorded their views. A list of persons who made written and/or verbal submissions to the Committee is given in Appendix IV.

1.2.5. The Committee collectively and some of its members individually met the representatives of the Indian Statistical Institute Workers' Organisation several times. The ISIWO submitted three memoranda. The Committee has kept in view the submissions made by the Organisation while making its recommendations on various terms of reference.

1.2.6. The Institute is currently dealing with a number of subjects which, besides Statistics, Mathematics and Economics, include Geology, Botany, Biology, Physics, Chemistry, Human Genetics, Demography, Psychometry, Sociology, etc. The Committee does not have among its members experts in all these fields. For the evaluation of the work of some of these units (other than Statistics, Mathematics and Economics) the Committee sought, therefore, the assistance of eminent experts in the relevant fields. A list of these experts is at Appendix V.

1.2.7. One of the terms of reference of the Committee relates to the inspection of the buildings, equipment and other assets of the Institute. After going through the material supplied by the Institute, the Committee came to the conclusion that it would be necessary to arrange for detailed "on the spot" studies before the Committee could take a view in regard to the various physical resources of the Institute. The Committee, therefore, appointed M/s Quest Consultants & Engineers Pvt Ltd, Calcutta to carry out "on the spot" study of the physical resources of the Institute on specified terms and conditions. The Committee has taken into consideration the study carried out by the consultants in making recommendations on this term of reference.

1.2.8. Immediately after the Committee was set up, the Director, ISI was requested to send detailed notes on each point of the terms of reference of the Committee. At the first meeting of the Committee held in October 1982, the Director, ISI submitted to all members of the Committee : (i) a paper entitled "Preamble to the Account of Scientific Activities (1970-82)" of the Institute, (ii) eight reports giving an account of the activities from 1970 to 1982 of the various divisions of the Institute and a few publications. Some more papers on

the activities of some units of the Institute were received later. A list of these submissions is given at Appendix VI. The paper "Preamble to the Account of Scientific Activities (1970-82)" gives valuable back-ground information of general interest and is reproduced at Appendix VII. The Director, ISI also submitted a note, giving the views in brief of the Institute on the terms of reference of the Committee, in January 1983. A copy of this note is given at Appendix VIII.

1.2.9. As per Section 9(2) of ISI Act, 1959, Dr B. P. Adhikari acted as the representative of the Institute and was given the desired opportunity to be present and be heard at the review, inspection or evaluation made by the Committee.

1.3. Acknowledgements

1.3.1. The Committee takes this opportunity to express its thanks to the various eminent people, who spared time to favour the Committee with their views in spite of their many pre-occupations. The various memoranda and letters received from them have helped the Committee very greatly in arriving at its conclusion.

1.3.2. The Committee is greatly indebted to Shri P. N. Haksar, Chairman of the ISI Council, who gave valuable advice to the Committee in a number of matters. A summary record of the views expressed by him is given at Appendix IX.

1.3.3. The Committee wishes to record its appreciation of the great pains taken by the Director, Dr B. P. Adhikari, and the staff of the Institute in providing voluminous material needed by the Committee from time to time.

1.3.4. The Committee also wishes to record its appreciation of the services rendered by its staff, headed by its Secretary, Shri R. N. Saxena, who efficiently and successfully organised the meetings of the Committee and helped the Committee in collecting and analysing the information and data received from various sources. Shri Saxena's earlier acquaintance with the affairs of ISI, his organising ability and diligent work were of special help to the Committee.

CHAPTER II

RETROSPECT AND APPROACH

2.1. The Beginning

2.1.1. The origin of the Indian Statistical Institute can be traced back to the early twenties. During this period a number of brilliant young statisticians, under the inspiring guidance of late Professor P. C. Mahalanobis, formed a small research group which was known as Statistical Laboratory. The decision to establish an Indian Statistical Institute was taken by this group in December 1931 and the Institute was registered in Calcutta in 1932. The first Memorandum of Association (or Constitution) of the Institute set the objective of the Institute as the promotion of the study of Statistics, both pure and applied, and allied subjects and provision for research and instruction for the advancement of the study and dissemination of knowledge of these subjects.

2.1.2. In the late fifties, need was felt to broaden the scope of the institute and a new Constitution was adopted in May 1958. The new changes *inter alia* authorised the Institute to take up study of subjects relating to planning and national development and undertake other activities including operational research in furtherance of national development.

2.1.3. During the fifties the Institute was spending large amounts of Government funds received as contractual payments for sponsored projects. It was at that time the only big research institution doing statistical work all over India and its importance was also recognised internationally.

2.2. Statutory Recognition

2.2.1. At this juncture Government decided to accord its due recognition and give it a statutory footing. The Indian Statistical Institute Bill was presented by the late Prime Minister Jawahar Lal Nehru in the Parliament and was passed in December 1959.

2.2.2. The Act recognised the Institute as an Institution of National Importance and empowered it to confer Diplomas and Degrees in Statistics.

2.2.3. While piloting the Bill, Prime Minister Jawahar Lal Nehru had said that the intention of the Bill was not to bring the Institute under Government control but to keep its autonomous character. He said that the Government had progressively come to the conclusion that too much centralisation and departmentalisation of activities was not a good thing. He felt that such institutions should not have to ask for sanctions to people who usually had no ghost of an idea of sciences. About audit of accounts, he expressed the opinion that it was better for such institutions that Comptroller and Auditor General be not charged with the audit of these institutions. The important thing was an audit of performance,

i.e. what was being achieved or done. For purpose of performance audit, Clause 9(1) of the Bill contained safeguards to see that public funds were being properly spent. The Prime Minister laid emphasis on practical work together with teaching and research. He felt that absence of practical work would culminate an ivory tower people unconcerned with what was happening around.

2.3. Provision for Review

2.3.1. In pursuance of the Section 9(1) of the Act, Government appointed a Review Committee on the 15th February 1966. This Committee submitted its report on the 31st December 1966. The major recommendations of the Committee related to (i) changes in the Memorandum of Association (or Constitutions of ISI) with respect to objectives of the Institute, (ii) dissociation of ISI from the Planning Commission (iii) transfer of National Sample Survey from ISI to an autonomous organisation, (iv) stopping of the project (ISIJU-1) for the development of a computer, (v) expansion in the activities of Research & Training School, (vi) re-activation of policy advisory committee for SQC & OR and strengthening these units, (vii) maintenance of small units for purpose of research in the Research & Training School, and (viii) setting up of an Academic Council.

2.3.2. The Council of the Indian Statistical Institute appointed a Committee on the 14th January 1967, under the Chairmanship of late Dr. C. D. Deshmukh to advise the Chairman and Council of ISI on the report of the Review Committee. This Committee more or less endorsed the recommendations of the Review Committee, except that it suggested some changes in "objectives" recommended by the Review Committee. It did not also accept the recommendation regarding the Computer.

2.3.3. In order to incorporate some of the changes suggested and agreed to by ISI and also to add some new features, a revised Memorandum of Association was drafted and this was approved by the General Body of the Institute in July, 1974. This new Memorandum came into force in July, 1976, after it was approved by the Government of India. Some of the recommendations of the First Review Committee, which were earlier accepted by ISI were substantially modified or even rejected under the new Memorandum and Regulations. Appendix X gives some of the details.

2.3.4. Since the First Review Committee reported, there have been some basic changes in ISI. New centres have been added. NSS work has been given up. There has been substantial addition of staff in the rest of ISI. The School of Research & Training has been replaced by a number of Divisions. New bodies like Divisional Committees of Scientific Workers and Academic Council have been created. UGC pay-scales and designations have been given to the scientific staff. The positions of Dean and Professors-in-charge of Divisions have become elective for a fixed term. There is now less emphasis on survey research and greater emphasis on theoretical work. There are reports of serious friction between Mathematicians and Theoretical Statisticians and others, particularly in Delhi.

2.3.5. After a lapse of more than 16 years Government appointed the Second Review Committee on the 27th August 1982. The findings and recommendations of this Committee are given in Chapters III to VIII.

2.4. Four Phases

2.4.1. The Institute seems to have passed through four distinct phases since 1959, when ISI Act was passed by the Parliament :

Phase I : 1959-69, i.e. from the passage of ISI Act to substantial implementation of the recommendations of the First Review Committee.

Phase II : 1969-72 i.e. from substantial implementation of the recommendations of the First Review Committee to the death of Prof. P.C. Mahalanobis.

Phase III : 1972-76, i.e. from the death of Prof. P.C. Mahalanobis to the coming into effect of new Memorandum of Association.

Phase IV : 1976-83, i.e. from the coming into effect of the new Memorandum of Association to-date.

2.4.2. Phase I was a period of rapid growth, great enthusiasm and considerable focus on applied research work, especially National Sample Survey (NSS) and planning.

2.4.3. Prior to 1959, ISI carried out bulk of its applied research and survey work on the basis of *ad-hoc* contract payments. It received regular grant from the Government mainly for theoretical research work and training. In other words, there was a substantial amount of multiple funding of its activities. After 1959, there was a progressive and substantial increase of regular grant from the Government even for applied research and survey work and the proportion of *ad-hoc* contract payments declined. In spite of its greater dependence on Government grant, it enjoyed much greater autonomy than other similar institutions in the country. It was largely due to the special position that its Founder Secretary, Prof. Mahalanobis, enjoyed as Statistical Adviser to the Government, Member, Planning Commission and a friend of Prime Minister Jawahar Lal Nehru. The Institute greatly expanded its staff, set up new centres to cover other parts of the country and new units to undertake research in sciences and technologies other than statistics which it felt would help promote their mutual development. It became more of an inter-disciplinary and multi-regional organisation than it was before.

2.4.4. Phase II was a period of adjustment to some of the basic changes recommended by the First Review Committee, separation of NSS from ISI, severance of the link between Planning Commission and ISI, development of the Delhi Centre of ISI to concentrate on problems of economics, econometrics and planning. The bias towards applied research still continued. The personnel relations in Calcutta, however, started facing difficulties as a result of social unrest in that region.

2.4.5. Phase III was a period of transition following Prof. Mahalanobis' death, weakening of central guidance, inability to find new foci for applied research work to replace the loss of contract with NSS and Planning Commission, worsening of the situation in Calcutta, move of the new Director, Dr. C.R. Rao, and some Mathematicians and Theoretical Statisticians devoted to him from Calcutta to Delhi, growing concern in Calcutta Campus about its future role

and relationship with Delhi Centre, access to greater authority by Mathematicians and Theoretical Statisticians in Delhi Centre, greater emphasis on theoretical or "ivory tower" type of research work, greater indiscipline among junior staff and growing reluctance among senior scientists in Calcutta to take up applied research work that needed management of large staff, loss of emphasis on survey research given by Prof. Mahalanobis earlier and departure of Dr. C.R. Rao.

2.4.6. Phase IV saw the introduction of large representative bodies like the Council and Divisional Committees of Scientific Workers under the new Memorandum of Association, replacement of the School of Research & Training by Divisions comprising groups of units and having jurisdiction over all the Centres, election of relatively junior people as Heads of some of these Divisions, efforts by the second Director, Dr. G. Kallianpur, to develop a new major centre at Bangalore, increase in apprehension in Calcutta about the future role of Bangalore and Delhi Centres, increasing apprehension among Economists in Delhi Centre about domination by the enlarged group of Mathematicians and Theoretical Statisticians, resignation of good Economists, growing demand at Delhi and Bangalore for greater autonomy and even independence, departure of Dr. Kallianpur, controversy about the appointment of his successor, efforts by the third and present Director, Dr. B.P. Adhikari, to improve the image of ISI and use the golden jubilee celebrations of ISI to organise the visit of a large number of well-known scientists from all over the world to the Institute.

2.4.7. There has been a significant improvement in the situation in the latter part of Phase IV as compared to the earlier part of Phase IV and Phase III. Nevertheless, ISI continues to face serious problems, which call for urgent remedial measures.

2.5. Approach of the Committee

2.5.1. The Indian Statistical Institute is an institution which has attained a pre-eminent place as an advanced institute of research and teaching. It has earned international repute in the field of Statistics and related sciences. From its inception it has been guided by the principle that in statistics development can occur only from an integration of theory and practice. Prof. Mahalanobis conceived statistics as a "new technology with theoretical foundations in mathematical theory of probability and its practical value in its applications in natural and social sciences and in business affairs of all kinds." There is no doubt that this should continue to be the basic character of ISI with equal emphasis on pure and applied branches of Statistics.

2.5.2. In many ways ISI is a unique academic institution in India. It is largely funded by the Government of India but enjoys considerable autonomy in the pursuit of academic excellence. At a time when many old and high quality institutions have gone through a period of turmoil, if not decline, ISI has continued to function by and large as an institution of high quality. We feel that this basic character of the Institute should continue to develop, and therefore, we have tried to strengthen it so that it could work more effectively in future and contribute to the advancement of science.

2.5.3. This Review has taken place after a period of sixteen years and during this period a number of important developments had taken place in the Institute. This naturally added to the complexity of the task before the Committee.

During the course of the review it became clear that some re-organisation of the Institute and some changes in the management structure were essential in order to make the Institute a more cohesive and effective institution. We are conscious of the fact that in existing institutions which have a long standing some resistance to change is inevitable. However, we are of the view that if ISI has to keep its promise, some changes in its organisation are now essential.

2.5.4. At the same time we are conscious that the proposed changes must be consistent with the milieu within which the Institute functions. We have eschewed making recommendations, which would have looked ideal on paper, but which were likely to present difficulties in implementation.

2.5.5. We consider that ISI should continue to give equal emphasis on pure and applied branches of Statistics. It is our feeling that perhaps in recent years applied research especially survey research, has not received adequate emphasis. These trends need to be reversed. For achieving this it is necessary for the Institute to develop links, both formal and informal, with organisations in Government and outside which have interest in the application of statistical tools. The Institute must take the initiative in forging such active links.

2.5.6. Another important point which may be mentioned here relates to the setting up of units within the Institute in a variety of disciplines belonging to natural and social sciences. This obviously was done with a view to providing interaction between Statistics and different disciplines. Times have since changed and many institutions with a specialised focus in natural and social sciences have come into existence in India. The universal applicability of Statistics should not necessarily be taken to mean that the statistical institute must necessarily have units devoted to the various disciplines in other sciences. The Institute must, therefore, from time to time review and decide against the background of developments in the educational and scientific fields in the country as to which units are necessary and which may be redundant.

2.5.7. The major activity of the Institute, no doubt, is research. Research by individual scholars on subjects of their own choice is a necessary part of academic freedom. The motivation for such research is purely internal to the scholar. However, group research and more particularly inter-disciplinary research needs appropriate organisational device if there is to be a focus and a sense of direction. It has to be admitted that group or inter-disciplinary research is difficult to organise. Special efforts are, therefore, called for and we have accordingly made special recommendations for the promotion of such research activities in the Institute. The links with the outside agencies which are in a position to support research and other activities must be properly coordinated under an appropriate institutional umbrella.

2.5.8. Teaching at ISI absorbs only a small part of the total faculty time. Nevertheless, teaching must continue to be an integral part of the Institute. The benefits of learning from a group of distinguished scholars must not be lost to the younger generation. The Institute must continue to maintain the high standard that it had achieved in the past in its teaching programmes.

2.5.9. The growth of an educational and research institution depends to a large extent on the organisational environment which consists not only of the formal structures but also of the informal systems. The informal systems lead to the

establishment of certain conditions which often times have a stronger influence than the formal structures. In an institution of advanced studies, the faculty must have enough freedom to pursue what they consider appropriate. However, it must also be possible to ensure the fulfilment of institutional goals and objectives. The Institute adopted certain organisational changes in 1976. While we do not propose to suggest any major alteration in this basic institutional structure, we have made recommendations in the subsequent chapters for supplementing the organisational set up by a number of small committees which will help in more effective functioning of the various organs of the Institute and also in enabling them to acquire a better sense of direction.

2.5.10. An important part of the terms of reference of the Committee relates to the financing of the Institute. We are firmly of the view that the academic work of the ISI should continue to be financed wholly by the Government and the Institute should not be asked to change its academic character with a view to reducing its reliance on the public exchequer. At the same time, we believe that it would be in the academic interest of the ISI, if somewhat greater emphasis was given to applied research and to the application of statistical techniques to practical issues. A greater emphasis on applied fields and cost-related pricing of services provided by ISI would lead to accrual of higher revenues which could be used with advantage for further development. The financial recommendations of the Committee are designed to make more resources available to the Institute without reducing its primary academic character or reducing the responsibility of the Government for funding its research activities.

2.5.11. We are also of the view that the public accountability of institutions and personnel which use public money is essential. Therefore, the system of auditing and accounting in ISI deserves to be strengthened. Similarly, it is essential to ensure that there is a proper system of evaluation of the work of ISI as an institution as well as of the individuals working in it. As such, we have considered it appropriate to make certain recommendations regarding periodic performance audit of ISI and evaluation of its research staff.

2.5.12. We are also of the view that our recommendations in respect of re-organisation must not lead to any retrenchment of the existing staff. However, some redeployment of staff among different units with minimum geographical dislocation, may be necessary. We believe that such redeployment is essential now and will also be necessary in future for a healthy growth of the institution, as needs and capabilities change.

CHAPTER III

REVIEW AND EVALUATION OF PERFORMANCE

3.1. Audit of Performance

3.1.1. "Audit of Performance" that Prime Minister Nehru wanted for a scientific institution like ISI has basically to comprise review and evaluation of work, over a period, at two levels: the Institute as a whole and its main scientific components.

3.1.2. This has to be done keeping in view the nature of the institution, its avowed objectives and the personnel and other resources available to it.

3.1.3. We propose to make first a few preliminary observations about ISI as a whole, then look at its component divisions and units and follow this up by a general assessment of its staff composition and strength in recent years.

3.2. Nature of ISI

3.2.1. The name, Indian Statistical Institute, has now become famous all over the world. But inasmuch as it can be interpreted in a narrow sense by laymen, it has created some problems for the organisation.

3.2.2. However, the Memorandum of Association (or constitution) of the Institute and the Government of India have both interpreted its name, objectives and functions rather broadly, so that it is now more like a university than a technical institute in nature.

3.2.3. The Memorandum of Association, as approved by Government of India in 1976, clearly states that the objectives of the Institute shall be:

- (1) "to promote the study and dissemination of knowledge of Statistics, to develop statistical theory and methods, and their use in research and practical applications generally, with special reference to problems of planning of national development and social welfare."
- (2) "to undertake research in various fields of natural and social sciences, with a view to the mutual development of Statistics and these sciences."
- (3) "to provide for, and undertake, the collection of information, investigations, projects and operational research for purposes of planning and the improvement of efficiency of management and production."

3.2.4. The Government of India also formally recognised the broad interpretation of the role of Statistics in the functioning of the Institute in an official communication to it dated the 15th June, 1962, as under :

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

The First Review Committee generally endorsed this position, but they recommended a ceiling of 20% on the expenditure on such auxiliary activity.

3.2.5. However, the narrow view about the scope of work of ISI still persists in the minds of some people. This has prompted others to suggest that the name of the ISI should be changed and it should be called a university (as mentioned at Para 3.9 of the memorandum of Association approved by the Government of India) and placed under the jurisdiction of the Ministry of Education instead of the Department of Statistics.

3.2.6. That in our view will not be a correct step to take. ISI is now a prestigious name somewhat like M.I.T. Both these institutions are likely to lose something if their names were to be changed. Further, although, ISI is nearer a university than a technical institute, it has some difference from a conventional university. A university is primarily a teaching institution, although it also undertakes research. ISI is primarily a research organisation, although it undertakes some teaching. In a university diverse disciplines co-exist in a campus. They are supposed to inter-act on a purely informal basis. There is no formal policy or programme to make them interact. In ISI, other disciplines have been purposively placed around a key technology, statistics, with the specific and formally stated objective of "the mutual development of statistics and these sciences". Therefore, there is this subtle difference, viz. ISI is an "inter-disciplinary" while a university is a "multi-disciplinary" organisation.

3.2.7. ISI has submitted to the Committee a paper entitled "Preamble to the Account of Scientific Activities (1970-82)", which clarifies its position usefully and gives a summary account of its recent activities. We agree broadly with the views expressed in this paper so far as the specific issue of nature and scope of work of ISI is concerned. As stated in Chapter I, this paper has been enclosed at Appendix VII.

3.3. Relative Flexibility

3.3.1. Because of its special character, ISI, has another basic difference from a conventional university. Unlike the latter, it has no pre-determined post (or cadre) concept. Posts and units are to be created to accommodate a brilliant scientist or to meet a special need. These are to be abolished, when that scientist or need disappears. Most universities do not have this flexibility.

3.3.2. In practice, however, ISI has not been able to take due advantage of this flexibility. Its ability to create new positions and units has been limited for various reasons. Opposition from workers has inhibited it from abolishing posts and units, which had outlived their usefulness. Accordingly, the special dynamism that the promoters of ISI presumably expected to result from flexibility, has been lost to it to a considerable extent.



3.4. The Staff of ISI

3.4.1 The best scientists of ISI seem comparable with the best of other institutes of similar excellence in their competence and diligence. It is among the average and below average scientists that one notices some difference in these respects. The difference is even more striking among the non-academic, especially the junior staff. The ratio of non-academic staff to academic staff is much higher in ISI than in comparable institutes. The ratio in ISI is as high as 5 : 1. This has tended to complicate the administrative problems of ISI.

3.4.2 Unlike in some comparable institutes, there is no system of annual performance record so far as the scientific staff of ISI are concerned. This has tended to affect individual accountability. In every department of ISI there is a number of individuals who are remarkably competent and diligent. But there is also a number whose performance leaves much to be desired. In the absence of annual performance records and an effective system of accountability, incentives and disincentives, the performance of some of the units has been significantly less than the number of staff would warrant.

3.4.3 If in spite of this deficiency, some of the units of ISI are continuing to publish papers of international standard and doing other work, which has earned praise of experts consulted by us, the credit for this should go to that group of competent and diligent members of the ISI staff to whom we have made a reference earlier.

3.4.4 But the scientists, who are in position to publish papers and earn peer appreciation, have a specific incentive. This cannot be said of those, whose work gets submerged in a report prepared by a team, because of lack of a satisfactory method of assessing and recording their contribution in a regular manner.

3.4.5 The same thing applies, although to a smaller extent, to those who devote a large part of their time to teaching. We have said "to a smaller extent" because to those who like teaching, appreciation by students is often a significant recognition and incentive. Nevertheless it is only fair that the time spent in teaching and the general reputation regarding its quality should get systematically recorded.

3.5. Applied and Inter-disciplinary Research

3.5.1 The founders of ISI, and its Memorandum of Association, placed special emphasis on applied research and inter-disciplinary research. So long as Prof. Mahalanobis was at the helm of affairs both received considerable attention. But after his death there has been a significant change.

3.5.2 The separation of NSS from ISI created a void in the field of survey research, which has not yet been filled by giving new foci to such research and identifying new areas where the talent and facilities available in ISI can make optimum contribution for the benefit of science and society.

3.5.3 Under the present procedure, individual scientists or single discipline units initiate research projects. They are considered by the Divisional Committee of Scientific Workers (DCSW) and the Technical Advisory Committee concerned. Both these bodies consider these projects from the standpoint of a particular discipline only. Under the constitution, it is the Academic Council which has been given the function of "promotion of inter-disciplinary studies

and research within the Institute and collaboration with external organisations." Unfortunately, the Academic Council has not been able to pay attention to this function at all. This has resulted in neglect of inter-disciplinary research in the Institute. Whatever inter-disciplinary research gets done in ISI is due more to the personal initiative of a few concerned individuals or needs of those who sponsor research projects, rather than official effort of the ISI as an institution. It is important to recognise clearly this deficiency and evolve suitable corrective mechanism and measures.

3.6. ISIs Development

3.6.1. It is said that the ISI has not been particularly successful in planning its own development in a balanced, consistent and continuous manner. The nature and composition of its centres, divisions and units are cited as examples.

3.6.2. The Delhi Centre was originally intended to concentrate on problems of economic planning. But it has now become a centre largely for Mathematics and Theoretical Statistics. The Planning Unit has lost its importance and applied statistics, which is an essential aid to planning, has not yet found a place here.

3.6.3. For the Bangalore Centre, 30 acres of land have been secured and a major building programme is under way. But no one precisely knows yet what its main focus and function will be and whether primacy will be given to Mathematics and Statistics or Economics. The posting of two senior mathematicians at Hyderabad and Madras is difficult to justify.

3.6.4. The composition of some of the Divisions and rationale of some of the units in Calcutta are difficult to understand.

3.6.5. The ISI Council and the Academic Council created under the Memorandum of Association of 1976 do not seem to have focussed attention on these issues or to have had any worthwhile policy discussion in their respective spheres. The Director is an overburdened person, whom the day-to-day problems of the management of such a big Institute with its diverse Centres, Divisions, Units and factions, keep extremely pre-occupied.

3.7. Divisions of ISI

3.7.1. With this broad look at the Institute as a whole, we may now turn to its important components.

3.7.2. The scientific activities of the Institute are grouped in the following Divisions:

- (i) Theoretical Statistics & Mathematics (called Stat-Math Division)
- (ii) Applied Statistics, Surveys & Computing
- (iii) Social Sciences
- (iv) Physical & Earth Sciences
- (v) Biological Sciences
- (vi) Library, Documentation & Information Science
- (vii) Statistical Quality Control (SQC) & Operations Research (OR)

3.7.3. In this context a reference may be made to the following appendices:

- (i) Appendix XI which gives the number of scientific staff of each Division and Unit;
- (ii) Appendix XII which tabulates the number of papers published by the scientists of the Institute between 1970 and 1980. This information has been collected from the reports submitted to us on the activities of the various Divisions of the Institute;
- (iii) Appendix XIII which gives data about the quantum of selected items of work done by the scientists in each Division. This information has been supplied by the Director, ISI at our request. It relates to 130 scientists, out of a total of 152 presently working in Calcutta. These scientists do not include the academic staff of the SQC & OR Division and those who are engaged in computer maintenance; and
- (iv) Appendix XIV which summarises the views expressed by different eminent people and experts to us about the general quality of the work of the Institute. ✓

It may be noted that the information in these appendices is not complete and also lacks uniformity. However, these appendices give a broad idea of the relative performance of different Divisions and Units and individual scientists working in them. What stands out is the wide variation in the performance of different units and different individuals. This indicates that the performance of a number of them has been very good while that of others has not been satisfactory. We are aware that a proportion of poor performers exists in other institutes also. But we feel that it should have been much less in a centre of excellence like ISI. There is need to have an arrangement for providing effective peer and/or administrative guidance and pressure on the laggards.

3.8. Theoretical Statistics & Mathematics Division

3.8.1. This Division which is popularly called Stat-Math Division has units in Calcutta, Delhi, Bangalore, and one scientist each at Hyderabad and Madras.

Stat-Math Division in Calcutta

3.8.2. The Calcutta unit of this Division has 5* professors and 24* other faculty members. They have been engaged in research in a wide variety of areas in Mathematics and Statistics. They have an impressive list of publications during the period under review. Some of the papers published are path-breaking. By and large their research out-put is of high quality.

3.8.3. Besides their work in Theoretical Statistics and Mathematics, this Division has a tradition of collaboration with other Divisions of ISI. It has close contacts with the SQC & OR Division. The graphtheoretic techniques developed by it have been applied in studies of symmetry of sociological relations. This Division has also done a good deal of work in sampling theory and computer systems, and several other areas of application of statistics.

*N.B. The figures of Academic staff used in this Chapter are those which were supplied by the Institute in October 1982.

3.8.4. The research output of this Division has received worldwide attention and, therefore, it has been able to attract talented statisticians from all over.

3.8.5. This Division is engaged in teaching of B. Stat. and M. Stat. courses, and in training of research scholars. Forty-four Ph. Ds were produced during the last decade. The Division has conducted several summer schools over the years to promote better understanding of modern view points in Statistics and Mathematics among college and university teachers.

Stat-Math Unit in Delhi

3.8.6. The Delhi unit of this Division has 7 professors and 3 other faculty members. It came into being in Delhi when Dr. C.R. Rao moved in. He attracted some Statisticians and Mathematicians to join. It has now more professors than the Calcutta unit.

3.8.7. The main areas of research are linear models, generalised inverses, characterisation problems, stochastic processes, game theory, mathematical physics, functional analysis etc. The research publications are of good quality. Some of the work done in this unit can be quite useful for econometric theory and model building.

3.8.8. Unfortunately, there is no evidence of collaboration between the Stat-Math Unit and the Planning or SQC & OR units in Delhi. On the other hand there is considerable hostility among them.

3.8.9. The faculty of the Stat-Math Unit in Delhi is also engaged in teaching M. Stat. students and providing research guidance to Ph. D. students. However, the number of students especially in M. Stat. is rather small. In the current session there are only 11 students in M. Stat. First Year and 15 students in M. Stat. Second Year. The Delhi Unit has so far produced 6 Ph. Ds.

Stat-Math Unit at Bangalore

3.8.10. The Stat-Math Unit at Bangalore Centre was started in 1978. Although it was started with a lot of enthusiasm by the then Director of ISI, Dr. G. Kallianpur, it never picked up. In fact, one associate professor and one lecturer are the only faculty members. The Unit has no teaching or research activity, except for the individual research by the professor.

3.8.11. Dr. Kallianpur, who sponsored the Bangalore Unit, has argued "Bangalore is the most important new industrial centre in the country. The new industries concentrated in this region (aircraft, telephones, electronics) afford an enormously important field of application for Statistics and Stochastic processes. Apparently similar considerations led the TIFR to start a small branch of its own (before the ISI did) on the campus of the Indian Institute of Science..."

3.8.12. But the five years (1978—1983) of experience has shown that the experiment has not succeeded, not so much because of lack of potentialities (mentioned by Dr. Kallianpur) but because it has been difficult to attract bright statisticians to accept regular positions at the Bangalore Centre. It is not convincing to argue, as Dr. Kallianpur has done, that a Centre can be run relying mainly on visiting faculty. It is necessary to have a regular core faculty with a minimum

critical mass in a centre. If this is to be continued in Bangalore, it will be necessary to strengthen it by transfer of staff from other Centres and by fresh recruitment.

Stat-Math Staff at Madras and Hyderabad

3.8.13. It is obvious that the Stat-Math staff at Madras and Hyderabad are too isolated to be useful. They have no institutional research or teaching activity. They have only some individual research work to show. There is a strong case for transferring them to the Bangalore or Calcutta Centres.

3.9. Division of Applied Statistics, Surveys and Computing

3.9.1. This Division is based only in Calcutta. It has 23 faculty members including 3 professors. It is divided into two units : (i) Computing and (ii) Bio-metry. Surprisingly there is no separate applied statistics or survey research unit. The name of the Division, therefore, seems misleading.

3.9.2. The research activities of the Applied Statistics group cover problems of theoretical and applied nature in sampling theory, sample surveys, design of experiments, combinatorics, multivariate analysis and linear models. Some of the faculty members are devoting considerable time in work on Theoretical Statistics.

3.9.3. The Computing group deals with design and implementation of a statistical data based management system, computer faults and fault diagnosis, mathematical and statistical software package, numerical methods, and computer architecture.

3.9.4. The Biometry Unit is engaged in the development of field research to study malaria and other vector propagated tropical diseases, using modern epidemiological techniques.

3.9.5. The Division took up a number of projects during the period under review from Government organisations and certain research institutions. Nine of them have been described in its report submitted to the Committee. But they appear to be a mixed bag. The Division has not yet been able to regain the loss of focus that was caused by the transfer of NSS from ISI.

3.9.6. It is high time that the Division develops new foci. Areas like the tertiary sector, inventory changes, transport, non-agricultural production in rural areas, quick estimation of disaster losses, and analysis of available secondary data in key areas are all in need of special attention. There is a need for data base generation on the socio-economic, ecological and biometric profiles of different regions. There is also a number of problems associated with large scale estimational surveys and small scale diagnostic surveys, which require further research. The Division could be also very helpful to the NSS in solving its many technical problems, if there is mutual interest. In fact there is a strong case for setting up a separate survey research unit.

3.9.7. The staff of the Division have been taking part in the teaching programmes of B. Stat., M. Stat., ISEC (International Statistical Education

Centre) and for ISS (Indian Statistical Service) probationers and other Government officers. They have also been organising specialisation courses in computer science for M. Stat. and M. Tech. students.

3.10. Social Sciences Division

3.10.1. This Division has seven units located in Calcutta, one in Delhi and one in Bangalore and has a total faculty of 53 including 9 professors. The planning Unit in Delhi is part of this Division and has a strength of 15 including one distinguished scientist and 2 professors. The Economic Research Unit in Bangalore, which is also part of the Social Sciences Division, has a faculty of only one professor and one other economist.

Social Sciences Division in Calcutta

3.10.2. This Division consists of the following seven units:

- (i) Demography Research Unit
- (ii) Economic Research Unit
- (iii) National Income Research Unit
- (iv) Pre-census Population Studies Unit
- (v) Linguistic Research Unit
- (vi) Psychometric Research & Services Unit
- (vii) Sociological Research Unit

Demography Research Unit

3.10.3. Many of the research studies of this unit are based on survey data requiring statistical expertise. But in the report 'Empirical Studies on Trends and Differentials of Fertility', it is stated,

"the researchers experienced difficulties in integrating results from sample surveys which were conducted by different scientists because of differences in sample designs and concepts used."

Yet there is no evidence of any collaboration between this unit and the Applied Statistics Division.

3.10.4. The teaching activities of this unit comprise of teaching (i) B. Stat., (ii) M. Stat., (iii) ISEC, (iv) training in vital statistics and demography for statistical officer trainees, and (v) ad-hoc training for trainees from abroad.

Economic Research Unit in Calcutta

3.10.5. This unit in Calcutta has a long tradition of good quality work in quantitative Economics. The research work of the unit is mainly in the field of economic theory, regional analysis, econometric methods, applied econometrics and public policy.

3.10.6. Looking through the list of the research projects of this unit we find that it has taken up some projects, which are joint ventures of several units. In

some other projects, several people of the unit have participated. Besides these evidences of collaborative efforts, ERU has had long association with Applied Statistics, Sample Survey and Stat-Math units ; and it has been successful in sparking off interest of other units in its problems.

3.10.7. Some of the research projects of the ERU have been legitimately short-term and time bound, but others (like one on Indian economy, 1970-71 and 1971-72, and on a macro-econometric model for India) could be on continuing (or long term) basis and broad based. But the latter were given up half-way. The reason seems to be some compulsion which forced it to take up short term projects. While we are not against the unit accepting short-term projects, we feel that some of the long term projects (like those mentioned above) are of substantial national importance and should be undertaken by the ERU on a continuing basis. There is also need for developing regional planning models with provision for such information flow as would help implementation. In such projects, the unit should seek collaboration not only with other units of ISI, but also with outside organisations.

3.10.8. There has been some dissatisfaction about the manner in which the research projects have been approved by the DCSW for ERU as well as other units. We have been told that "... project proposals are discussed in the meetings of DCSW where external experts are also present. But the open discussion inhibits people to criticise projects of one another..." in our view this can be taken care of if written reports of external referees are obtained on a confidential basis for major projects and considered by the DCSW and the TAC before approval.

3.10.9. Besides teaching courses for B. Stat. and M. Stat. students, ERU has a well-developed Ph. D. programme. The number of Ph. Ds produced so far is 11.

National Income Unit

3.10.10. Research by this Unit in national income estimation is very useful for understanding the structure of the economy. But, in our view, this research should be done along with the relevant projects relating to the modelling of the Indian Economy. Such work is likely to throw up several methodological problems which will interest Stat-Math and Applied Statistics groups also.

3.10.11. The research contributions of the unit under the leadership of its first professor had been large and of great value. He maintained close links with the Central Statistical Organisation and the Reserve Bank of India. But the output of this Unit has gone down after his retirement.

3.10.12. The scientific staff of the National Income Research Unit (NIRU) collaborates with those in ERU in teaching of economics and related topics, specially 'national accounts'.

3.10.13. But it is now a small unit and has no independent Head. It is currently headed by a professor of ERU. It may be advantageous to merge it with ERU.

Pre-census population studies unit

3.10.14. This again, is a very small unit. The Head is the sole research worker of this unit, others are technical assistants. Its main project is 'pre-

census population project of India'. Other projects are socio-economic bibliography of India, compilation and editing of the manuscripts of the statistical survey of Bengal Districts, 1807—14, and analytical studies. The pre-census project is expected to be completed shortly. The ISI may consider merging this Unit with Demography Unit. However, the present Head should not be disturbed in the last phases of the project.

Linguistic Research Unit

3.10.15. The present programme of linguistic research in the ISI was initiated in 1968 when Prof. Djordje Kostic, of Yugoslavia came to ISI as a Visiting Professor with the object of (a) studying the acoustic and articulatory phonetic structure of major Indian languages, and (b) applying statistical methodology to linguistic and phonetic data.

3.10.16. Since then this unit has continued to collaborate with the Institute of Prof. Kostic in Belgrade and with other departments of Linguistics in various universities in India. There is, however, no evidence of collaboration of this unit with any other unit of ISI. Statistical analyses of the linguistic data seem rudimentary and do not appear to have benefited by the unit being part of the ISI. All publications listed by the unit are of Prof. Kostic (with a few co-authored by members of the Linguistics Unit).

3.10.17. It is evident that the main guiding force of the unit continues to be Prof. Kostic. Either a competent Indian successor to him should be found or the unit should be phased out. If it is continued there should be close link with ECSU (Electronic and Communication Science Unit), which is doing very useful work on pattern recognition.

Psychometric Research & Services Unit

3.10.18. This unit consists of 2 professors and 3 other faculty members.

3.10.19. The Unit is mainly engaged in research on the application of psychometric methods to the problem of selection of students for various educational courses and of personnel for different kinds of industry. The research activities of the unit include development of tests for educational measurements, new methods and tools for the selection of professional trainees and placement of personnel in the industry, intelligence tests for deaf children for diagnostic purposes etc., studies on delinquent children, studies in areas of community and social psychology, Rorschach Psychogram through Computer programming and development of a scale for measuring managerial ability.

3.10.20. The psychometry unit has provided technical services in connection with selection of students to ISI and recruitment of staff to some other organisations. The faculty members have a long list of publications, especially in earlier years. But their output has declined sharply in recent years. There is now serious factionalism which is adversely affecting their current work. This needs urgent attention of the Institute.

Sociology Unit

3.10.21. The founder and first professor of the sociology unit emphasised the role of sociology in ISI "as an empirically verifiable area where indicative

logic and method of statistical inference could be and were to be applied". He had been very active as a researcher and played an important role in the field of sociology at the national and international levels.

3.10.22. We note that the unit collected a large mass of data from a large scale survey in and around Giridih town, but the sampling design was not prepared in consultation with the concerned Statistical Unit of ISI. These data yet remain to be properly processed and utilised for meaningful analysis of social change. This reveals lack of effective communication between the Sociology Unit and the technically trained statisticians of ISI.

3.10.23. During the past two years, however, the members of the unit have begun to realise the limitation of their hitherto isolated *ad-hoc* research endeavours. They have recently identified 3 major themes, 7 areas and 12 specific projects within the overall framework "dynamics of persistence of change in social structure".

3.10.24. We feel that in an institution like ISI, with its continuing commitment to the Mahalanobis tradition of studying social transformation, a well-developed Sociology Unit has an important role to play and deserves support. The Unit, has now two scholars of considerable competence who should be able to provide effective leadership to the research group.

Planning Unit in Delhi

3.10.25. ISI in Delhi was established in 1967 mainly as the Planning Unit. In 1960's and early 1970's it worked in close collaboration with the Perspective Planning Division (PPD) of the Planning Commission. The link between the Planning Unit of ISI and the Planning Commission was snapped as a consequence of the recommendation of the First Review Committee. By mid 1970's many outstanding economists of the Unit left the Institute to accept assignments elsewhere. Although, in the early stages, the Unit produced a good deal of outstanding research in the areas of various aspects of planning, the research work has suffered in the later part of 1970's. In recent years the Unit has undertaken research projects on distribution and consumption of commodities like sugar, cement, steel etc., regional economics and construction of input-output tables. The Unit may usefully collaborate with ERU and NIU in the areas suggested by us earlier and in developing new approaches and techniques of planning and programming.

Economic Analysis Unit in Bangalore

3.10.26. This Unit which has only one professor and one other faculty member has produced a number of useful papers on aspects of income distribution and poverty. But it lacks the minimum critical mass to produce an impact.

3.11. Division of Physical and Earth Sciences

3.11.1. This Division has 7 professors and 31 other faculty members. It consists of the following eight units :

(i) Electronics Unit

(ii) Electronics and Communication Sciences Unit

- (iii) Geological Studies Unit
- (iv) Physics Unit
- (v) Chemistry Unit
- (iv) Flame Project Unit
- (vii) Maintenance Unit (Electromechanical Laboratory)
- (viii) Audio Visual Unit

Electronics Unit (EU)

3.11.2. This Unit has 15 scientific workers including 2 professors.

3.11.3. It was originally set up in late 1960's with the object of designing and developing a second computer in the Institute. However, it became clear in early 1970's that full-fledged research and development of a computer design could not be undertaken by the Institute due to various reasons. The group which started this work has, since 1970, been engaged in theoretical research on digital systems and in teaching and training activities of the Institute. Some of the personnel of this Unit are also engaged in research in the fields of theoretical physics and fluid mechanics.

3.11.4. This Unit had designed the first indigenous central processor in collaboration with the Jadavpur University. It had also developed a very fast paper tape reader. However, the fact remains that the Unit has for various reasons failed to achieve tangible results. ISI should phase out this kind of technological activity.

3.11.5. The staff of the Unit is also engaged in teaching a number of courses, including B. Stat., M. Stat., M. Tech., Diploma in Computer Science, etc. They also supervise Ph.D. work of some students.

Electronics & Communications Sciences Unit

3.11.6. This Unit has 13 scientific workers, including one professor.

3.11.7. The research activities of the ECSU include information systems and computing circuits, digital signal processing, digital data communication and net working problem, Cybernetics, System Theory and Artificial Intelligence, statistical and mathematical methods of Pattern Recognition and Applications, statistical studies in speech and musical acoustics Parametric and Non-Parametric Methods in Image Analysis and Image understanding system, and Fuzzy Set Theory and Application.

3.11.8. Scientists from E.C.S.U. take classes in Computer Science Courses for B.Stat. and M.Stat. and offer guidance to Ph.D. students. Till now 4 students of this unit have been awarded Ph.D. degree of the Calcutta University. Some students from IIT, Kharagpur, B.E. College, Jadavpur University, B.H.U. and Calcutta University get their practical training in advanced digital technology in ISI.

3.11.9. The scientists of this unit have been collaborating with a number of organisations like the Electronic Commission, Defence Research and Development

Organisation, IIT's, All India Institute of Medical Sciences and National Physical Laboratory.

3.11.10 It is not quite clear as to why two units bearing nearly the same names exist in the Institute. The EU seems to have been historically earlier to work on computer hardware activities. The other unit is now reported to be doing work on software and pattern recognition and signal processing. However as electronics is the main stream of activity, ISI should consolidate these two into one unit. It does not also seem appropriate that the Electronics Unit should deal with Fluid Mechanics and Theoretical Physics activities. These subjects should form part of the Physics Unit.

Geological Studies Unit

3.11.11 The Geological Studies Unit has a faculty of 8 including 3 professors. This unit does not have any teaching responsibility.

3.11.12 It has taken up a team approach to a common focus "Precambrian and Gondwana Geology in Pranhita Godavari Valley". So far research efforts of the unit have been concentrated mainly on (1) Geological mapping, (2) Vertebrate Palaeontology, and (3) Sedimentology.

3.11.13 Before the appearance of the workers of this unit in the Pranhita-Godavari Valley in the late 50's, the valley was geologically almost virgin. The unit initiated geological mapping of the area in terms of modern concepts. The GSU has not only erected the Precambrian and Gondwana lithostratigraphy in the valley, but has also brought into focus the complex facies mosaics generated by near shore and fluvial processes. Now that stratigraphical foundation has been laid and outlines of approach have been defined, the GSU should attempt to complete the stratigraphy in the remaining parts of the basin. It is high time that the unit publishes a synthesis of the stratigraphic studies so far made by it.

3.11.14 The dinosaur (*Barapasaurus tagorei*), displayed in GSU Museum is a result of sustained research efforts of the Unit in the field of Vertebrate Palaeontology. Justifiably, the Unit is considered to be a premier centre of research in Vertebrate Palaeontology in India and abroad.

3.11.15 It seems that with the departure of some persons holding senior positions in recent years, the academic standard of the sedimentology group in particular has been affected causing a crisis of leadership. No senior worker participated in research on proterozoic stratigraphy and sedimentation since 1966. The same is also true for Gondwana Sedimentology. Collaboration between the workers of the unit and statisticians seems to have faltered in recent years; attempts need to be made to strengthen such collaborative programmes.

Physics Unit

3.11.16 The Physics Unit comprises one senior lecturer and 3 junior technicians.

3.11.17 The Unit came into being in 1960 when the B.Stat. and M. Stat. courses were initiated by ISI. This Unit has been catering to the teaching need in science subjects. During 1960-80, Physics used to be obligatory for the B.Stat. students. Since 1981 the study of general sciences like physics has been made one of the elective subjects for B.Stat. and the teaching load of the unit has declined substantially.

Chemistry Unit

3.11.18. The Chemistry Unit comprises one associate professor, and 9 junior technicians. It has now reduced teaching load for the same reason as noted for Physics.

Flume Project Unit

3.11.19. The Flume Project "A" which relates to the study of Grain-size Distribution has been carried out in ISI since 1976 by a team consisting of a geologist, a statistician and a mathematician. The object of this study is to examine the physical process of grain sorting by running water in alluvial streams and experimental channels leading to development of specific grain-size distribution patterns and to develop adequate theoretical models connecting bed (source) materials, flow parameters and grain-size distributions of transported materials. This appears to be a project of some importance involving a number of disciplines. Initially the project was jointly financed by the Indian National Science Academy and the ISI. But since 1979 it is financed solely by the ISI. Flume Project "B" which deals with the sediment transport mechanism, is an on-going project designed to study the mechanism of ripples and dune formation.

Maintenance (Electro-Mechanical Laboratory) and Audio-Visual Unit

3.11.20. The Division of Physical & Earth Sciences has two more units. One is called the Maintenance Unit (Electro-Mechanical Laboratory) which has fabrication equipment and special testing and measuring equipment. This Unit can be broadly divided into two parts. The first part deals with developing fabrications and the second part with the repair and maintenance of scientific equipment, reprographic equipment of science Divisions etc. The second unit is called the Audio-Visual Unit, which is well-equipped with various kinds of public address systems, recording equipment, transcription of recorded material and projections of various conferences, seminars, etc. These are basically service units.

3.12. Division of Biological Sciences

3.12.1. This Division of the Institute has a faculty of 11 including 1 professor and consists of the following units :

- (i) Anthropometry & Human Genetics,
- (ii) Biochemistry,
- (iii) Botany Research,
- (iv) Crop Science,
- (v) Entomology Laboratory,
- (vi) Embryology, and
- (vii) Leaf Protein.

Anthropometry and Human Genetics Unit

3.12.2. The Anthropometry and Human Genetics Research Unit came into existence in its present form in 1968.

This Unit is engaged in research in broadly five categories, namely, (i) social biological programme, (ii) genetics, diversity and evolution of morphological traits,

(iii) human ecology programme (iv) human adaptability programme, and (v) biochemical genetics programme. Most of the studies undertaken by the Unit are reported to be of good standard.

3.12.3. Besides carrying out research, the scientists of this Unit have also been involved in the teaching programme, though it is now limited because anthropometry and human genetics is only an elective subject for the B.Stat. course. The Unit also gives research guidance to Ph.D. students. It has so far produced 3 Ph. Ds.

3.12.4. This Unit seems to have had good collaboration with the statisticians and some other scientists in the Institute. For example, this Unit carried out a study in 1970-71 to examine sex ratio and sex sequences of births in India. This was done in collaboration with the statisticians and system analysts of computer science unit. Again in 1973-74 this Unit carried out a sample survey on "some aspects of family planning (including abortions)". In this survey the statisticians and scientists of the computer science unit as also those of demographic research unit of the Institute had collaborated.

Botany Research Unit

3.12.5. This Unit has only one scientist, besides a few technical hands. The Unit is engaged in a number of studies. Presently it has 9 research projects in hand.

3.12.6. One project of the Unit relates to the "behaviour of field rodent" where an effort has been made to provide data to overcome the speculative basis of computing field losses caused by rodents. This project is descriptive in nature. Under the project on the "inter-specific and intra-specific competition and interaction in cultivated plants", the information gathered is of generalised nature. Much more work is required to substantiate the assumptions of real advantages of mixed cropping. This point also holds good for the project on rice breeding where social relevance is aimed at in developing dual purpose (grain-cum-straw) cultivars.

3.12.7. This Unit is not engaged in any teaching programme. It has been reported to us that the single scientist, who is heading this Unit, is due to retire in another 3-4 years time. The Institute should consider early the question of either finding a suitable replacement from or transferring the work and staff to another organisation specialising in Botany.

Crop Science Unit

3.12.8. This Unit came into existence in 1961. It had one professor, who was in-charge of the Unit and who resigned in 1981. Since then the Unit has been functioning without any scientific staff. It has only a small technical staff at present. The Unit is engaged in studying the phenomena of asymmetry in plants and animals with a view to gaining knowledge of laws operative in the structure and behaviour in case of animals and the field in case of plants.

3.12.9. The biometric work in the 4 projects of this Unit seems to be quite interesting. The publications put out by the Unit in the past are impressive. But no publications have been brought out after the retirement of the professor-in-charge. This unit is not engaged in any teaching programme.

3.12.10. Although small, this Unit had done commendable work in the past. It should be either manned properly or its work and staff should be transferred to another institute specialising in this field.

Leaf Protein Unit

3.12.11. This Unit was established in 1970 with the objective of initiating research on leaf protein as a part of an International Biological programme. The Unit has one Associate Professor and one Lecturer and is engaged in research to develop the technology for production of concentrated leaf protein at a low cost.

3.12.12. It has done good work covering various aspects of the leaf protein technology. The results obtained so far have been encouraging. However, no leaf protein concentrate has yet reached the marketable stage.

3.12.13. We suggest that the unit should now take up intensive bio-chemical and nutrition studies on the leaf protein concentrates already isolated from promising plants, and develop leaf protein concentrates particularly for livestock and poultry feed on a priority basis.

Embryology Research Unit

3.12.14. This Unit was established in 1961. It has one associate professor and some supporting staff. The Unit has been engaged in study of invertebrate embryology involving mathematical and statistical models, molecular and cellular embryology, bio-mathematics and bio-statistics, and molecular and general ecology.

3.12.15. The Unit has carried out both basic and applied research, particularly in the field of invertebrate embryology. It has also evolved mathematical and statistical models on the fundamental growth processes, such as transcription translation, cellular differentiation and morphogenesis.

Entomology Laboratory

3.12.16. This Unit has only one lecturer with some supporting staff. It is engaged in measurement of insect nuisance, mosquito swarming, gut movement and study of malaria vector in Calcutta. The Unit seems to have done some good research work in its limited field.

3.13. Library, Documentation & Information Sciences

3.13.1. The Library, Documentation and Information Sciences Division of ISI comprises a specialised scientific library at the headquarters at Calcutta, outlying branch libraries at Delhi, Bangalore, Giridih, Bombay, Madras, etc. and a Documentation, Research & Training Centre (DRTC) at Bangalore. The Division caters to the needs of the scientists, researchers and students of the Institute as also members of some other educational institutions.

3.13.2. The library has now a total staff of 94 including 4 at Deputy Librarian or higher level. Besides covering the conventional areas of functioning it has gradually developed documentation, bibliography, reprography and translation services. It has, presently 123,069 books of which at least 2500 are reported to be rare and out of print books and 3500 reference or text-books. It has about 57,000 journals (bound). The number of current titles received in library is 671 by subscription, 619 through exchange and 1012 as complimentary. It

has also a large number of official reports, micro-films and 3,75,000 cadastral survey maps.

3.13.3. The library of the Institute at Calcutta is well stocked and housed in a new building. It may be useful if the Institute prepares a detailed scheme for developing it into a National Library on Statistics.

3.13.4. We note that the library is not offering any abstract service although it is receiving a large number of journals. We appreciate that a full-scale abstract service may involve substantial expenditure. We feel, nevertheless, that it will be useful if the library develops a small abstract service in which only important articles are chosen for abstracting.

3.13.5. At present there is no system in ISI for carrying out an inventory of the library books. In the absence of this system it is not possible to determine the loss/pilferage from the library, if any. We recommend that the Institute should evolve early a system of perpetual inventory for all library books.

3.13.6. The Documentation, Research and Training Centre was set up at Bangalore in 1962 with the following objective.

- (i) to carry out, guide and support research and development in different branches of information science ;
- (ii) to help development of information centres, libraries, documentation centres, data centres etc. by offering advisory services in designing special developmental plans for this purpose ;
- (iii) to disseminate results of research, information analysis and consolidation in different areas of information sciences ; and
- (iv) to develop man-power with appropriate professional skills and understanding capable of participating efficiently and effectively in the management of information service system.

3.13.7. The DRTC has now 5 faculty members including 2 professors. It is presently engaged in research programme, advisory service programme, extension programme, application programme, training programme, employment information programme, continuing education programme and a faculty developmental programme. The Centre is running a 24-month regular course leading to the award of "associate-ship in documentation and information science". About 10-12 students are admitted every year. A total number of 132 students have passed out of this course since 1962.

3.13.8. The DRTC is doing very useful work. However, the First ISI Review Committee was not sure whether its functioning under ISI was justified. It had recommended that the Centre should continue as a part of the Institute for the time being and the position should be re-examined after 5 years. No action has yet been taken by the Institute on this recommendation. We have given some thought to this matter. We feel it would be very unfortunate if this Centre, which is doing such useful works, is wound up. The kind of work that it has been doing is of importance to the country's library science community. Its link with the library service of the Institute has been beneficial. We, therefore, recommend that the Centre should continue to function under the aegis of the Institute till such time as it can grow into a viable autonomous centre by itself.

3.14. Personnel of ISI

3.14.1. For carrying out the functions described above, ISI had the following staff in 1982 :

| Group | Calcutta | Delhi | Bangalore | Other lo- cations | Total |
|----------------------------------|----------|-------|-----------|----------------------|-------|
| I Scientific and technical staff | 378 | 49 | 21 | 39 | 487 |
| II Office Staff | 406 | 30 | 23 | 34 | 493 |
| III Service staff | 150 | 14 | 5 | 2 | 171 |
| IV Campus maintenance staff | 306 | 31 | 7 | 30 | 374 |
| Total : | 1240 | 124 | 56 | 105 | 1525 |

3.14.2. Category-wise distribution of staff in each group and for different divisions and centres can be seen at Appendices XV(a) and XV(b).

3.14.3. The account given earlier of the performance of various divisions indicate that a total scientific and technical staff of 487 is not large compared to the volume of work, although there is considerable scope for improvement in staff deployment and use.

3.14.4. While there is a case for reduction of staff in some units there is also a case for increase in others in Calcutta. If appropriate readjustment is made, the Calcutta Centre of ISI should be able to manage over the next few years with a modest increase in the present level of 378 scientific and technical staff. But within this general level, an attempt may be usefully made to recruit some new brilliant researchers at the higher levels by readjustment of such savings as may result from attrition (i.e. death, retirement and resignation) at lower levels.

3.14.5. These days high calibre scientists have very attractive job opportunities abroad which is not possible for ISI to match in financial terms. Even then, we are told, that some of them will be pleased to work for the ISI for the kind of salary it can offer, provided conveniently located living quarters are provided to them. This is a matter which merits serious consideration.

3.14.6. Visiting Professors and Fellows have played a very important role in keeping the Institute abreast of the latest developments in the world of science, in a manner which no amount of exchange of literature can provide. Some of them have also acted as valuable catalytic agents. We feel that ISI's programme of visiting Professors and Fellows needs not only to be continued but also stepped up. Adequate funds, furnished quarters for longterm visitors and guest houses for short term visitors need to be provided for this purpose.

3.14.7. The number of non-scientific and non-technical staff in Calcutta, which is 862, seems *prima facie* to be unduly high compared to other similar institutions.

N.B. The figures of staff shown in the above table and at other places in this Chapter were supplied by the Institute in October 1982.

We are told that this is due to certain historical reasons. Be that as it may, there should be a strict ban against addition to these posts. A substantial proportion of the vacancies that may arise as a result of attrition in these posts, should not be filled up until the proportion between non-scientist to scientist posts comes down to the level that is common in other similar institutes in the country. If it is felt that there is a case for different norms for ISI, a special study of the workload and requirement of different categories of non-scientific staff should be undertaken at an early date.

3.14.8. The day-to-day management of such a large number of junior staff cannot but create serious problems for the Institute. If substantial items of maintenance and house keeping work can be transferred to contractors, it may lead not only to efficiency and economy but also to a desirable reduction in management problems.

3.14.9. The total staff strength of the Delhi and Bangalore Centres may need some increase, especially at the higher levels. But this should be done only as a last resort after appropriate re-deployment between Delhi, Bangalore and Calcutta centres and Madras and Hyderabad units has been completed. This redeployment and increase should be guided more by the new focus to be given to the work of these centres as recommended by us, instead of the present relationship between their number and out-put and its appropriateness.

CHAPTER IV

STATISTICAL QUALITY CONTROL AND OPERATIONS RESEARCH

4.1. Introduction

4.1.1. The Statistical Quality Control and Operations Research Division of ISI was set up in early 1950s with the object of promoting (a) use of SQC and allied techniques and (b) Quality assurance on organised and systematic lines in industrial and other establishments for improved quality of goods and services as well as higher productivity and lower costs.

4.1.2. The first SQC and OR Unit of the Division was started in Bombay in 1953 followed by two more units in Bangalore and Calcutta in 1954. During the next six years five more units were set up in Delhi, Vadodara, Coimbatore, Madras and Trivandrum. But, thereafter, the progress was halting—only three units being opened, one in Hyderabad in 1974, the second in Pune in 1976 and the third, a training and promotional unit, in Calcutta in 1962.

4.1.3. The Division has been endeavouring to achieve the aforementioned objectives by providing in-plant training in SQC, OR and allied techniques to selected plant personnel to enable them to handle specific problems of the plant, the Division's technical officers playing the role of Catalysts. The Division has also been conducting training courses, like one year full time post-graduate Diploma Course in SQC & OR in Calcutta, two-year part-time Diploma Course in SQC & OR in Bombay and Madras and six month evening course in SQC in Bangalore and Hyderabad to provide skilled manpower for eventual absorption in the SQC & OR Division itself or to meet the manpower needs of industries. We have visited the units in Bangalore, Delhi, Madras, Calcutta, Bombay and Pune and have met a number of senior executives of the plants and organisations serviced by the SQC Units. We have also had the benefit of consultations with the Head of the SQC & OR Division and his associates in the various centres.

4.2. Statistical Quality Control

4.2.1. Almost all the client organisations contacted by us, with one solitary exception, have commended the work done by the SQC Units in inculcating the fact among the plant personnel that quality assurance is not an extra cost. It is, on the contrary, a means of reducing costs if appropriate quality control techniques are applied. But the service rendered, though excellent as far as it goes, does not go far enough. Most of the client organisations, we met, wanted more of the service. The SQC & OR Division as at present constituted is in no position to perform such an enlarged task. The report of the SQC & OR Division submitted to us frankly admits this incapacity.

4.2.2. According to the Head of the Division, the capacity of the SQC & OR Division to expand its personnel is at present limited to not more than 10 persons per annum, even if funds were available. Allowing for a depletion rate of 2 to 3 persons per annum, the net accretion will be not more than seven persons

per annum. It will thus take seven years to double the Division's present strength of 50 odd. We feel, however, that this is very much of an underestimation. With the right kind of policy and management, it should be possible to increase the strength several times.

4.2.3. The first thing that strikes an outsider is the evaporation of the élan of the Quality Control movement that the Division generated in the 1950's. It began to peter out during the later half of 1960s. The stagnation that ensued has continued right until today. It is a stagnation that has also been noticed and brought to our attention by some company executives who happened to be *au fait* with Division's work in the 1950s and early 1960s as well as now. The admissions and the output of the 'Core' courses approved by the Academic Council have been falling since 1969-70 at all centres but most catastrophically in Bombay and next to it in Calcutta. It may however, be noted that, besides these 'Core' courses, the Division has also organised short-term general courses and in-plant training programmes.

4.2.4. The table below summarises the output of these courses :

| Year | Short term course conducted | | In-Plant training programmes | |
|---------|-----------------------------|---------------------|------------------------------|---------------------|
| | No. of training courses | No. of Participants | No. of in-plant courses | No. of participants |
| 1969-70 | 11 | 288 | 33 | 1626 |
| 1970-71 | 6 | 120 | 31 | 1333 |
| 1971-72 | 2 | 47 | 37 | 1531 |
| 1972-73 | 3 | 69 | 34 | 1412 |
| 1973-74 | 3 | 50 | 38 | 1161 |
| 1974-75 | 4 | 62 | 31 | 1060 |
| 1975-76 | 8 | 127 | 37 | 1723 |
| 1976-77 | 4 | 107 | 67 | 2765 |
| 1977-78 | 7 | 161 | 27 | 2316 |
| 1978-79 | 9 | 171 | 38 | 2781 |
| 1979-80 | 5 | 98 | 63 | 1769 |
| 1980-81 | 7 | 110 | 54 | 2601 |
| 1981-82 | 5 | 177 | 55 | 2678 |

4.2.5. It will be observed from the above table that the number of training courses and the participants have dropped rapidly after 1969-70. Although during the last two or three years there has been some progress in the number of in-plant

training programmes conducted as well as their participants, it is not as much as required.

4.2.6. We have given some thought to the basic reason for this stagnation of the Division whose staff strength (Technical Officers) has remained stationary around 55 since the early 1970s. It seems to us that the reason for this stagnation is not lack of finance. The Division could raise the funds required for its own expansion by providing contract service to the industry both in the public and private sectors. In fact, it has been earning a sum of around Rs. 10 lakhs per annum as fee as shown in the following table:

| Year | Earnings (Rupees in Lakhs) | Year | Earnings (Rupees in Lakhs) |
|---------|-------------------------------|---------|-------------------------------|
| 1976-77 | 7.62 | 1979-80 | 9.41 |
| 1977-78 | 9.35 | 1980-81 | 14.34* |
| 1978-79 | 10.30 | 1981-82 | 12.85 |

*Includes collection of arrears of earlier years.

4.2.7. These earnings could have been increased much more by increasing the existing rate of service charge. At present public and private sector organisations are charged at the rate of Rs. 200/- and Rs. 250/- per specialist day respectively. A significant increase in earnings could have been secured by merely raising the former rate to parity with the latter. In fact, even a rate of Rs. 250/- per specialist day seems somewhat low considering that organizations are now-a-days quite willing to pay even Rs. 500/- per specialist day in case the specialist service provided is of the right quality and meets the requirement of the client organization.

4.2.8. In any case the earnings of the SQC & OR Division even at the present rather modest scale of charge have accumulated into an SQC fund totalling now around Rs. 50 lakhs. If the Indian Statistical Institute wanted to expand its SQC work, it could have financed the growth out of this fund, instead of accumulating the earnings of several years into a consolidated fund for some possible future use.

4.2.9. Therefore, the real difficulty was not lack of finance. The growth of the Division by use of funds earned out of contract service was not favoured apparently because of a strong reservation in the mind of some people in the Indian Statistical Institute against the idea of a research institute earning its own keep even partially. The reason for this attitude is two-fold. First, it does not bring to the staff members the kind of credit that the publication of a paper in a prestigious journal does. Second, which is a direct consequence of the first, is the prevailing peer view that is said to look down upon contract work.

4.2.10. This is clearly shown by the view of a former Director of Indian Statistical Institute, expressed to us, that the SQC & OR Division's "executive" pre-occupation with 'consultancy' work with industry has "isolated the SQC faculty from statisticians and probabilists in Calcutta and Delhi." One consequence of this isolation is the Division's "failure to produce any important development in this field." As a result he has suggested the delinking of the SQC & OR Division from the Indian Statistical Institute. Similar suggestion has been made to us by some other academic statisticians also. They advocate its divorce from

the Indian Statistical Institute on the ground that its functions are not primarily academic and pure research, but making money by 'consultancy.'

4.2.11. We have given careful consideration to the above views. It seems to us that the arguments for delinking the SQC & OR Division from the Institute ignore the basic difference between "pure" and "applied" research. Unlike other 'pure' fields such as mathematical statistics and probability theory, SQC & OR are *wholly* applied fields. Without applications in industry such fields have no *raison d'être* what-so-ever. There is, therefore, no case for not taking all possible steps to extend the applications of SQC & OR in industry specially when there still exists a vast potential number of actual users who are willing to pay for the service. In developed countries of the West even academic scientists involved in 'pure' research take time off their teaching and research chores to do some paid "consultancy" work in industry. In its earlier years, the Indian Statistical Institute itself undertook a large volume of contract work with considerable benefit for its academic work.

4.2.12. In view of these considerations it is difficult to appreciate the prevailing attitude in the Indian Statistical Institute towards contract work of the SQC & OR Division. We consider it a serious obstacle to the attainment of its own declared objective, namely, mounting of a massive programme of training hundreds of thousands of managers and supervisors, at all organisational levels and in all company departments, as has been done so successfully by the Japanese, who began their quality control programme at about the same time as the Indian Statistical Institute. If the SQC & OR Division somehow manages to change their present attitude other difficulties in the way of its expansion are not likely to be as onerous. We believe that finance required to expand its activity will be readily forth-coming

4.2.13. We recommend that the Indian Statistical Institute should undertake the "extension" of its SQC & OR work on a sufficiently large scale to meet the existing vast unsatisfied demand for this service in industry and other institutions on a "self-financing" basis, on the lines recommended in some detail for 'contract services' in Chapter VIII of this report. This, however, is not to say that the existing grant that is being spent on the SQC & OR Division should be withheld or curtailed. The present level of grant that the Division is receiving should be continued, irrespective of its own earnings, so as to enable it to concentrate on research needed for the adaptation and development of SQC & OR techniques. Without such research, a plateau will soon be reached which will be very counter productive. It is the further extension of the work of the Division which will be financed by its own earnings.

4.2.14. In addition, we may emphasize that the Indian Statistical Institute's work in this field cannot yield the optimum result unless there is an effective national policy for the promotion of SQC. The First Review Committee recommended that SQC should be made compulsory for industry. But that could not be done for various reasons, including lack of trained staff. Step by step approach needs to be adopted by Government progressively extending the obligation of industry on the one hand and training of the needed staff on the other. It would be useful if a high level policy advisory committee for SQC & OR of the type that had existed earlier is again set up.

4.3. O. R. Techniques

4.3.1. Although the SQC & OR Division was originally designed to disseminate both SQC and OR techniques with equal vigour, application of OR techniques

has all along taken a back-seat in the promotional endeavour of the Division. As a result such OR work as has been done in client organisations has been restricted to routine application of standard OR techniques like linear programming, queuing theory, inventory control, ABC analysis and the like. While these techniques have, no doubt, been widely adopted the world over to solve management problems, OR is no mere application of pre-fabricated tools and techniques that one seeks to apply willy nilly to the problems one faces. It is also, on the other hand, a free creation of the executive mind in the field of industry, production, management and administration by a wise exercise of judgement, common sense, and knowledge of the specific field to which it is applied. Accordingly, OR is a management activity pursued in two complementary ways, one by the free and bold exercise of common sense untrammelled by routine and the other by the application of a repertoire of well-established pre-created methods and techniques already mentioned. While the OR Division has done something to sponsor application of routine techniques in a few areas, it has been largely oblivious of the other approach, its more creative role like the search for plant-specific ways of increasing productivity. This is all the more necessary in our country since the utility of pre-fabricated techniques is very limited in the Indian context because of the absence in many cases of the ambient conditions validating these techniques and models. But plant specific ways of improving productivity can only be invented by teams of men well-versed in both disciplines—OR as well as plant operations. A case in point is Evolutionary Operations Research (EVOP) a methodology invented by interdisciplinary teams of chemical engineers and statisticians.

4.3.2. Such off-beat OR explorations cannot be done by merely sending SQC or OR experts to plants to train plant personnel in quality control and statistical methods. It requires close involvement of the statistical experts in the operation of the plant. Only then will it be possible to discover what specific measures are required to increase the plant productivity and/or reduce costs.

4.3.3. We recommend that the SQC and OR Division should sponsor its OR work not merely by training of plant personnel in pre-fabricated OR techniques but even more vigorously by in-plant association with plant operators in order to devise innovative ways of enhancing productivity and reducing costs. Its implementation requires a radical change in the ideology of the OR practitioners of the Division.

4.3.4. They have to reorient themselves to solving specific problems facing the plants rather than building abstract models and teasing out methodological "break-throughs." Such a reorientation can only be brought about by a new look at the objectives of SQC and OR Division which are mainly problem solving rather than pure academic research.

4.4. A New Set-up

4.4.1. An alternative to the deflinking proposal discussed above is to make the SQC & OR Division more autonomous in the Indian Statistical Institute framework than is the case at present. We recommend that :

- (a) the Head of the SQC & OR Division should be delegated adequate powers to enable him to take such steps as are necessary to expand the SQC & OR Division sufficiently to make a significant impact on industry.

- (b) to achieve the aforementioned goal he should have adequate powers to draw on the SQC fund of around Rs. 50 lakhs already available, besides a reasonable share of such additional earnings as the Division is able to garner by its service to industry in future. These funds should be in addition to the annual Government grant at the existing level. The latter should be used to cover its expenditure on research and training. This fixed annual grant should continue to be made available by Government to the Division, irrespective of its level of earnings.
- (c) the Head of the Division should be delegated adequate powers of recruitment, promotion, transfer and disciplinary action in respect of all officers and staff of his Division subject to the normal guidelines of the Indian Statistical Institute Council in these matters.
- (d) he should also be delegated adequate powers to hire premises and residential accommodation, buy equipment, etc. subject to the requirement that any expenditure in excess of the annual Government grant at the present level should be met from the Division's share in the earnings from the service it provides.
- (e) a step by step approach should be adopted by Government for progressively extending the obligation of industry on the one hand and training of the needed staff on the other for SQC & OR work.
- (f) a high level policy advisory committee for SQC & OR should be set up.

4.4.2. The reorganization of SQC/OR Division in the way suggested above naturally leads us to consider in what way the existing administrative set up of the Indian Statistical Institute is appropriate for the proposed operation of the SQC & OR Division. While we do recognise that in a research institute all scientists are deemed 'equal' there is a case for some distinction between a primarily research and a primarily operational Division. Since the SQC & OR Division's main work is application and promotion of established techniques methodologies, an administrative set-up which will hold officers incharge of units and sub-units responsible for reasonable output of the staff under them will perhaps be more appropriate.

CHAPTER V

TEACHING AND TRAINING

5.1. Introduction

5.1.1. Although the Indian Statistical Institute is primarily a research institute, one of its important objectives is "to promote the study and dissemination of knowledge of Statistics." The objective of giving instructions for the advancement of the study of Statistics and allied subjects, has been stressed right from the very beginning of the Institute in early 1930's and finds a place even in the first constitution of the Institute. Till 1959, the Institute was conducting a number of certificate courses. When the Institute was recognised by the Government of India as an Institute of National Importance, it was also authorised to award degrees and diplomas in Statistics.

5.1.2. The Institute is presently conducting a large number of teaching and training courses in Statistics and allied subjects which include theoretical as well as practical training on the basis of live data and specific problems. The Institute introduced courses of study leading to the degree of Bachelor of Statistics (B. Stat.), Master of Statistics (M. Stat.) and two higher degrees of Ph.D. and D.Sc. in 1960. A list of courses provided by the Institute currently along with the number of students admitted to each course during the last two years, is given in Appendix XVI.

5.1.3. The main courses are :

- (i) Research courses leading to registration for the Ph.D. degree
- (ii) Degree Courses
- (iii) Diploma Courses in various branches of applied statistics
- (iv) Electronic Computer Courses
- (v) Courses for Statistical Officers (jointly with the Central Statistical Organisation)
- (vi) Evening Courses
- (vii) Documentation and Information Science Course
- (viii) Language Courses
- (ix) Short-term and Summer Courses
- (x) International Statistical Education Centre (ISEC) Courses (in collaboration with the Central Statistical Organisation)
- (xi) Diploma and Certificate Examinations (all-India examinations open to external candidates)

The Institute, we are told, has made efforts to develop a type of statistical education which would serve the needs of the country. The aim is to give students an opportunity not only to acquire knowledge of statistical theory but also to become proficient in the use of statistical methods in economic planning,

science and technology and in solving practical problems of various kinds. Hence the teaching programme includes mathematics of a fairly high level, mathematical statistics and application of statistical methods in various fields, sample surveys and project work of various kinds, economic planning and the use of statistical methods in social sciences.

5.1.4. A view has been expressed to the Committee that the B.Stat. course of the Institute has outlived its utility and should, therefore, be discontinued. The argument given is that the B.Stat. course was started in the Institute when Statistics was not being taught as a separate subject in most of the Indian Universities. This is not the case now. Almost all the Universities in India are teaching Statistics and awarding degrees of B.Sc. (Statistics). We have examined the suggestion carefully. We are of the view that exposure of the staff to under-graduate students has many advantages and often stimulates new lines of thinking. Moreover, the B.Stat. course provides a major input of M.Stat. students in the Institute. It is also of a different character and standard as compared to the B.Sc. (Statistics) degree of other Universities. We, therefore, recommend that the Institute should continue the B.Stat. course.

5.1.5. The data furnished by the Institute shows that most of the students admitted to M.Stat. are from the Institute itself. We feel that there should be a greater intake of students from outside the Institute. In order to achieve this objective, the number of students admitted to M.Stat. should be increased and efforts should be made to take a substantial proportion of M.Stat. students from outside the Institute.

5.1.6. At present all the examiners are internal. In our view this is not a desirable practice. We recommend that there should be external examiners also.

5.2. Admission of Candidates

5.2.1. The Institute is presently conducting an all-India examination for admission of students to B.Stat. and M.Stat. courses. The examination consists of a selection test and interview. The selection tests are held at Bangalore, Bhubaneswar, Bombay, Calcutta, Delhi, Gauhati, Hyderabad, Madras, Nagpur, Patna, Trivandrum, Vadodara, Varanasi and Waltair. The candidates who secure high positions in the selection tests are called for interview in Calcutta for B.Stat., in Calcutta and Delhi for M.Stat., and at different places for other courses. The standard of admission tests as well as the interviews are reported to be very strict with a view to ensuring admission of students of exceptional ability only.

5.2.2. In view of the all-India character of the Institute and the course, it is important that candidates from all over the country get equal opportunities for admission into these courses. In this context the Indian Statistical Institute should re-examine relative weights assigned to the written tests and interviews and the level of stipend to be granted.

5.3. Stipends, Allowances, Tuition Fees, etc.

5.3.1. All students admitted to B.Stat., M.Stat., M. Tech. in Computer Science, Diploma in SQC & OR and for the Ph.D. courses, receive stipends and book allowances. No tuition fees are charged for these courses. The Institute is charging a token fee of Rs. 200/- for one year evening course in statistical methods and application which is conducted in Calcutta and Delhi and one year course

on operation of automatic data processing equipment which is conducted in Calcutta. The Institute is also charging a token fee of Rs. 150/- for the nine months evening course in SQC conducted in Bangalore and Hyderabad and a fee of Rs. 250/- for the three-month intensive course in programming and application of electronic computers conducted in Calcutta. Questions have been raised about the rationale of these stipends, free studentships, level of fees, etc. We suggest that the Education Committee recommended by us in chapter VIII should go into this matter at an early date. They should examine inter alia whether reasonable fees should be charged for B.Stat., M.Stat. and M. Tech courses and free studentships and stipends should be limited to say 50% of the seats available for such courses. They should also consider reviewing the rates of such stipends in the light of inflation and what is being done by other institutions of similar standing and examine the desirability of introducing adequate number of post-doctoral fellowships.

5.4. Teachers

5.4.1. The present rules of the Institute provide that each and every scientist is expected to do some amount of teaching. But in practice, this is not being followed. Teaching is completely voluntary and any scientist may choose not to teach at all. Each year the Dean of Studies calls a meeting of teachers where the various scientists themselves volunteer to teach a particular subject and they are accordingly allotted the work of teaching that subject.

5.4.2. The proportion between students and scientists in ISI is very low. That between students and those scientists who actually teach is no doubt higher but it is still very much lower than the UGC norms. We note that among those who actually teach, the teaching load varies very substantially because the teaching is entirely voluntary. We recognise that the teaching load has to be substantially lower in an organisation like the ISI where research is primary and teaching secondary responsibility, as compared to a University where teaching is primary and research is secondary responsibility.

5.4.3. Still there is great advantage even for research scientists coming in contact with young minds through teaching. There is, therefore, a strong case for making some teaching obligatory for all such scientists who can take courses that students need. This will also distribute the teaching load much more evenly than at present and reduce the grievances that some of the present teachers have. If in some disciplines, this cannot be done and the teaching load of individual teachers is as high as UGC norms, some consideration may be shown to them in terms of sabbatical leave or vacation facilities. A suggestion has been made to us that those who do not teach or guide Ph.D. students should not be given the designation of Professor or Lecturer. This may be considered by the Institute authorities.

5.5. General

5.5.1. We have received a number of suggestions for the improvement of the course contents of the various degree and diploma courses. One of the most important general comment is that the courses should have more practical content and should have live association with various fields of natural and social sciences.

We recommend that the Education Committee referred to above should look into all these matters, especially the syllabus for each course.

5.5.2. Many teachers who met the committee, have complained that the Institute is not giving sufficient importance to the role of teaching while evaluating the work of its scientists for purposes of promotion. We agree that teaching needs to be given due weightage for evaluating the work of a scientist. We hope that the recommendation that we have made in Chapter VIII regarding career records of scientists will take care of this grievance of teachers.

CHAPTER VI

BUILDINGS, EQUIPMENT & OTHER ASSETS

6.1. Introduction

6.1.1. In this Chapter we deal with various physical assets of the Institute including lands, buildings, furniture, fixtures and office equipments, scientific equipment, computer and peripheral equipment, vehicles and communication equipment like telephones, telex, etc.

6.1.2. In making recommendations in this Chapter, we have kept in view the norms already established, the quality of manpower, the environment of the Institute and the need for austerity etc. In this connection, we have also made the following broad assumptions :

- (i) the programmes and activities of the Institute will not undergo any major change in the near future ; and
- (ii) maximum advantage should be taken of the existing facilities by renovating, expanding, re-arranging, etc. rather than building new structures, particularly in view of the financial constraints.

6.1.3. There is yet another important factor which has to be kept in view in order to appreciate the recommendations made in this Chapter. The Calcutta Campus had a unique origin & peculiar developments, policies and problems. It was not started on a 'clean slate'. The realities, the historical needs and perspectives of the founder had to be kept in view. The buildings in the Calcutta Campus today compare unfavourably with those in other comparable national institutes. Hence recommendations have been made to renovate and make use of the existing structures to the maximum extent possible.

6.2. Land

6.2.1. The Institute is in occupation of various plots of land in Calcutta and other places as per the following details :

| Sl. No. | Place | Area (in acres) |
|---------|------------|--------------------|
| 1. | Calcutta | 39.61 |
| 2. | Delhi | 14.70 |
| 3. | Bangalore | 30.00 |
| 4. | Hyderabad | 7.00 |
| 5. | Madras | 5.00 |
| 6. | Vadodara | 0.30 |
| 7. | Giridih | 51.22* |
| 8. | Darjeeling | 2.43** |
| | Total | 151.51 |

* including 39 acres agricultural land.

**including some eroded land.

Calcutta

6.2.2. Ten plots of land-8 owned and 2 rented-totalling 39.61 acres is in possession of the Institute at Calcutta. Of the ten plots of land, 6 plots totalling 30.08 acres are contiguous and 4 plots totalling 9.53 acres are within a distance of 1 Km. from the Campus.

Rented Land

6.2.3. There are two plots of land which the Institute is in occupation on payment of rent and they are 204 B.T. Road which is contiguous to the major portion of the land owned by the Institute and Gupta Niwas which is situated at a distance of 1 Km. from the Campus.

6.2.4. The 204 B.T. Road land of 4.21 acres belongs to the Statistical Publishing Society (SPS) which is an Associate Institution of the ISI, but the buildings on this land are jointly owned by SPS and Sadharan Brahma Samaj. Part of the buildings on this land is occupied by the Institute on payment of rent of Rs. 2,000/- per month. It is felt that the Institute needs this plot of land and the buildings occupied by it for permanent use to meet its growing demands and also to maintain continuity of plots within the Campus. The Institute may examine the question of taking over this piece of land from the SPS.

6.2.5. The Gupta Niwas plot of land had been requisitioned by the West Bengal Government 25 years ago and handed over to the Institute for its use. Since this was not the property of the Institute, no plans had been drawn up to utilise this land. This is a good location for constructing quarters for either the faculty or the lower staff. The Institute has approached the West Bengal Government for acquiring this property.

State of Maintenance

6.2.6. The present state of maintenance of buildings, boundary walls and surroundings of the Institute is unsatisfactory. We feel that adequate steps should be taken to improve the state of maintenance and to upgrade the Campus to its potential. The budget provision of about Rs. 5 lakhs for maintenance of buildings etc. for the past few years has been found to be inadequate. An architect consulted by us estimates that recurring expenditure of about Rs. 12 lakhs per year may be needed for satisfactory maintenance of buildings, lawns, etc. We recommend that this amount may be provided.

Physical Environment of the Campus

6.2.7. The adjoining area of the Campus, particularly on the road side, is now utilised by outsiders for a variety of purposes, some of which are undesirable from the stand point of an educational institute. The Institute has already approached the Government for getting the adjoining strip of land acquired for lease to the Institute. Action on this should be expedited. The acquisition of land on the opposite side is equally important for the same reason. In addition, it will help improve the approach to the Institute. The Institute should approach the government for acquiring this piece of land also.

Delhi

6.2.8. The Delhi Centre is situated near the Jawaharlal Nehru University on a 14.76 acre plot of land. The present Campus was inaugurated in December

1974; it is well-laid and apart from the main academic building which houses the faculty rooms, the library, the class rooms, seminar rooms, auditorium, etc., it has a student's hostel, a guest house and faculty quarters. These should be adequate for the present in view of our proposal to transfer the Stat-Math staff to Bangalore.

6.2.9. The maintenance of the existing land is good and landscaping is commendable.

Bangalore

6.2.10. The Bangalore Centre is currently engaged in Documentation, Training and Research, Statistical Quality Control work and some research in Economics and Statistics. The teaching activities are restricted at present to conducting a 2-year certificate course in Library Science for about 10 students per year. But we have proposed that the Stat-Math staff from Delhi, Madras and Hyderabad should be transferred to Bangalore and the Economics staff should be transferred to Delhi or Calcutta. The net activities of this Centre will increase substantially as a result.

6.2.11. The Institute has a 30 acre plot of land located about 12 Km. away from the City. The Institute is now developing this land into a composite campus and construction of an academic-cum-administrative building commenced in 1982. In view of the size of the land, there is great potential for developing it into a modern campus which can act as the focal point for growth of the Institute in this region.

6.2.12. Construction of faculty quarters, hostel, guest house, administrative and low-paid staff quarters will soon begin and it is expected that the shift to the new campus will take place around July 1, 1984. As this campus is quite far from the City and there are no marketing and other facilities, we recommend that the Institute should initiate immediate plans to have a shopping cooperative, a post office, a bank, a medical unit and possibly a primary school within or very near the campus so that certain basic facilities and amenities are available in the new campus.

Madras, Hyderabad, Vadodara & Darjeeling

6.2.13. The Institute owns land in Hyderabad, Madras, Vadodara and Darjeeling and these plots have remained unutilised for nearly two decades. Since the Institute pays substantial amount by way of rent for office accommodation in Hyderabad, Madras, and Vadodara, it may examine the economics of constructing office buildings in these places.

Giridih

6.2.14. The activities of the Institute at Giridih pertain to agricultural experimentation and some surveys in the neighbourhood of the Institute conducted by the sociology unit. The 39 acres of agricultural farmland is used for crop experimentation under the direction of one of the scientists from Calcutta. There is some uncertainty whether it will be possible for the Institute to continue the same kinds of experiments after the concerned scientist retires from the Institute. In that event the entire land area may not be required by the Institute.

6.3. Buildings

Calcutta

6.3.1. The Calcutta campus of the ISI has the following major buildings :

| Sl. No. | Description | No. of storeys | Total floor area (sq.ft.) |
|---------|--|----------------|---------------------------|
| 1 | New Library building | 7 | 1,20,000 |
| 2 | Main building | 7 | 64,650 |
| 3 | Geology building | 5 | 31,840 |
| 4 | Boys' hostel | 3 | 33,000 |
| 5 | ISEC Hostel (building I) | 5 | 15,490 |
| 6 | Guest House & faculty quarters (building II) | 5 | 42,930 |
| 7 | Faculty quarters (building III) | 5 | 9,930 |
| 8 | Faculty quarters and ladies hostel (building IV) | 5 | 9,930 |
| 9 | Studio hall building | 1 | 6,020 |

6.3.2. In addition, there are other structures located in various plots of land within and outside the main campus.

Academic Buildings

6.3.3. Academic activities of the Institute are currently housed in the 7 storeyed main building, in the 5-storeyed Geology building and in the 1st and 4th floors of the New Library Building where the Computer Section is also located.

6.3.4. The new Library Building which has been constructed upto seven floors has provision for 3 more floors. It is planned to shift the entire teaching activity to the 5th floor of this building while the Economics Research Unit and the National Income Unit will move to the 6th floor.

6.3.5. A detailed examination of the space requirements for academic purposes has been made and it tends to suggest that the total space requirement is around 1,50,000 sq. ft. whereas the space available currently is 1,24,500 sq. ft. Thus the shortage is around 25,000 sq. ft. We recommend that the Institute should construct over a period of five years the 7th, 8th and 9th floors of the New Library Building which would contribute 42,000 sq. ft.

Library

6.3.6. The Library currently occupies the 1st, 2nd and the 3rd floors of the New Library Building and has a working space of 54,000 sq. ft.

6.3.7. To cater to the needs of expansion of the library, the 4th floor of this building, now occupied by the Computer Science Unit, is earmarked for the library. This should provide another 18,000 sq. ft. for future expansion.

Administrative Building

6.3.8. At the present moment, various sections under administration are located in far-flung sheds and buildings in the campus. Most of them are housed in ill-ventilated, hot and stuffy old dilapidated buildings. As a result of the dispersed locations, co-ordination of work and movement of files and papers are hampered; this also creates the need for a large number of Group 'D' (or class IV) staff to carry files and other essentials from one section to another. There is, therefore, a need to locate all the administrative sections in one building. It is learnt that the Institute has initiated action to construct a 3-storeyed, 30,000 sq. ft., Administrative Building to house all units of the administration under one roof. Sanction for the construction of this building has already been received from the Government and Rs. 36 lakhs has been earmarked for this purpose. The space requirement for the administrative sections works out to around 28,000 sq. ft. Therefore, the 30,000 sq. ft. area, as planned is quite adequate.

6.3.9. A large number of scattered and rather shabby looking sheds are now used for storage of both serviceable and obsolete materials of different kinds. It would be advisable to store all such materials in one place in a Central Store, to be specially arranged for the purpose.

Auditorium

6.3.10. The Institute has felt the need for the construction of a sizeable auditorium where important lectures, conferences and the Institute's convocation could be held. We recommend that a suitable auditorium should be constructed in place of the existing studio or at some other convenient location.

Hostel Building

6.3.11. The Institute is required to provide hostel facilities for the following categories of students :

- (a) Research scholars
- (b) Graduate and post-graduate boy students
- (c) Graduate and post-graduate girl students
- (d) ISEC students
- (e) ISS trainees

6.3.12. The existing hostel accommodation consists of a boys' hostel building constructed in 1980. It consists of 95 rooms, 89 of which are single rooms and 6 are double rooms. In addition, a 5-storeyed building of approximately 15,000 sq. ft. carpet area is utilised for accommodating the ISEC students and research scholars. This has accommodation for 68 students. This building, however, is more suitable for faculty quarters and was probably constructed for that purpose. It is also inadequate for catering to the growing needs of research scholars. The ISS officer-trainees are accommodated in an old hostel block shed,

which is ill-ventilated, extremely congested and asbestos roofed with thatched partitions between the rooms. This shed can accommodate 30 students. The lady students are accommodated in one of the floors of a residential building meant for faculty quarters and accommodation exists for about 18 lady students.

6.3.13. In view of the unsatisfactory arrangement currently existing for lady students, research scholars, ISEC students and ISS officers, the Institute has proposed the construction of a second hostel block of 160 rooms. We recommend the proposal.

Residential Accommodation for faculty & staff

6.3.14. Within and outside the campus, 42 units are currently available for residential accommodation for the faculty and other officers. The Institute has already received sanction from the Government to construct 16 units. Another 6 units will become available when the second students hostel is constructed where space has been provided for 6 faculty quarters. Keeping in view the space available within the campus and the immediate-requirements, construction of further quarters is warranted. Also, the space vacated by lady students, research scholars, ISEC students, etc. can be converted into faculty quarters. We recommend that 48 more faculty quarters be constructed over the next 5 to 7 years.

6.3.15. We have earlier emphasized the importance of the ISI being able to attract Visiting Professors and brilliant faculty members from outside and the need for providing adequate accommodation for them. We, therefore, recommend that a substantial proportion of the new faculty quarters should be fully furnished and kept in reserve for visiting scientists and newly appointed high level scientific staff. To facilitate rotation, however, no one should be allowed to occupy these furnished quarters for more than two years.

6.3.16. Till very recently, the Institute had not made any provision to provide quarters to Group 'D' (or Class IV) staff. However, construction has now been undertaken to provide 48 quarters to essential staff who need to be housed within the campus. Space exists in the Deluxe Garden for construction of five more blocks of low paid staff quarters to accommodate 80 additional families. It is also possible to construct bachelor quarters in this Garden.

Maintenance of Buildings

6.3.17. The First Review Committee had commented critically about maintenance of buildings and the general standard of building construction. Since the submission of the First Review Committee's report two more building complexes have been constructed. They are the Boys' Hostel Building and the New Library Building. The over-all level of maintenance of most of the buildings continues to be poor. This is true even of the recently constructed buildings. We have already recommended, earlier that the budget provision for maintenance should be increased.

6.3.18. We have been advised that 8 buildings which are as old as 80 years and are in a dilapidated condition, need to be demolished since the cost of maintaining and renovating them will be extremely high. We recommend the demolition of these buildings, as soon as new faculty quarters are constructed.

Construction, Renovation and Maintenance Proposals for the future

6.3.19. After discussions with various officers of the Institute and examining its long-term needs, some proposals for construction, renovation and maintenance of buildings and auxiliary facilities have been identified and tentative financial requirement in each case has been worked out.

6.3.20. The following table gives the priority accorded to the various proposals mentioned above so that physical work may be spaced over a period of 6 or 7 years :

(Rs. in lakhs)

| | Maintenance | | Renova- tion | Additions alteration | New construction |
|---|------------------------------|-------------------------------|--------------------|-------------------------|---|
| | Overtime expendi- ture | Recurring expendi- ture | | | |
| 1. Office and lab. space for academic units including class rooms | 5.3(B) | | 1.50(A) 5.50(A) | | 45*(A) 25(C) |
| 2. Office space for administration units] | | | 10.0(B) | | 26.0*(A) |
| 3. Auxiliary facilities & services | | | | 5.0*(A) 3.0(C) | 10.0(C) 12.0(A) 10.0(B) |
| 4. Hostel accommodation for students re- search scholars and officers trainees, Guest House | | | | | 60.0*(A) 30.0(A) |
| 5. Residential accommodation for faculty staff | 3.5(A) | | 1.0(A) 3.2(A) | 13.0(A) | 24.0(A) 90.0(A) |
| 6. Residential flats for essential staff | | | | | 18.0*(A) 32.0(B) 51.5(C) 30.0(B) |
| 7. Campus improvement | 3.2*(A) | | 10.0(B) | | |
| 8. Annual maintenance | | 12.0(A) | | | |

Symbols used: A : Highest priority C : Third priority
B : Second priority * : Already sanctioned

6.3.21. We recommend that the Institute may draw up detailed plans for obtaining Government's approval regarding new construction and renovation of buildings in the light of the suggestions made above.

Procedure for construction of new buildings

6.3.22. We note that the Institute could not utilise the full provision in the current five-year plan for construction of buildings partly because sufficient amount was not released by the Government and partly because the Institute lagged very much behind in the execution of approved construction proposals. In the present procedure for sanction of funds, construction proposals are submitted to the Government on year to year basis and the actual construction work

commences after a lapse of about eight months of securing sanction. Invariably, the Institute could not spend the budgeted amount for the year in the remaining period. There is, therefore, a need for modifying the existing procedure.

6.3.23. We suggest that the Institute should prepare a master plan for its construction activity. The construction programme for the five-year plan period should be submitted to the Government well in advance of the commencement of the plan period, indicating therein the approximate expenditure involved. The Government should examine the proposal and indicate its tentative approval for various items of construction work. Based on this tentative approval Institute should proceed with the preparation of conceptual drawings and financial estimates. Depending on the anticipated progress of work during any year, the Institute should come forward with proposals for budget allocation before Section 8(1) Committee, giving complete justification for the work details of financial estimates and architectural design and also an idea of the portion of work expected to be completed during the year.

6.3.24. We recommend that while actual financial sanction and release of funds would be made on a year to year basis after consideration of the annual proposals of the Institute, the administrative approval for the items of work to be undertaken during the five-year plan period should be accorded by the Government at the commencement of the plan period.

Calcutta City Office

6.3.25. The Institute maintains a 2,000 sq. ft. office in the city on a monthly rent of Rs. 3,750/-. This office serves as the Calcutta SQC Unit and is also used for holding important meetings. In view of the nature of work of the SQC Unit, it is important that it should be located in the city. Further, it also serves as a liaison point between the main campus and the city. However, this office is poorly maintained and needs improvement.

6.3.26. We learn that the Institute is contemplating surrendering in the near future most of its rented accommodation both at Calcutta and outside. Till such time the Institute is able to build its own office and residential accommodation and to save on capital expenditure, it would be advisable to continue with rented accommodation on a selective basis.

Delhi

6.3.27. The details of the major buildings other than faculty quarters at Delhi are as follows :

| Sl. No. | Description | No. of floors | Area (Sq.ft.) |
|---------|------------------------------|---------------|----------------|
| 1 | Faculty block | | 93,730 |
| 2 | Classrooms and Seminar rooms | | 11,140 |
| 3 | Students' Hostel | (48 rooms) | 12,840 |
| 4 | Dining Hall | | 2,900 |
| 5 | Guest House | (16 rooms) | 7,100 |
| | | | <u>127,710</u> |

6.3.28. No additional requirement of classrooms or students' hostels should be needed on the basis of the redeployment proposed by us. There may, however, be need for some further faculty rooms, research scholars' rooms, an auditorium to seat around 400 people and space for housing a mini-computer. For this purpose, an administrative block of around 30,000 sq. ft. may be required during the 7th plan period.

Residential Quarters

6.3.29. The total staff strength of the Delhi Centre is 132 and accommodation is now available for 32 persons. In addition, the Institute is constructing 53 quarters. The position after the completion of this construction programme will be as follows :

| Type of Quarters | Staff strength | Existing No. of quarters | Hired accommodation | Quarters under construction | Total No. of quarters |
|---|----------------|--------------------------|---------------------|-----------------------------|-----------------------|
| 'A' for Professor & Associate Professors | 21 | 8 | 4 | 6 | 18 |
| 'B' for Lecturers | 11 | 3 | 2 | 9 | 14 |
| 'B' for administrative staff & technical staff like STA | 28 | 6 | 4 | 6 | 16 |
| 'C' for Class IV staff | 72 | 5 | .. | 32 | 37 |
| Total : | 132 | 22 | 10 | 53 | 85 |

6.3.30. The accommodation for faculty seems adequate for the present but to cater to the future, some more 'A' type quarters need to be constructed during the 7th plan period. To provide the essential and semi-essential staff with accommodation, it would be necessary to construct some further quarters for them also. We recommend that the Institute may initiate steps to construct 6 'A' type quarters, 12 'B' type quarters and 16 'C' type quarters in Delhi during the 7th Five-year Plan. Upon the completion of the construction of these quarters, the total number of quarters in Delhi will be as follows :

| | |
|------------------|------------|
| A type | 24 |
| B type | 14 |
| B type | 28 |
| C type | 53 |
| Total | 119 |

Bangalore

6.3.31. Currently, the Institute functions from two rented buildings, one for Documentation Research, Stat-Math and Economics and the other for the SQC.

In addition, four other buildings have been taken on rent, three of which are used as hostels (one for men, another for ladies and the third for research scholars) and the fourth as the Institute's guest house.

6.3.32. The Documentation Research & Training Centre Stat-Math and Economics units are located in a three-storeyed, 12,000 sq. ft. office which is well maintained, although the building is rented.

6.3.33. The other rented building, which houses the SQC unit is in an extremely poor state of maintenance. We learn that the Institute's policy with regard to maintenance of rented buildings is not to spend any money on them. However, in view of the low rent being paid by the Institute for most of its rented buildings, the landlords have tended to ignore maintenance. Since an office of the SQC unit will have to be maintained in the city, even after the new campus is completed, at least one of the rented buildings will have to be retained. The Institute should review its present policy of not spending any money on maintenance of rented buildings not only in Bangalore but in other cities also, keeping in view the rent paid and cost of alternative accommodation.

6.4. Furniture, Fixtures and office equipment Calcutta

6.4.1. Furniture and fixtures at the Calcutta Campus were inspected on a sample basis and were found to be generally acceptable. In all, there are 54 types of wooden furniture, 21 types of steel furniture, 7 types of office equipment, 15 types of electrical equipment, and fittings and 7 types of miscellaneous items.

6.4.2. Most of the furniture and fixtures in the class rooms, faculty rooms, administrative offices, hostels, faculty quarters, etc. are old and of vintage design. When compared with the furniture at the Delhi and Bangalore Centres, the ones in Calcutta appear shabby. The unsatisfactory state of maintenance of furniture and fittings in Calcutta is partly due to lack of funds. In keeping with the general idea of upgrading the Calcutta campus the standard and quality of furniture and fixtures need to be improved. We recommend that over a period of 7 to 10 years, the Institute may discard those furniture which are not worth renovating and replace them by modern steel furniture with emphasis on standardisation.

6.4.3. The Institute does not have a replacement policy for air-conditioners, typewriters, refrigerators, geysers, etc. and some of these items are very old. We suggest that the Institute should draw up a policy for replacing, in a phased manner, old typewriters, old refrigerators, old air-conditioners, etc. and make a suitable budget provision for this purpose every year.

6.4.4. There are quite a large number of unserviceable and condemned items of furniture and office equipment which are lying stored in various sheds or offices. Mostly, these consist of folding chairs, wooden furniture and even some typewriters. The old Honeywell computer and unserviceable machines are also stacked in sheds. The Institute may constitute a committee to identify all unserviceable items, other than furniture and fixtures, and write off such items from the books of accounts and dispose them off through auction.

Delhi and Bangalore

6.4.5. Furniture, fixtures, office equipment and other related facilities at both Delhi and Bangalore Centres are good and their maintenance is satisfactory.

At the main office of the Bangalore Centre, the Institute has standardised the furniture and fixtures.

6.5. Scientific Equipment

Calcutta

6.5.1. All scientific equipment of unit value of Rs. 5,000/- and above was examined on the basis of the list provided by the Institute. Most of the equipment are in good, serviceable condition and well-maintained. Bulk of the scientific equipment are in the possession of the Electronics Unit and the Electronics and Communication Sciences Unit.

6.5.2. As with furniture and fixtures, quite a large number of obsolete scientific equipment are lying around which are not currently used by the units. These are stored in the units themselves. The Institute should constitute a Committee to examine and decide on the current utility of these obsolete items and may dispose of those which are not needed. Items about the possible use of which there is uncertainty may be stored in a separate room and a further review of such scientific equipment may be undertaken after, say two years.

6.5.3. None of the scientific equipment has been provided with systematic identification mark, and therefore, it becomes difficult to reconcile the physical stock of such items with the records maintained in the accounts Department. The Institute should take immediate steps to put identification mark on all scientific equipment and to maintain a proper record of such items. In view of the high value of such equipment and their critical nature, there should be an annual stock-taking of such items and the stock records of all scientific equipment should be maintained both in the respective units and in the accounts Department.

6.5.4. Most of the scientific equipments have a good utilisation factor. In view of this, the requirements of scientific equipment needed in future to keep pace with latest technology warrants periodical evaluation. However, currently the various units do not seem to be well prepared to furnish necessary details.

6.5.5. The Institute has an excellent Reprography Unit with facilities for Zeroxing, micro-filming, micro-fishing, photo-printing, etc. The standard of maintenance is also good. The utilisation of these equipment is of a fairly high order.

6.6. Computers

Calcutta

6.6.1. The Indian Statistical Institute has a long tradition of using high speed electronic computers for its computing and data processing activities. The first digital computer in India was installed in the Calcutta campus of the Institute as long back as 1956. Since then the Institute has been continually attempting to acquire more powerful computing facilities. The original HEC 2M computer installed in 1956 was replaced successively by a URAI II computer in 1958, an IBM 1401 computer in 1964, a Honeywell-400 computer in 1970 and most recently by EC-1033 computer in 1979. At present, the bulk of the routine computing jobs of the Institute are processed on this computer. But it does not have upto-date facilities and also has difficulty about timely availability of spare parts.

Therefore, on occasions, the larger facilities of the regional computer centre located at Jadavpur University have to be used. In addition to this main system, the Institute has a small supporting mini computer UNIVAC V-77/200 installed in 1979. An ORG-80 micro system has been installed in December 1982 as data preparation device to replace gradually punched card machines now in use.

6.6.2. In spite of being a pioneer in this field, ISI does not possess upto date computers. Each of the earlier computers procured by it was rather obsolete at the time when it was installed at the Institute. This is particularly true of the EC-1033 computer which is based on the technologies of the late sixties. The EC-1033 system is slow by modern standards, and has very limited immediate access storage capacity.

6.6.3. The EC-1033 would need to be replaced in a few years' time, partly because the commitment of the vendor to supply the spare parts needed to maintain the system, will lapse and partly because it will become unduly obsolete. It takes about three years for various agencies of the Government to clear any proposal for acquiring a computer system. The ISI should, therefore, initiate action soon to replace its EC-1033 computer by a modern and more powerful computer.

Delhi and Bangalore

6.6.4. The Delhi Centre has a mini computer (Inter-data 732) with a 96 K memory is used mostly for scientific research and by students. The primary user of this computer is the Planning Unit and therefore, the computer is attached to this unit. One of the constant problems encountered is poor maintenance, particularly on account of non-availability of spare parts. It is learnt that the computer was inoperative for the past 4 months. The present maintenance contract is with a public sector unit. But the standard of service offered by them has been found to be unsatisfactory. The utilisation of the computer for the last one year or so has been around 4 to 5 hours per day. On the other hand, the volume of computing work has increased substantially over the past two years to necessitate hiring computer time from outside. We recommend that this matter may be examined urgently in consultation with the Department of Electronics.

6.6.5. There will be need for a suitable computer at the Bangalore centre after it has been reorganised as recommended by us.

6.7. Vehicles

Calcutta

6.7.1. The Institute's present fleet of vehicles at Calcutta consists of 3 buses, 9 ambassador cars, 1 ambassador ambulance and 7 jeeps. In addition, there are 5 trailers which are used exclusively for field work by various departments.

6.7.2. The general condition of most of the cars is good although there are a few which are quite old. It appears that the Institute's policy is to avoid capital expenditure on replacement of vehicles and, instead, to repair and maintain them in as good a condition as possible.

6.7.3. Of the ambassador cars and jeeps, one of each has been under repair for the last four years. The Institute should not have taken so long to get two vehicles repaired. After these two vehicles are repaired, the Institute should retain them for at least three to four years.

6.7.4. The present fleet of vehicles seems quite adequate. On the basis of an analysis carried out of Kms covered per vehicle, it would appear that the Institute's fleet of cars is in excess of requirement by about two. However, a rational replacement policy for the vehicles need to be formulated because of the escalating cost of maintenance and the age of most of the vehicles.

Delhi

6.7.5. There are two ambassador cars, two matador vans and one mini bus at the present moment at Delhi. However, the two matador vans are old. To replace one of them, the mini-bus was purchased in 1979-80. But both the matadors continue to be used although not frequently. The maintenance cost of the two matadors over a three-year period has been around Rs. 76,000/- which is very high. In view of the limited utility and high maintenance cost of the matadors, the Institute should consider disposing of both of them and replacing these two with one mini-bus.

6.7.6. The present mini-bus is used for pick-up service for the employees. The proposed second mini-bus may act as a stand-by for the existing one and can be used during conferences, etc. when the pressure on vehicles is high.

6.7.7. The ambassador cars are well-maintained and considering their current utilisation, no further additions seem necessary.

Bangalore

6.7.8. The Institute has two ambassador cars and two matador vans at Bangalore. Although the utilisation of the cars is low (on the basis of Kms run/month) the present fleet should not be depleted now, in view of increase in demand when the distantly located new campus starts functioning. We were unable to obtain the maintenance and running expense on each vehicle since these were not maintained individually.

6.8. Communication Facilities

6.8.1. There are serious complaints regarding telephones in Calcutta specially in respect of the PABX system maintained by the P & T Department. Their services are extremely poor. Since the PABX system is operated by P & T personnel it is difficult to have this system functioning beyond office hours. Therefore, no telephone board operates before 10.00 am and after 6.00 pm.

6.8.2. Apart from the PABX system which has 200 lines plus parallels, there are two PBXs in Calcutta for internal communication having a total of 140 lines plus parallels. One of the internal PBXs, located at 202 B. T. Road, requires replacement while the second one needs thorough overhauling.

6.9. Inventory Control

6.9.1. The Institute has not introduced any inventory control system for materials. In the absence of this, there are frequent stock-outs which lead to delays in execution of work. Although a Kardex system exists, these are not updated at the time of either receipt or issue of materials. A proper inventory control system for materials needs to be instituted urgently.

6.10. Disposal of Stores

6.10.1. Although there are laid-down systems and procedures for disposal of stores, a large number of condemned items are stored in various places, since the Institute has not taken any action to dispose them of. Such items have accumulated because old items which are replaced by new/latest items are seldom disposed of. In future, the Government may determine whether a capital item proposed to be acquired by the Institute is an 'additional' or a 'replacement' item. If it is a replacement item, then the Institute must dispose of the old item as soon as its replacement is procured.

6.11. Miscellaneous

6.11.1. The Institute has a maintenance workshop in Calcutta which is utilised for maintenance of calculating machines and typewriters, maintenance and repair of duplicators, repair and maintenance of Xerox and other reprographic equipment. After an examination of the current utilisation of machines and workmen and the current job demands, we feel that there is inadequate utilisation of the men and machines. In fact, the present workshop is a remnant of a development workshop which was started in the Institute in 1950. Most of the equipment and machines of the development workshop were transferred to Garden Reach Workshop in Calcutta, leaving only a few machines back. We suggest that Garden Reach Workshop be requested to take over the remaining machines also.

CHAPTER VII

BUDGET AND FINANCE

7.1. Sources of Finance

7.1.1. Since the Indian Statistical Institute was declared as an Institution of National Importance by the Government of India, through the ISI Act of 1959, it has been almost wholly financed by the Government of India through grants-in-aid. The other sources of income which are relatively small, are consultancy services rendered by the SQC & OR Division and the psychometric research unit and project works undertaken by the Institute on a contract basis. In project work, the net income of the Institute is marginal because it charges only the actual additional expenditure incurred by it for a particular project. The other miscellaneous income of the Institute includes membership fees, sale proceeds of prospectus of academic courses, house rent, hostel rent etc. The following table shows the grants-in-aid from the Government of India and income from other sources received by the institute during the last 5 years :

Table 1 : Income of the ISI (1978-79 to 1982-83)

(Rs. in lakhs)

| Year | Grants-in-aid from Government | | | | | Other receipts | | |
|---------|-------------------------------|-------|--------|--------|--------|----------------|----------|-------|
| | Non-Plan | Plan | | | | SQC | Projects | Misc. |
| | | Rev. | Equip. | Const. | Total | | | |
| 1978-79 | 239.05 | 34.24 | 45.49 | 42.85 | 122.58 | 6.25 | 3.17 | 1.76 |
| 1979-80 | 248.30 | 40.50 | 30.60 | 28.90 | 100.00 | 7.00 | 1.66 | 2.68 |
| 1980-81 | 276.50 | 39.50 | 20.00 | 27.50 | 87.00 | 7.00 | 3.95 | 4.38 |
| 1981-82 | 302.00 | 45.00 | 26.00 | 29.00 | 100.00 | 7.00 | 6.47 | 5.47 |
| 1982-83 | 343.00 | 47.15 | 28.45 | 15.00 | 90.60 | 7.00 | * | * |

(*)—Not available

7.1.2. Every year the Institute prepares a budget and, after it has been passed by the Council of ISI, submits it to the Government for its consideration. This budget of the Institute is first scrutinised by a Committee appointed by the Government under Section 8(1) of the ISI Act, 1959. The Government grant is actually based on the recommendations made by the Section 8 (1) Committee. The Government grants are made under two major heads, namely non-plan and plan. The plan funds consist of three parts; plan revenue, equipment and construction.

7.1.3. It will be seen from Table 1 that the non-plan grants had increased from Rs. 239.05 lakhs in 1978-79 to Rs. 343.00 lakhs in 1982-83 which amounts

to a gross increase of over 43% over a period of five years. The Institute has reported that the main reasons for increase in grant are : (a) effect of additional instalments of DA declared by the Government from time to time, (b) effect of a merger of a part of DA with pay for purpose of calculation of HRA, CCA, and contributory provident fund, and (c) provision of Rs. 5 lakhs per annum for house building advance for the workers of the Institute. The Institute has reported that these compulsory increases have steadily gone up from Rs. 24.60 lakhs in 1978-79 to Rs 88.85 lakhs in 1982-83. If these compulsory increases are deducted from the amount of total grant of the Institute, the net increase in grant will be from Rs 214.45 lakhs to Rs. 254.15 lakhs. This amounts to an increase of about 18% over a period of 5 years.

7.1.4. *Plan Grants* : The grants for the plan projects of the Institute are based on the plan provision made for the Institute under the Sixth Five-year Plan. The Planning Commission had approved a total outlay of Rs. 9 crores for the Sixth Five-year Plan for the Institute. The actual amount of grant to be given to the Institute for this purpose every year depends again on the budget proposal submitted by the Institute and recommendations of the Section 8 (1) Committee. Table 1 shows the figures of grants given to the Institute for plan projects during the last 5 years. It will be seen that the total grant released to the Institute in the first three years of the plan period is only Rs. 2.78 crores. The actual release of grant are always based upon the budget figures formulated by the Institute and the recommendations of the Section 8 (1) Committee. While it is true that the Section 8 (1) Committee has often cut down the demand of the Institute in respect of plan projects, the performance of the Institute in regard to expenditure on Plan projects, particularly on construction, has been significantly less than the amount provided to the Institute in 4 years out of 5. This would be clear from the following table which shows the actual expenditure incurred by the Institute against the grant given to it under different heads during the last four years.

Table 2

(Rs. in lakhs)

| Years | Non-Plan | | | Total Exp. | Plan | | | |
|---------|-------------|-------------------|--------------|------------|-------------|-------|-------------|--------|
| | Govt. grant | Internal receipts | Total income | | Revenue | | Capital | |
| | | | | | Govt. grant | Exp. | Govt. grant | Exp. |
| 1978-79 | 229.05 | 8.01 | 237.06 | 237.12 | 34.24 | 26.41 | 88.34 | 109.89 |
| 1979-80 | 245.30 | 9.68 | 254.98 | 255.32 | 40.50 | 40.49 | 59.60 | 57.55 |
| 1980-81 | 270.50 | 11.38 | 282.88 | 282.22 | 39.50 | 25.89 | 47.50 | 41.53 |
| 1981-82 | 297.00 | 12.47 | 309.47 | 315.48 | 45.00 | 44.87 | 55.00 | 38.08 |

7.1.5. The expenditure incurred in different centres during the last four years is given at Table 3 below :

Table 3
Budget and Expenditure in each centre for 4 years

(Rs. in lakhs)

| Year | Centre | Non-Plan | | Plan Revenue | | Plan Capital | |
|---------|--------|----------|---------|--------------|-------|--------------|--------|
| | | Budget | Expr. | Budget | Expr. | Budget | Expr. |
| 1978-79 | C | 202.01 | 196.60 | 18.41 | 17.40 | 74.82 | 92.30 |
| | D | 27.95 | 32.53 | 1.45 | 1.30 | 7.90 | 12.94 |
| | B | 7.10 | 7.99 | 14.38 | 7.71 | 5.62 | 4.65 |
| | T | 237.06 | 237.12 | 34.24 | 26.41 | 88.34 | 109.89 |
| 1979-80 | C | 217.94 | 215.14 | 32.38 | 31.24 | 41.25 | 47.61 |
| | D | 29.62 | 32.22 | 0.93 | 0.85 | 9.80 | 9.71 |
| | B | 7.42 | 7.96 | 7.19 | 8.40 | 8.55 | 0.23 |
| | T | 254.98 | 255.32 | 40.50 | 40.49 | 59.60 | 57.55 |
| 1980-81 | C | 243.03 | 241.47 | 27.01 | 17.01 | 31.65 | 35.52 |
| | D | 32.00 | 32.63 | 2.25 | 0.64 | 4.85 | 5.29 |
| | B | 7.85 | 8.12 | 10.24 | 8.18 | 11.00 | 0.72 |
| | T | 282.88 | 282.22 | 39.50 | 25.89 | 47.50 | 41.53 |
| 1981-82 | C | 269.15 | 278.19* | 29.00 | 28.66 | 52.00 | 33.77 |
| | D | 32.00 | 29.45 | 4.00 | 5.39 | 2.00 | 3.28 |
| | B | 8.32 | 7.84 | 12.00 | 10.82 | 1.00 | 1.03 |
| | T | 309.47 | 315.48* | 45.00 | 44.87 | 55.00 | 38.08 |

C : Calcutta, D : Delhi, B : Bangalore, T : Total

(*) : In 1981-82 when the Golden Jubilee of the Institute was celebrated, a sum of Rs. 5.8 lakhs was spent towards travel expenses of foreign scientists invited by the Institute. The Government agreed to reimburse the expenditure which has not been included in the budget.

7.2. *Release of Grants* : One of the points which has been stressed by the Institute relates to delay in releasing the grants-in-aid every quarter. The present procedure is that the grants are released on a quarterly basis after taking into account the statement of actual expenditure incurred by the Institute during the earlier quarter. This is the usual procedure which is followed in releasing the grants-in-aid to all autonomous organisations. In practice, however, the grants which

are supposed to be released at the beginning of every quarter are usually delayed by one or even two months. This affects the ways and means position of the Institute to a great extent. We knew that this problem was also dealt with by the First Review Committee which had recommended that "an amount equal to a quarter's expenditure should be paid in advance so that the Institute has funds to meet committed expenditure". But this provision has not solved the problem. We recommend that to meet such contingencies the Institute may be given a one time advance of Rs. 30 lakhs to be used as a revolving fund for this specific purpose.

7.3. Role of Section 8(1) Committee

7.3.1. There has been a number of complaints against the functioning of the Section 8 (1) Committee. We have considered the matter and we are of the view that as the Department of Statistics is the main source of funding and as the Department has no other means of scrutinising the budget proposals and the work plan of the Institute, Section 8 (1) Committee should continue to function. We agree, however, with the recommendation of the First Review Committee that Section 8 (1) Committee should be appointed for a term of 5 years so that it may clear the work programme of the Institute for a period of 5 years and sufficient amount of continuity is maintained in its work. The Committee can be asked to submit inter alia to the Government a report before the commencement of each financial year showing the programme of work for which the Central Government may provide funds.

7.3.2. The inclusion of a representative of the Ministry of Finance in the Section 8 (1) Committee appears to be a very useful procedure. It is, however, important that the latter should try to carry conviction within the Committee instead of exercising a veto outside. This would, however, require that the agenda papers of the Committee should reach him well in time for necessary scrutiny.

7.3.3. One of the reasons why a large number of scientists have complained about the functioning of Section 8 (1) Committee seems to be that there is no proper feedback to the Divisions, particularly about reasons for cutting their budgets or dropping their projects. This needs to be corrected. The Director should look into the matter and arrange to give necessary feedback to each division.

7.4. Financial Liability of the Government

7.4.1. The Government have asked us to advise them on the liability of the Government to finance the activities of the Institute and on the manner in which the Institute should increase its own financial resources.

7.4.2. As has been noted earlier, the Institute, which has been declared by the Government of India as an Institution of National Importance, has been doing good work, which is widely recognised in India as well as abroad. One of the main purposes of declaring the Institute as an Institution of National Importance, was to place it on a sound financial footing. There are a few other institutions in the country which have been recognised by the Government as institutions of national importance. So far as we are aware, all these institutions are wholly financed by the Government, though they may be permitted and sometimes even encouraged to earn such income as feasible in the form of fees, sale of publications, contract services, etc.

7.4.3. Section 5 of the ISI Act, 1959 enjoins the Central Government to pay to the Institute "such sums of money as that Government considers necessary by way of grant, loan or otherwise" to enable the Institute to discharge efficiently its functions which include research, education training, project activities and statistical work relating to planning for national development. We recommend that the Government should continue to finance such activities of the Institute wholly as in the past. Presently, the Institute is making some income through contract services rendered by the SQC & OR Division and the Psychometric Research Unit and some sponsored projects undertaken by it on behalf of the Government or other organisations. We have made detailed recommendation in Chapter VIII about the ways in which this income could be increased. We recommend that this income should be utilised mainly for further development of the Institute and should not adversely affect the grant from Government that the Institute is entitled to under the ISI Act, 1959.

7.5. Audit of Accounts

7.5.1. The audit of the Institute's accounts is presently done by auditors duly qualified to act as such under the Companies Act, 1956, and are appointed by the Institute on the advice of the Central Government in consultation with the Comptroller and Auditor General (C&AG). This is provided under Section 6 of the ISI Act, 1959.

7.5.2. Besides following the above practice, the Institute's accounts are also being test audited on a percentage basis by the Comptroller and Auditor General once in five years and some times even at more frequent intervals.

7.5.3. We have considered the question of audit in depth. We note that this question was given careful consideration even when the ISI Act, 1959, was piloted by then Prime Minister Jawaharlal Nehru in the Parliament. Prime Minister Nehru was of the view that scientific institutions like ISI should not be subjected to routine type of annual audit of the C&AG. They should be, instead, subjected to some kind of performance audit periodically. We recommend that the Government should appoint a review committee to carry out this performance audit (or review) of the work done by the Institute once every 5 or 7 years. If this practice is followed the present system of audit of accounts by a firm of qualified accountants alongwith a test audit by the C&AG should be deemed sufficient.

7.5.4. In this connection we may invite attention to the provision of Section 6 (2) of the ISI Act, 1959, in accordance with which, the Central Government has the power to give "such directions to the auditors in the performance of their duties as it thinks fit". The Government can resort to this provision of the Act, whenever considered necessary, and give detailed directions to the auditors based on the test audit reports of the C&AG and the observations of the Section 8 (1) Committee.

7.5.5. We have gone through the various audit reports and the points raised thereon. A statement showing the objections raised thereon and replies of the Institute is given in Appendix XVII. It will be observed therefrom that many of the objections are relatively minor, relating to procedural and technical irregularities only. There are some remarks pointing to the need for the ISI to improve its book keeping. This should be examined carefully in consultation with experts. There are three important points which we would like to make in this context.

7.5.6. The first relates to the introduction of an internal audit system in the Institute. This recommendation has been made by the C&AG year after year during the last several years. We understand that the Institute has recently finalised a scheme of internal audit which will come into operation shortly. We would suggest that this scheme should be got approved by the C&AG before it is actually put into effect.

7.5.7. The second point relates to the physical verification of assets, furniture, equipment, etc. Such a physical verification every year is a matter of great importance to any organisation, governmental or non-governmental. We understand that the Institute has recently carried out a physical verification. We recommend that the Institute should ensure that such physical verification is carried out every year with-out fail.

7.5.8. The third point relates to the appointment of a Finance and Accounts Officer. We have made recommendations in this regard in Chapter VIII.

CHAPTER VIII

ORGANISATION AND ADMINISTRATION

8.1. Introduction

8.1.1. Some of the organisational and administrative problems that ISI is facing are no doubt unique for it but others are not much different from what many similar institutions in India are facing today.

8.1.2. So far as the problems, which result from the social and political milieu in which ISI is working are concerned, it cannot obviously do much by itself. It is only the mobilisation of sympathy and support from the Government, workers and students that can help it. The more prestige the institute earns as a centre of excellence, the greater will be the prospect for this.

8.1.3. So far as the other problems are concerned, the solution has to be sought through a judicious combination of formal and informal actions.

8.1.4. In a sense informal actions at different levels should really be the basis of the first few steps. Formal actions should be basically supportive of informal actions and, if necessary, the last resort.

8.2. Formal set-up in ISI

8.2.1. But if there are certain deficiencies in the formal set-up of the institution that make effective combination of informal and formal procedures difficult, some reform of the formal structure will have to be carried out.

8.2.2. In the formal structure of ISI the main decision making bodies, besides the Director, are the Council, Academic Council, Divisions, Units and Centres.

8.3. The Council

8.3.1. The composition of the Council is based on the representation of various interests and groups, internal and external. Whether this will lead to an integration of ISI point of view depends on how the Council is used.

8.3.2. A perusal of the minutes of the Council meetings held in the past reveals the following :

- (a) There is no record of any policy discussion though some discussions may have policy implications;
- (b) There is no record of the Council having adopted a role of critically reviewing ISI's policies regarding teaching, research, internal controls evaluation of the organisations functioning, scientist development, new directions, etc.;
- (c) In 15 meetings of the Council during 1981-82 there was a high average attendance and matters recorded as discussed are the annual reports,

budgets, finance committee reports, personnel items, approving graduating lists, election of committee buildings, approving new and revised courses recommended by the Academic Council ;

- (d) In two meetings the role of the Section 8(1) Committee was discussed confining its role to the annual budget and not to the long term policies; and
- (e) Only on one occasion suggestions were made by two members regarding research (23-12-81).

8.3.3. The channel for agenda items is through the Director. Most educational items originate from the Academic Council and the Dean of studies. Decisions on reports of the ISI Committee (finance, works, etc.) requiring Council approval come on to the agenda. All else emanate from the Director. This is in accordance with the Regulations.

8.3.4. The question arises whether policy discussion at the Council is desirable. Should there be a policy committee of the Council ? The First Review Committee had suggested a small Executive Committee. The Deshmukh Committee agreed. But it was not included in the 1976 Regulations. This, in our view, was counter-productive.

8.3.5. The Chairman of the Council should be able to exercise the authority and powers of the Council in between its meetings, if necessary. But he has relied more on persuasion than on power and has always provided strong and active support to the Director. But this constructive sharing of the executive burden has related largely, according to the Chairman and Director to tensions which needed to be defused and to specific decisions.

8.3.6. The Regulations state that the Council governs the Institute and so its main role is the approval and ratification of specific recommendations. It is a passively benevolent body exercising its authority through the Director and the appointment of or delegation to Committees. Its relatively large size seems to militate against its being a truly executive body. As a body it is activated only at points of crises such as its re-action in 1967 to the First Review Committee's report and in developing the new organisations which came into operation in 1976.

8.3.7. The Council of the Institute at present has 25 members, of whom 11 are employees of the Institute. The proportion of internal members is very much on the high side as compared to other similar institutes. Moreover, the internal members attend the meetings in full strength, whereas the attendance of the external members is significantly lower because of their location and pre-occupations. The internal members, therefore, play a dominant role in the affairs of the Council. It has been suggested to us that the Council should consist of a much smaller number of members, say, 12, of whom about two-thirds should be external members. It should have a term of 4 or 5 years. The Chairman of the Council should also have a similar term with much more power than at present. He should be able to exercise the administrative powers of the Council in between its meetings. We feel that there is considerable merit in this proposal. But any such change in the Constitution of the Institute would require the approval of the General Body of ISI by three-fourths majority and, thereafter, the approval of the Government of India. This process will take con-

siderable time. We consider that the same purpose may be served if a small compact committee is appointed for the present to assist the Council in its work. If experience over, say, next three years, shows that this is not adequate, the Government and the General Body should seriously consider the above-mentioned suggestions.

8.3.8. We, therefore, recommend that the Council should appoint a seven-member Policy and Planning Committee from amongst its members. The Chairman of the Council will be the Chairman and the Director, ISI will be the Vice-Chairman of this Committee. Other members of the Committee will be nominated by the Chairman from amongst the members of the Council, of whom one should be a Government representative and three non-employees of ISI.

8.3.9. This Committee will help the Council not only in laying down the policy directions but also in preparing concrete action proposals to achieve the policy goals.

8.4. Academic Council

8.4.1. The Academic Council, which has a very large number of members, has recommendatory role vis-a-vis the Council. While it does not have an autonomous decision-making role, its recommendations are *de facto* taken as decisions.

8.4.2. The Constitution of ISI prescribes two functions for the Academic Council : (i) one relating to teaching and (ii) the other relating to the promotion of inter-divisional and inter-organisational (or inter-disciplinary) research. But the Academic Council has paid little attention to the latter.

8.4.3. A perusal of the minutes of the Academic Council meetings reveals the following :

- (a) in the 15 meetings held between July 1977 and June 1982, items discussed related to education programmes,
- (b) in one meeting research collaboration was mentioned but was referred to the Director for a decision on the specific issue. The Academic Council said it would discuss policy, but thereafter no policy discussion took place, and
- (c) the question of sabbatical leave was raised twice. There was no discussion and the subject was eventually dropped.

8.4.4. The Academic Council consists of all professors and those in equivalent categories. In addition, two representatives of scientific workers, below the rank of professor, are elected from each of the six divisions. The existing strength of the Academic Council is around 75. It meets at least once in a year, sometimes twice or thrice. *Prima facie*, it is a very large and unwieldy body. The discussions are too prolonged and in several cases no decisions are arrived at. It has been suggested to us that the Academic Council to be effective should have a much smaller number of members, say, 25, though it may have powers to co-opt advisers from various divisions as and when necessary. We feel that there is merit in this proposal. However, any reform of the Academic Council will require the approval of the General Body of ISI with three-fourths majority and also that of the Government of India. In view of the time-consuming process involved, we have made alternative recommendations later in this Chapter for

the setting up of a research committee and an education committee, which, we hope, will serve the purpose at least for the present. This matter may be reviewed by the Government after some time, say, three years, and if these committees, recommended by us, do not help improve the situation, the Government and the General Body should consider revising the composition of the Academic Council.

8.5. The Director and Decision-making

8.5.1. The Director is the key authority in the Institute and all the important issues have to be considered by him and decisions on them taken by him *de facto*, whatever may be the *de jure* position of other authorities in the organisation. As has been mentioned earlier this puts a tremendous burden on him. He needs to be helped and relieved of this burden.

8.5.2. We recommend that the Chairman be authorised by the Council to appoint a Coordinator (or Deputy Director) of Research and a Coordinator (or Deputy Director) of Contract Services from amongst the members of the Academic Council. The Director should, in consultation with the Chairman, delegate substantial powers to them and back them up in the use of these powers so that they can be an effective support to his own functioning.

8.5.3. We recommend further that the Director, the Dean of Studies, the two Coordinators (or Deputy Directors), the Head first of Delhi Centre (and later Head of Bangalore Centre also) and Chief Administrative Officer should form an internal Standing Committee which would help the Director in major administrative problems and draw up relevant documents for discussion in the Council.

8.5.4. We may clarify that the Dean of Studies, the Coordinators (or Deputy Directors) of Research and Contract Services and Head of Delhi Centre (and later of Bangalore Centre) will hold these positions in addition to their regular posts of professors. It would be, therefore, desirable to pay them a suitable special pay in addition to their substantive salary.

8.6. Dean of Studies and Education Committee

8.6.1. There should be a small Education Committee of the Academic Council. The Dean of Studies should be the Chairman of this Committee. Other members of this Committee may number four to six and should normally be teachers who take a relatively heavy load of teaching and are members of the Academic Council. They should be nominated by the Chairman of the Council.

8.6.2. The Education Committee would *inter alia* initiate discussion on new courses, revision of courses etc.

8.7. Role of Teachers

8.7.1. We were informed of Prof. Mahalanobis views that ISI was primarily a research institute in which researchers may also teach, even though the ISI Act of 1959 makes educational programmes a national responsibility of the Institute and therefore of its scientific staff.

8.7.2. Educational roles of the scientific staff have not been formalised so far. Many members of the Academic Council asserted that they were ignorant about

the fact that teaching is not taken into account while evaluating the performance of a scientific worker.

8.7.3. There seems to exist considerable resentment in terms of the relative significance and authority of the formal and informal system. This is expressed in statements to the effect that the Academic Council makes all the educational decisions and recommendations but its membership includes many 'non-teachers' (it is not clear within the Institute as to who is a 'teacher') participating in these decisions, whereas many 'teachers' who carry a heavy teaching load do not take a formal part in these decisions because of the composition of the Academic Council.

8.7.4. The Dean of Studies has to negotiate, persuade, plead and occasionally obtain the Director's instruction in trying to discharge his Regulation 8 responsibility for the organisation of the teaching and training activities of the Institute. The assertion often made to us is understandable that the more senior scientific workers are not anxious to occupy the position of Dean. The short, two years, term of the Dean has been a serious handicap and needs to be made extendable by a second term of two-year. This can be done by convention and may not require an amendment of the Regulations.

8.8 Research Committee

8.8.1. As mentioned earlier, the Academic Council has not dealt with its second responsibility, namely promotion of inter-disciplinary research (through inter-divisional and inter-organisational collaboration), although mutual development of Statistics and Natural and Social Sciences is enjoined by the Constitution of ISI. The situation is not likely to improve unless some corrective measure is taken.

8.8.2. This is the main reason why we propose that there should be a coordinator (or Deputy Director) of Research whose specific responsibility will be promotion of inter-disciplinary research. He should head a small Research Committee of seven members of the Academic Council nominated by the Chairman of the Council strictly on the basis of experience and competence. This Committee should associate with its work, as special invitees, selected external experts, preferably from the Technical Advisory Committees (TAC). A certain amount of discretionary fund may also be usefully put at its disposal for this specific purpose. Apart from promoting inter-disciplinary research, this Committee should advise the Academic Council and the Director about research priorities and allocation of research funds in general. This Committee should also consider urgently the desirability of setting up a strong enough Survey Research Unit.

8.8.3. We recommend that the Coordinator (or Deputy Director) of Research should prescribe a proforma which will help clarify the full cost of each research project submitted for approval in terms of :

- (a) value of staff time input of the unit sponsoring it,
- (b) value of staff time input of other units,
- (c) other operational cost in rupees,
- (d) other operational cost in foreign exchange, and

(e) percentage to be added as overhead cost.

He should also devise a procedure for:

- (a) preparing a balance sheet of inputs/outputs of different units, and
- (b) charging to the sponsors the full operational cost and sharing the overhead cost of all sponsored projects.

8.8.4. Such detailed quantification of the cost of research projects, whether in-house, collaborative or sponsored, if properly studied, should help introduce a much needed cost consciousness in research projects in general and help earn a better financial return from sponsored projects in particular.

8.9. Contract Services

8.9.1. ISI undertakes a number of research and surveys projects on behalf of different organisations on a contract basis. It also provides services like SQC, OR and Psychometric tests on a similar basis. Some of its staff members also serve as consultants and receive payments.

8.9.2. We recommend that a Coordinator (or Deputy Director) of Contract Services should be appointed to oversee all these operations, promote them where they deserve encouragement, control them where they need to be restricted and ensure that proper charges are made for them and ISI gets its due share. He should also lay down principles regarding how much ISI should receive as overhead cost.

8.9.3. If in the research interest of ISI itself some project has to be taken up on concessional terms, that may be done. But both the unit and the sponsor should be told clearly how much concession is being given and why.

8.9.4. The earning of such income should not, however, be used for reducing the level of grants from the Government of India that the units providing such contract services are currently getting for the "research and training" part of their work. There should be, of course, no question of curbing, on this account, the normal increase in grants that other units can reasonably expect. All that would be counter productive because no one in ISI will have then any incentive to undertake such projects.

8.9.5. Since the staff members working on these projects will be getting their normal salaries, they should not be given any special payment or bonus. That would be extremely divisive because staff members in other units will not get any such payments.

8.9.6. We may emphasise that the *raison d'etre* for ISI undertaking sponsored projects should not be to earn money but to gain valuable experience, enlarge its scope of studies without extra cost to the Institute and help other worthwhile enterprises in the country. It should be looked at as a public service and not as a commercial operation. On the other hand, there should be also no objection to ISI taking up more of contractual work in future, because in earlier years bulk of its income came from such work from multiple sources.

8.10. Chief Administrative Officer

8.10.1. At present an Officer-on-Special Duty looks after both administration and finance. There is need for a full time Chief Administrative Officer to assist

the Director in overseeing work relating to general administration. He should be also the Secretary of (i) the internal Standing Committee and (ii) Policy and Planning Committee mentioned earlier.

8.10.2. The post of Chief Administrative Officer currently held in abeyance should, therefore, be revived.

8.10.3. A new post of Finance and Accounts Officers should be created. The unit for internal audit should be placed under this officer.

8.11. Committee System

8.11.1. Because of a substantial operating informal system, the Director is at present over-burdened and does not seem to have adequate organisational support. At the same time, there does seem to be a certain amount of uncertainty, defensiveness and alienation amongst the scientists.

8.11.2. We have, therefore, suggested a system of Committees as a facilitating mechanism for more participation and a much higher degree of communication between various groups and levels.

8.11.3. We have suggested small committees, the members of which will be appointed. It is easier for small committees to come to grips with the development of policy and planning for the Institute at various levels and to take operational decisions which might relieve the pressure on the Director. Small appointed committees might make internal control through review more feasible.

8.11.4. Obviously, no structure will work if people controlling the structure do not wish it to work. That holds today and will hold good also for the system that we have suggested.

8.11.5. Our hope, however, is that if there is more delegation of responsibility and power, re-inforced by creating developmental responsibility at different levels and the Director is relieved of much of his present routine chores to be able to concentrate on policy planning and providing leadership, ground will be prepared for creating a more conducive climate.

8.12. Divisions

8.12.1. It is not quite clear why the research divisions and Divisional Committees of Scientific Workers (DCSW) were created in 1976 in the form that they exist today. A presumption is that it might be to reduce the span of control, to decentralise decision making, to create sentient groups, to enable and encourage inter-unit collaboration, planning, budgeting and review.

8.12.2. The formal role of the Professor-in-charge of Division is to call meetings of DCSW, agglomeration of the Division's research plan and budget and to comply with procedures within the standing service orders. All other roles are undertaken informally.

8.12.3. The Professor-in-charge can act as a research leader in the broad field of the Division, the coordinator of the divisional research activities, policies, long and short term plans and budgeting and represent the Division in Institute matters, including at the Council.

8.12.4. He is elected for two years. If he does not get a 75% majority of votes, the Council chooses the Professor-in-charge, usually on the basis of who gets the highest votes. This is not infrequent and does suggest that the position is perceived as having some status and that there are factions in some Divisions. SQC & OR Division, however, seems to send in no names and, therefore, the Council appoints the head.

8.12.5. It would appear that because of the high individuality of units the short tenure of the Professor-in-charge and limited authority (most personnel matters being dealt with the administration and ISIWO), the Professor-in-charge of Divisions are not anxious to undertake an active organisational or institutional research role unless informally encouraged to do so.

8.12.6. The roles, therefore, will vary depending upon the homogeneity of the Division, the Professor-in-charge's personal and professional qualities, the specific formal or informal authority delegated by the Director. Such delegated authority might or might not be regarded as legitimate by his peers.

8.12.7. The Divisional Committee, which is a relatively large body, does not appear to be effective, in any, integrative, developmental, review or control function regarding research, although, it does organise seminars and such academic activities.

8.12.8. We feel that the Professor-in-charge's term of two years is too short for him to be really constructive.

8.12.9. We recommend that the Professor-in-charge's term should be made extendable to a second term by an amendment of the "Regulations". If that is not feasible, there may be some advantage in re-naming this post as Convener of DCSW, instead of Professor-in-charge.

8.12.10. In order to make the Divisional Committees of Scientific workers more effective proper care needs to be taken in choosing a Professor-in-charge who has the stature to command the respect and cooperation of the senior/outstanding research workers in the Division. Otherwise, the latter may cease to take active part in DCSWs work with undesirable consequences. This consideration needs to be kept in view particularly when the Council has to make a selection, under circumstances when no candidate gets 75% of the votes.

8.12.11. It has been represented to us by a number of knowledgeable people that the present composition of Divisions, which was devised apparently in some hurry in 1975, is rather haphazard and unsatisfactory.

8.12.12. Some of them have suggested that the science Divisions should be re-organised somewhat on the lines indicated by Prof. Mahalanobis in a memo. to the First Review Committee, viz., (i) Division of Theoretical and Applied Statistics, (ii) Division of Mathematical Sciences, (iii) Division of Social Sciences and (iv) Division of Natural Sciences.

8.12.13. Others have proposed the following re-organisation :

- (i) Statistics and Mathematics Division, consisting of the following units :
 - (a) Theoretical Statistics Unit,
 - (b) Applied Statistics Unit,
 - (c) Survey Research Unit, and
 - (d) Mathematics Unit,

- (ii) **Natural Sciences Division**, consisting of the following units :
- (a) **Physics Unit** (including the present Physics Unit and groups working on Theoretical Physics and Fluid Mechanics in the present Electronics Unit),
 - (b) **Geology Studies Unit** (combining the present Geological Studies and Flume Project Units),
 - (c) **Chemistry Unit** (combining the present Chemistry and Bio-Chemistry Units),
 - (d) **Plant Sciences Unit** (combining the present Botany, Crop Science and Leaf Protein Units), and
 - (e) **Biology Unit** (combining the present Anthropometry and Human Genetics, Biometry and Embryology Units and Entomology Laboratory) ;
- (iii) **Social Sciences Division** consisting of the following units :
- (a) **Economic Research Unit** (combining the present Economic Research Unit and the National Income Research Unit),
 - (b) **Planning Unit**,
 - (c) **Population Studies Unit** (combining the present Demography Research Unit and Pre-census Population Studies Unit),
 - (d) **Sociological Research Unit**, and
 - (e) **Psychometric Research and Service Unit** ;
- (iv) **Electronics, Communication and Computer Sciences Division** (or **Miscellaneous Division**) consisting of the following units :
- (a) **Electronics and Communication Sciences Unit** (combining the present ECSU, Computer Science and Digital Techniques Groups of the present Electronics Unit and the Computer Science Group of the Applied Statistics, Surveys and Computing Division),
 - (b) **Linguistic Research Unit**,
 - (c) **Maintenance Unit** (Electro-Mechanical Laboratory), and
 - (d) **Audio-Visual Unit** ;
- (v) **Computer Service Centre** ;
- (vi) **Library, Documentation and Information Science Division** ; and
- (vii) **Statistical Quality Control and Operations Research Division**.

8.12.14. We feel that any of these alternatives will be an improvement over the present arrangement. But our preference is for the latter.

8.12.15. Several knowledgeable people, from ISI and outside, have suggested to us that the Computer Unit should be separated from the Applied Statistics Division and the computer programmers in it should be enjoined to give special help to units which lack expertise in this regard. According to them this will help reduce the feeling that the Applied Statistics Division is now getting

preferred access to the computer and also encourage other units to make greater use of it. As against this, some members of the Applied Statistics Division have told us that such a step would adversely affect the work of that Division which was currently using 80% of the computer time. We recommend that the Policy and Planning Committee should examine the issue and take an early decision. But whatever may be the alternative chosen by them, ISI should set up a small Committee with the Director or Dean as Chairman for allocation to different users of the services of computers and computer programmers, irrespective of where they may be located. This will help reduce some of the complaints of unfair allocation of these services that were made before us.

8.12.16. In all prestigious centres of statistical research in the world, powerful modern computers are continually used these days, a large number of terminals being available to the researchers and students. Ideally, the same should happen in ISI. The management of the computer itself should be entrusted, under the guidance of the committee of the type proposed above, to a computer service centre with systems analysts and programmers to help the users.

8.12.17. However, in contrast to the above ideal situation, the computer now installed in ISI, although obsolete and of limited capability, is used for only one shift a day (on an average of 5 to 6 hours) and has to be worked round the clock only for about 40 days in a year, when students of different courses use it to finish and submit their dissertations. With the present level of use by ISI scientists, idle time of a more modern and versatile computer would be greater. Of course, with a system of interacting terminals placed at the disposal of the scientists, the use of the computer will automatically increase and the applied statistical work and quantitative content of scientific work will be greatly enriched. But a modern computer will still have considerable idle time. Its purchase can be justified (especially to the financial authorities) only if this idle time can be sold to other users in the locality on a selective basis. There is a strong case, therefore, for the ISIWO to reconsider their present objection to selling of computer time to outsiders.

8.13. Units

8.13.1. Units are the primary research groups of ISI. Prof. Mahalanobis believed in building research around scientists of ability.

8.13.2. Attempts to attract, find or build second and third generations of able scientists vary considerably between units. There appears to be no standard policy in this regard.

8.13.3. The concept of a unit is very flexible. The focus can be on a discipline, a concept, a problem area, a programme, a technique and a person.

8.13.4. The annual review of research work of units in the DCSW meeting with the TAC (Technical Advisory Committee) is of questionable effectiveness. At the most an occasional project within a unit might be discontinued or a new project introduced.

8.13.5. The Social Science Division attempted to review its units in 1978 resulting in strongly defensive reactions from the units threatened (PPSU, NIRU, LRU).

8.13.6. DCSW lacks effectiveness, hard decisions can only be made by the Director, and so it is frequently perceived that what matters is the informal direct relationship between the unit and the Director.

8.13.7. There is no mechanism to search for, select, plan and develop new units. Nor is there, apart from Prof. Mahalanobis, early statements, a policy or policy making structure for the development of new units or phasing out of obsolete units. The impression gained, therefore, is that there is a lack of policy making and little control.

8.13.8. We recommend that :

- (a) where the units have a number of good scientists the position of head should be changed periodically,
- (b) where the unit is "a one man show" if it relates to a special field, then more active steps should be taken either to recruit or to develop more scientists in this field so that a team develops and the unit is not dependent on a single person, and
- (c) where the unit is small, it may be better to obtain the services of two or three senior people for fixed tenure and on deputation terms from a relatively big scientific organisation in the field.

8.13.9. The practice of deputation will ensure that the scientists concerned will not be at a loose end and will have chance of advancement in his parent organisation. It will also ensure a better "feed back" arrangement between ISI and premier institutions in respective non-statistical disciplines and, therefore, deserves to be practised much more commonly than is the practice today.

8.14. Centres

8.14.1. The Head of the Centre is appointed for a period of five years by the Council on the recommendation of a Committee consisting of the Chairman, the Director and an outside expert. There is thus a difference from the Professor-in-charge of a Division who is elected for a period of two years. There is an obvious organisational distinction being made between the developmental and administrative roles they have to play, that of the Centre Head, ostensibly, being considerably greater. However, in the 'Guidelines for Heads of Centres' and the Delegation of Powers (12-10-1979) the role of the Head is not clear. In the 'Delegation' he is in overall charge of administrative and scientific activities. In the 'Guidelines', scientific work will be drawn up 'Unit/Division-wise' and will have to be approved in the Division meeting. But administrative staff will be under the Centres Head. The Centre head will recommend the names of Unit Heads at the Centre for appointment by the Director. Teaching programmes will be decided in the Academic Council at Calcutta and the Centres will implement them. All appointments will be made from Calcutta with the Head or his nominee as member of the appointments or selection committees. The Head, in the 'Guidelines' cannot re-delegate powers without the Directors' sanction. Proposals regarding outside funds and visitors must be sanctioned by the Director. The Head may allocate existing space and equipment, transfer existing staff within the Centre, exercise disciplinary powers and approve and pass bills within the budget.

8.14.2. It is difficult to see what will induce a Head to take any initiative for the development of the Centre, why he should wish to tackle problems, and how

he can be responsible for scientific or even administrative activities. It is understandable that in view of the past transitional instability at the Centres, particularly Delhi, there might have then been need to exercise a strict centralised control from Calcutta and for scientific work use a matrix organisation from between Division/Centre. But if the growth of a Centre is perceived as an integrated growth with the Head performing a major developmental role, then there is obvious need to delegate more powers to him.

8.14.3. We feel that the two bigger Centres, first Delhi and later Bangalore, should be allowed much more delegated powers than at present after our recommendations for their re-organisation has been completed, but not complete autonomy from the main Institute at Calcutta. The present practice may continue so far as the smaller units elsewhere are concerned, but their complaints about delays at the Calcutta Headquarters should be periodically looked into.

8.14.4. The Delhi and Bangalore Centres should be given a budget which is wholly operated by the Head of the Centre subject to internal audit from Calcutta. Their budget would include the unit budget and a Centre discretionary budget. Within these budgets the Centre would recruit and develop scientists and plan new programmes, projects, units which might be different from those in the Calcutta Campus. The Head of Delhi Centre (and later of Bangalore Centre) should be member of the Director's Standing Committee proposed elsewhere in this report.

8.14.5. The object would be to give these two centres sufficient opportunity to have a creative developmental role without ISI Headquarters losing control over the standards or directions of growth. The main Institute in Calcutta should not lose importance because these two Centres will be specialised organisations and will not replicate the broad based character of the former.

8.14.6. At the Delhi Centre the Math-Stat Group grew around Dr. C. R. Rao when he moved to Delhi early in 1970s. Action and circumstances subsequent to this, as noted earlier, resulted in the atrophy of the Economics and Planning activity contrary to the recommendation of the First Review Committee. This has created a sharp antagonism between the Economics and Math-Stat groups at Delhi which has been most counter-productive. This Gordian knot can be cut only by some drastic action.

8.14.7. We recommend that bulk of the Math-Stat group including 4 or 5 posts of professor at Delhi should be transferred to Bangalore and one or two posts of professor should be transferred to Calcutta. Delhi should be basically planning, economics, econometrics and applied Statistics Centre (with preferably an economist or econometrician as Head), somewhat on the lines contemplated by the First Review Committee. Economics work currently being done at Bangalore should be transferred to Delhi or Calcutta as there is already another large institute at Bangalore specialising in economic research. Additional 4 or 5 posts of professor should be created at the Delhi Centre to attract the needed economists, econometricians and applied statisticians of high calibre from outside. A closer link should be established between ISI, especially its Delhi Centre, and Planning Commission, National Sample Survey Organisation and Central Statistical Organisation in particular.

8.14.8. As regards the Bangalore Centre, the First Review Committee typically questioned whether the DRTC (Documentation Research and Training Centre), which was the major activity at the time had a legitimate place in ISI. The reason later given for its development as a Centre was the rapidly growing industrial importance of Bangalore.

8.14.9. The proposal by Dr. G. Kallianpur, the sponsor of the Centre, to use part time foreign based Indian Scientists as the foundation on which to build this Centre's strength cannot be accepted as appropriate. If the primary actors are initially to be the foreign Indians then it is not unlikely that bright young Indian scientists who may be attracted by them to the Bangalore Centre, being inspired by their example, will also aspire to becoming visiting scientists based abroad. It would be more appropriate to have a strong indigenous base to which such visitors will be welcome additions.

8.14.10. We recommend that the Bangalore Centre should be given a suitable indigenous base by transferring bulk of the Math-Stat group from Delhi. It should be developed primarily as a Mathematics and Statistics Centre. SQC & OR and DRTC may, however, continue there.

8.15. Scientist Development and Evaluation

8.15.1. Implicit in the earlier paragraphs is an emphasis on investing deliberately in the development of scientists in order to form groups to develop fields of study relevant to the objectives of ISI. Such groups will not merely develop research and teaching at ISI but will endeavour to fulfil the inter-institutional collaborative objective of the Institute. Budgetary provision should be made for this.

8.15.2. Despite the standing service orders, there is considerable confusion, uncertainty and anxiety expressed in relation to evaluation of scientists for promotion.

8.15.3. We recommend :

- (a) an annual review of work of each scientist based on his own evaluation of the previous year and statement of plans for the following year, after due scrutiny, and
- (b) a two yearly evaluation of each scientist's accomplishments, that alongwith the annual reviews will be considered in detail by the Director's Standing Committee which may co-opt some outsiders, as necessary to take part in this evaluation.

8.15.4. The two yearly evaluation should result in feedback to the scientist as to what the Institute thinks of his work, both research and teaching, including, as far as research is concerned, his own work part in group work, inter-disciplinary collaboration, impact on other research organisations in terms of ISI's uniqueness etc.

8.15.5. A complete dossier or career record on each scientist will thus be built up which will ensure that no deserving candidate is left out of consideration and the full career record of every scientist is available to the selection committee when the question of promotion comes up. This will help introduce greater

objectivity in selection. This will also be somewhat in line with what obtains in the Tata Institute of Fundamental Research and the Indian Institute of Management.

8.15.6. We suggest that an expert group discuss and put up to the Director a detailed framework for regular review and evaluation of scientific workers covering individual research work, contribution as member of a research team and teaching.

8.15.7. It may be a useful practice if each scientist is required to present his plan of annual work and at least one scientific paper at a seminar to be organised by his unit or Division once each year. This will help stimulate peer interaction.

8.15.8. In view of the fact that ISI has the special privilege of not being tied to the usual post (or cadre) concept, there is need for it to be particularly careful about the procedure and standard for promotion and appointment. Creation and filling up of new posts should be clearly seen as meeting a genuine and important need and not as facilitating promotion. In making appointments to all new posts, external candidates should be considered alongwith internal candidates. Otherwise, ISI may risk losing this rare privilege.

8.15.9. We note with concern that ISI decided to create 22 new positions of Professor and 20 new positions of Associate Professor and fill up most of them by promotion, while the present review was in progress.

8.15.10. As we received this information when we were finalizing our report, we did not have time to examine its *raison d'être*.

8.16. General

8.16.1. There is a feeling in some quarters that there is undue inbreeding and subjective approach in the management of the affairs of ISI. The point is made that justice should not only be done but should also appear to be done. We believe that the recommendations that we have made, if implemented, will help reduce grounds for this kind of feeling. But it will be useful if ISI makes it a practice to associate external experts to a much greater extent than at present in matters like selection for posts, promotion, evaluation of performance, course and syllabus determination, examination and disciplinary action. Advertisement of vacancies should be a normal procedure. In special cases, however, the alternative of "search committees", with a majority of external members, may be tried with advantage.

8.16.2. We believe that the kind of re-organisation that we have proposed can be carried out without retrenching any existing staff. Any reduction in staff that may be necessary in a few units should be absorbed by redeployment to other units. In re-deployment care should be taken that low paid staff are not transferred from one Centre to another against their will. If there are a few who cannot be absorbed by re-deployment, they should be kept on in service as supernumerary until the process of attrition makes it possible to absorb them in a regular vacancy.

8.16.3. We have tried to formulate our recommendations in such a manner that most of them may be implemented without amendment of either the ISI

Act, 1950 or the Memorandum of Association. If, however, after detailed examination it is found that some amendment of the Act or Memorandum is needed, that should be minor and we would recommend that. The same applies to the ISI's Regulations.

B.16.4. We note, however, that in ISI, the process of amendment of Regulations is the same and as time consuming as that of the Memorandum of Association. Both have to be first approved at the Annual General Meeting of the Institute, after three months' notice, by three-fourths of the members voting and thereafter approved by the Government of India. The last amendment took several years' time. This has introduced an undue rigidity, which may prevent timely adjustment to changing situations and create serious difficulties for the Institute in future. The Memorandum of Association of an Institute is comparable to the Constitution and the Regulations to the laws of a country. The amendment of a law is always easier than that of a Constitution and with good reason. Laws have to be adjusted more frequently than constitutions to changing situations. We suggest that ISI and the Government of India should consider either (i) making amendment of Regulations more easy than that of the Memorandum of Association, or (ii) putting some of the detailed provisions now included in the Regulations (e.g. tenures of Dean and Professors-in-charge of Divisions, names and composition of Divisions) in the Bye-Laws instead. This is essential for a dynamic and healthy growth of the Institute.

(S.R. Sen)
Chairman

(T.S. Bhanu Murthy)
Member

(A.L. Nagar)
Member

(N.S. Ramaswamy)
Member

(Jagjit Singh)
Member

(S.P. Gupta)
Member

(Binjal N. Jalan)
Member

(G. Rangarajan)
Member

(K.C. Seal)
Member

(R.N. Saxena)
Secretary

New Delhi,
August 29, 1983.

CHAPTER IX

SUMMARY OF RECOMMENDATIONS

1. In many ways ISI is a unique academic institution in India. It is largely funded by the Government of India but enjoys considerable autonomy in the pursuit of academic excellence. ISI has continued to function by and large as an institution of high quality. We feel that this basic character of the Institute should continue to develop.

(Para 2.5.2.)

2. We consider that ISI should continue to give equal emphasis on pure and applied branches of Statistics. It is our feeling that perhaps in recent years applied research especially survey research, has not received adequate emphasis. These trends need to be reversed.

(Para 2.5.5.)

3. The Institute must from time to time review and decide against the background of developments in the educational and scientific fields in the country as to which units are necessary and which may be redundant.

(Para 2.5.6.)

4. The academic work of ISI should continue to be financed wholly by the Government and the Institute should not be asked to change its academic character with a view to reducing its reliance on the public exchequer. At the same time, we believe that it would be in the academic interest of ISI, if somewhat greater emphasis was given to cost-related pricing of services provided by ISI and it would lead to accrual of higher revenues which could be used with advantage for further development.

(Para 2.5.10.)

5. Public accountability of institutions and personnel which use public money is essential. Therefore, the system of auditing and accounting in ISI deserves to be strengthened. Similarly, it is essential to ensure that there is a proper system of evaluation of the work of ISI as an institution as well as of the individuals working in it.

(Para 2.5.11.)

6. We are of the view that our recommendations in respect of re-organisation must not lead to any retrenchment of the existing staff. However, some re-deployment of staff among different units with minimum geographical dislocation, may be necessary. We believe that such re-deployment is essential now and will also be necessary in future for a healthy growth of the institution, as needs and capabilities change.

(Para 2.5.12.)

7. There is wide variation in the performance of different units and different individuals. There is need to have an arrangement for providing effective peer and/or administrative guidance and pressure on the laggards.

(Para 3.7.2.)

8. There is a strong case for transferring the Stat-Math staff in Madras and Hyderabad to the Bangalore or Calcutta Centres.

(Para 3.8.13.)

9. The Applied Statistics, Surveys and Computing Division should develop new foci. Areas like the tertiary sector, inventory changes, transport, non-agricultural production in rural areas, quick estimation of disaster losses and analysis of available secondary data in key areas are all in need of special attention. There is a need for data base generation on the socio-economic, ecological and biometric profiles of different regions. There is also a number of problems associated with large scale estimational surveys and small scale diagnostic surveys, which require further research. The Division could be also very helpful to the NSS in solving its many technical problems, if there is mutual interest. There is a strong case for setting up a separate survey research unit.

(Para 3.9.6.)

10. We feel that some of the long term projects (like "macro-econometric model for India," and "performance of Indian economy") are of substantial national importance and should be undertaken by the Economic Research Unit on a continuing basis. There is also need for developing regional planning models with provision for such information flow as would help implementation. In such projects, the unit should seek collaboration not only with other units of ISI but also with outside organisations.

(Para 3.10.7.)

11. Written report of external referees should be obtained on a confidential basis for major projects and considered by the DCSW and the TAC before approval.

(Para 3.10.8.)

12. Research on national income should be done along with the relevant projects relating to the modelling of the Indian economy.

(Para 3.10.10.)

13. It will be advantageous to merge National Income Unit with the Economic Research Unit.

(Para 3.10.13.)

14. The ISI should consider merging the Pre-Census Population Studies Unit with Demography unit. However, the present Head should not be disturbed in the last phase of the project.

(Para 3.10.14.)

15. A competent Indian successor to Prof. Kostic should be found for the Linguistic Research Unit or the Unit should be phased out. If it is continued it should have close link with the Electronics & Communication Sciences Unit.

(Para 3.10.17.)

16. There is now serious factionalism in the Psychometric Research & Services Unit, which is adversely affecting current work. This needs urgent attention of the Institute.

(Para 3.10.20.)

17. We feel that in an institution like ISI, with its continuing commitment to the Mahalanobis tradition of studying social transformation, well-developed Sociology Unit has an important role to play and deserves support.

(Para 3.10.24.)

18. The Planning Unit may usefully collaborate with Economic Research Unit and National Income Unit in the areas suggested by us earlier and in developing new approaches and techniques of planning and programming.

(Para 3.10.25.)

19. ISI should phase out the technological activity relating to designing of a processor/computer presently carried out by the Electronics Unit.

(Para 3.11.4.)

20. ISI should consolidate the Electronics Unit and the Electronics & Communication Sciences Unit into one unit. The work of fluid mechanics and theoretical physics which is presently done in Electronics Unit should form part of Physics Unit.

(Para 3.11.10.)

21. ISI should consider early the question of either finding a suitable replacement of the Head of the Botany Unit from or transferring the work and staff to another organisation specialising in Botany.

(Para 3.12.7.)

22. The Crop Science Unit should be either manned properly or its work and staff should be transferred to another institution specialising in this field.

(Para 3.12.10.)

23. The Leaf Protein Unit should now take up intensive bio-chemical and nutrition studies on the leaf protein concentrates already isolated from promising plants and develop leaf protein concentrates particularly for livestock and poultry feed on priority basis.

(Para 3.12.13.)

24. ISI should prepare a detailed scheme for developing the Library at Calcutta into a National Library on Statistics.

(Para 3.13.3.)

25. The Library should develop a small abstract service in which only important articles are chosen for abstracting.

(Para 3.13.4.)

26. The Institute should evolve early a system of perpetual inventory control for all library books.

(Para 3.13.5.)

27. The Documentation Research & Training Centre should continue to function under the aegis of the Institute till such time as it can grow into a viable autonomous centre by itself.

(Para 3.13.8.)

28. While there is a case for reduction of staff in some units, there is also a case for increase in others in Calcutta. If appropriate re-adjustment is made, the Calcutta Centre of ISI should be able to manage over the next few years with a modest increase in the present level of 378 scientific and technical staff. But within this general level, an attempt may be usefully made to recruit some new brilliant researchers at the higher levels by re-adjustment of such savings as may result from attrition (i.e. death, retirement and resignation) at lower levels.

(Para 3.14.4.)

29. These days high calibre scientists have very attractive job opportunities abroad which is not possible for ISI to match in financial terms. Even then we are told, that some of them will be pleased to work for the ISI for the kind of salary it can offer, provided conveniently located living quarters are provided to them. This is a matter which merits serious consideration.

(Para 3.14.5.)

30. ISI's programme of visiting professors and fellows needs not only to be continued but also stepped up.

(Para 3.14.6.)

31. The total staff strength of the Delhi and Bangalore Centres may need some increase at the higher levels. But this should be done only as a last resort after appropriate re-deployment.

(Para 3.14.9.)

32. ISI should undertake the extension of its SQC & OR work on a sufficiently large scale to meet the existing vast unsatisfied demand for this service in industry and other institutions on a self-financing basis. However, the present level of grant that the Division is receiving should be continued irrespective of its own earnings.

(Para 4.2.13.)

33. A high level policy advisory committee for SQC & OR should again be set up as it existed earlier.

(Para 4.2.14.)

34. The SQC & OR Division should sponsor its OR work not merely by training of plant personnel in pre-fabricated OR techniques but even more vigorously by

in-plant association with plant operation in order to devise innovative ways of enhancing productivity and reducing costs.

(Para 4.3.3.)

35. The Head of the SQC & OR Division should be delegated adequate powers to enable him to take such steps as are necessary to expand the SQC & OR Division sufficiently to make a significant impact on industry. For this he should have adequate powers to draw on the SQC fund of around Rs. 50 lakhs already available, besides a reasonable share of such additional earnings as the Division is able to garner by its service to industry in future.

(Para 4.4.1.)

36. The Head of the SQC & OR Division should be delegated adequate powers of recruitment, promotion, transfer and disciplinary action in respect of all officers and staff of his Division, subject to the normal guidelines of the ISI Council in these matters. He should also be delegated adequate powers to hire premises and residential accommodation, buy equipment etc., subject to the requirement that any expenditure in excess of the annual Government grant at the present level should be met from the Division's share in the earnings from the service it provides.

(Para 4.4.1.)

37. The Government should adopt step by step approach for progressively extending the obligation of industry on the one hand and training of the needed staff on the other, for the SQC & OR work.

(Para 4.4.1.)

38. ISI should continue the B. Stat Course.

(Para 5.1.4.)

39. The number of students admitted to M. Stat should be increased and efforts should be made to take a substantial proportion of M. Stat students from outside the Institute.

(Para 5.1.5.)

40. There should be external examiners also for various courses of the Institute.

(Para 5.1.6.)

41. The Education Committee should examine *inter alia* whether reasonable fees should be charged for B. Stat, M. Stat, M. Tech courses and free studentships and stipends should be limited to say, 50% of the seats available for such courses. They should re-consider the rates of such stipends.

(Para 5.3.1.)

42. ISI should give due weightage to teaching for evaluating the work of a scientist.

(Para 5.5.2.)

43. The Institute should examine the question of taking over the plot of land at 204 B.T. Road from the Statistical Publishing Society.

(Para 6.2.4.)

44. An amount of Rs. 12 lakha per year may be provided to the Institute for satisfactory maintenance of buildings, lawns, etc.

(Para 6.2.6.)

45. The Institute should initiate immediate plans to have a shopping cooperative, a post office, a bank, a medical unit and possibly a primary school within or very near the Bangalore campus so that certain basic facilities and amenities are available in the new campus.

(Para 6.2.12.)

46. The Institute should examine the economics of constructing office buildings on its lands in Hyderabad, Madras and Vadodara.

(Para 6.2.13.)

47. The Institute should construct over a period of five years the 7th, 8th and 9th floors of the New Library Building at Calcutta.

(Para 6.3.5.)

48. A suitable auditorium should be constructed in Calcutta in place of the existing studio or at some other convenient location.

(Para 6.3.10.)

49. The construction of a second hostel block of 160 rooms is recommended.

(Para 6.3.13.)

50. The Institute should construct 48 more faculty quarters over a period of next five to seven years.

(Para 6.3.14.)

51. A substantial proportion of the new faculty quarters should be fully furnished and kept in reserve for visiting scientists and newly appointed high level scientific staff. To facilitate rotation, however, no one should be allowed to occupy these furnished quarters for more than two years.

(Para 6.3.15.)

52. Eight buildings which are as old as 80 years and are in dilapidated condition should be demolished.

(Para 6.3.18.)

53. The Institute should draw up detailed plans for obtaining Government's approval regarding new construction, renovation and major maintenance of buildings.

(Para 6.3.21.)

54. The construction plan of the Institute for the five-year plan period should be submitted to the Government well in advance of the Commencement of the plan period.

(Para 6.3.23.)

55. The administrative approval for the items of work to be undertaken during the five-year plan period should be accorded by the Government at the commencement of the plan period.

(Para 6.3.24.)

56. Calcutta City Office of ISI is poorly maintained and needs improvement.

(Para 6.3.25.)

57. Till such time the Institute is able to build its own office and residential accommodation and to save on capital expenditure, it should continue with rented accommodation on a selective basis.

(Para 6.3.26.)

58. The Institute should initiate steps to construct six 'A' type quarters, twelve 'B' type quarters and sixteen 'C' type quarters in Delhi during the Seventh Five-year Plan.

(Para 6.3.30.)

59. The Institute should review its present policy of not spending any money on maintenance of rented buildings not only in Bangalore but in other cities also, keeping in view the rent paid and cost of alternative accommodation.

(Para 6.3.33.)

60. The Institute should discard those furniture and fittings in Calcutta, which are not worth renovating and replace them by modern steel furniture with emphasis on standardisation over a period of 7 to 10 years.

(Para 6.4.2.)

61. The Institute should draw up a policy for replacing in a phased manner, old typewriters, old refrigerators, old air-conditioners, old geysers, etc. at Calcutta and make a suitable budget provision for this purpose.

(Para 6.4.3.)

62. The Institute should constitute a committee to identify all unscrivable items other than furniture and fixtures, and write off such items from the books of account and dispose them of through auction.

(Para 6.4.4.)

63. The Institute should constitute a committee to examine and decide on the current utility of the obsolete scientific equipment, which are stored in the units, and dispose of those which are not needed.

(Para 6.5.2.)

64. The Institute should take immediate steps to put identification mark on all scientific equipment and to maintain a proper record of such items and stock records should be maintained both in the respective units and in the Accounts Department.

(Para 6.5.3.)

65. ISI should initiate action soon to replace its EC-1033 computer by a modern and more powerful computer.

(Para 6.6.3.)

66. The Institute's fleet of cars is in excess of requirement by about two at Calcutta. A rational replacement policy for the vehicles need to be formulated because of the escalating cost of maintenance and the age of most of the vehicles.

(Para 6.7.4.)

67. A proper inventory control system for materials needs to be instituted.

(Para 6.9.1.)

68. In regard to disposal of assets, the Government should determine whether a capital item proposed to be acquired by the Institute is an 'additional' or a 'replacement' item. If it is a replacement item, then the Institute must dispose of the old item as soon as its replacement is procured.

(Para 6.10.1.)

69. The Garden Reach Workshop may be requested to take over the remaining machines from the Development Workshop.

(Para 6.11.1.)

70. In order to meet the situation created by delay in release of Government grants, the Institute should be given a one time advance of say, Rs. 30 lakhs to be used as a revolving fund for this specific purpose.

(Para 7.2.)

71. Section 8(1) Committee should continue to function. It should be appointed for a term of 5 years.

(Para 7.3.1.)

72. The Government should appoint a review committee to carry out the performance audit (or review) of the work done by the Institute once every 5 or 7 years.

(Para 7.5.3.)

73. The present system of audit of accounts by a firm of qualified accountants alongwith a test audit by the Comptroller & Auditor General should be sufficient and may be continued.

(Para 7.5.3.)

74. Physical verification of assets, furniture, equipment, etc. of the Institute should be carried out every year without fail.

(Para 7.5.7.)

75. It has been suggested to us that the Council should consist of a much smaller number of members, say, 12, of whom about two-thirds should be external members. It should have a term of 4 or 5 years. The Chairman of the Council should also have a similar term with much more power than at present. He should be able to exercise the administrative powers of the Council in between its meetings. We feel that there is considerable merit in this proposal. But any such change in the Constitution of the Institute would require the approval of the General Body of ISI by three-fourths majority and, thereafter, the approval of the Government of India. This process will take considerable time. We consider that the same purpose may be served if a small compact committee is appointed for the present to assist the Council in its work. If experience over,

say, next three years, shows that this is not adequate, the Government and the General Body of ISI should seriously consider the above-mentioned suggestion,

(Para 8.3.7.)

76. The Council should appoint a seven-member Policy & Planning Committee from amongst its members on the lines recommended.

(Para 8.3.8.)

77. We have made recommendations for the setting up of a research committee and an education committee, which, we hope, will serve the purpose at least for the present. This matter may be reviewed by the Government after some time, say, three years, and if these committees, recommended by us, do not help improve the situation, the Government and the General Body should consider revising the composition of the Academic Council.

(Para 8.4.4.)

78. The Chairman may be authorised by the Council to appoint a Coordinator (or Deputy Director) of Research, and a Coordinator (or Deputy Director) of Contract Services from amongst the members of the Academic Council. The Director, ISI should delegate substantial powers to them.

(Para 8.5.2.)

79. The Director, the Dean of Studies, the two Coordinators (or Deputy Directors), the Heads, first of Delhi Centre (and later of Bangalore Centre also) and Chief Administrative Officer should form an internal Standing Committee which would help the Director in major administrative problems.

(Para 8.5.3.)

80. A suitable special pay in addition to their substantive salary should be paid to the Dean of Studies, the two Coordinators (or Deputy Directors) of Research and Contract Services and the Head of Delhi Centre (and later of Bangalore Centre also).

(Para 8.5.4.)

81. There should be a small Education Committee of the Academic Council with the Dean of Studies as its Chairman.

(Para 8.6.1.)

82. The short, two years, term of the Dean has been a serious handicap and needs to be made extendable by a second term of two years.

(Para 8.7.4.)

83. There should be a Coordinator (or Deputy Director) of Research whose specific responsibility will be promotion of inter-disciplinary research. He should head a small Research Committee of seven members of the Academic Council nominated by the Chairman of the Council strictly on the basis of experience and competence. This Committee should associate with its work, as special invitees, selected external experts, preferably from the Technical Advisory Committees. A certain amount of discretionary fund may also be usefully put at its disposal for this specific purpose.

(Para 8.8.2.)

84. The Coordinator (or Deputy Director) of Research should prescribe a proforma which will help clarify the full cost of each research project submitted for approval.

(Para 8.8.3.)

85. We recommend that a Coordinator (or Deputy Director) of Contract Services should be appointed to oversee all these operations, promote them where they deserve encouragement, control them where they need to be restricted and ensure that proper charges are made for them and ISI gets its due share. He should also lay down principles regarding how much ISI should receive as overhead cost.

(Para 8.9.2.)

86. The earning of such income should not, however, be used for reducing the level of grants from the Government of India that the units providing such contract services are currently getting for the 'research and training' part of their work. There should be, of course, no question of curbing, on this account, the normal increase in grants that other units can reasonably expect.

(Para 8.9.4.)

87. There is need for a full time Chief Administrative Officer to assist the Director in overseeing work relating to general administration. He should be also the Secretary of (i) the internal Standing Committee and (ii) Policy and Planning Committee mentioned earlier. The post of Chief Administrative Officer currently held in abeyance should, therefore, be revived.

(Para 8.10.1.)

88. A new post of Finance & Accounts Officer should be created. The internal audit unit should be placed under this Officer.

(Para 8.10.3.)

89. We recommend that the Professor-in-charge's term should be made extendable to a second term by an amendment of the "Regulations." If that is not feasible, there may be some advantage in re-naming this post as Convener of DCSW, instead of Professor-in-charge.

(Para 8.12.9.)

90. In order to make the Divisional Committees of Scientific Workers more effective proper care needs to be taken in choosing a Professor-in-charge who has the stature to command the respect and cooperation of the senior/outstanding research workers in the Division. Otherwise, the latter may cease to take active part in DCSWs work, with undesirable consequences. This consideration needs to be kept in view particularly when the Council has to make a selection under circumstances when no candidate gets 75% of the votes.

(Para 8.12.10.)

91. The present composition of Divisions, which was devised apparently in some hurry in 1975, is rather haphazard and unsatisfactory. It should be modified along the lines of any of the two alternatives indicated at para 8.12.12. and 8.12.13.

(Paras 8.12.11. & 8.12.14.)

92. The Policy and Planning Committee should examine as to whether the Computer unit should be separated from Applied Statistics Unit and made a separate service centre. The Institute should set up a small committee with the Director or Dean as Chairman for allocation of the services of computers and computer programmers. This will reduce some of the complaints of unfair allocation.

(Para 8.12.15.)

93. Like all prestigious centres of statistical research in the world, ISI should have a powerful modern computer with a large number of terminals. But a modern computer will have considerable idle time. Its purchase can be justified (especially to the financial authorities) only if this idle time can be sold to other users in the locality on a selective basis. There is a strong case, therefore, for the ISIWO to re-consider their present objection to selling of computer time to outsiders.

(Paras 8.12.16. & 8.12.17.)

94. The position of the Head of unit should be changed periodically. If the unit is 'a one man show' active steps should be taken either to recruit or to develop more scientists in the field. A small unit should obtain the services of 2-3 senior people for fixed tenure and on deputation terms from a relatively big scientific organisation in the field.

(Para 8.13.8.)

95. The practice of deputation will ensure a better "feed back" arrangement between ISI and premier institutions in respective non-statistical disciplines and, therefore, deserves to be practised much more commonly by ISI than is the practice today.

(Para 8.13.9.)

96. We feel that the two bigger Centres, first Delhi and later Bangalore, should be allowed much more delegated powers than at present after our recommendations for their re-organisation has been completed, but not complete autonomy from the main Institute at Calcutta. The present practice may continue so far as the smaller units elsewhere are concerned, but their complaints about delays at the Calcutta Headquarters should be periodically looked into by the Chairman or Director.

(Para 8.14.3.)

97. The Delhi and Bangalore Centres should be given a budget which is wholly operated by the Head of the Centre subject to internal audit from Calcutta. Their budget would include the unit budget and a Centre discretionary budget. Within these budgets the Centre would recruit and develop scientists and plan new programmes, projects, units which might be different from those in the Calcutta Campus. The Head of Delhi Centre (and later of Bangalore Centre) should be member of the Director's Standing Committee proposed elsewhere in this report.

(Para 8.14.4.)

98. The bulk of the Math-Stat group including 4-5 posts of professor at Delhi should be transferred to Bangalore and 1-2 posts of professor should be transferred to Calcutta. Delhi should be basically planning, economics, econometrics and applied statistics centre (with preferably an economist or econometrician

as Head). Economics work currently being done at Bangalore should be transferred to Delhi or Calcutta. Additional 4 or 5 posts of professor should be created at the Delhi Centre to attract the needed economists, econometricians and applied statisticians of high calibre from outside. A closer link should be established between Delhi Centre of ISI and the Planning Commission, NSSO & CSO in particular.

(Para 8.14.7.)

99. The Bangalore Centre should be developed primarily as a Mathematics and Statistics Centre.

(Para 8.14.10.)

100. There should be (i) an annual review of work of each scientist based on his own account of work in the previous year and statement of plans for the following year after due scrutiny and (ii) a two-yearly evaluation of each scientist's accomplishments that alongwith the annual reviews, should be considered in detail by the Director's Standing Committee. A complete dossier or career record on each scientist will thus be built up which will ensure that no deserving candidate is left out of consideration and the full career record of every scientist is available to the selection committee when the question of promotion comes up.

(Paras 8.15.3. & 8.15.5.)

101. Each scientist should be required to present his plan of annual work and at least one scientific paper at a seminar to be organised by his unit or Division once each year. This will held stimulate peer inter-action.

(Para 8.15.7.)

102. In view of the fact that ISI has the special privilege of not being tied to the usual post (or cadre) concept, there is need for it to be particularly careful about the procedure and standard for promotion and appointment. Creation and filling up of new posts should be clearly seen as meeting a genuine and important need and not as facilitating promotion. In making appointments to all new posts, external candidates should be considered along with internal candidates. Otherwise, ISI may risk losing this rare privilege.

(Para 8.15.8.)

103. It will be useful if ISI makes it a practice to associate external experts to a much greater extent than at present in matters like selection for posts, promotion, evaluation of performance, course and syllabus determination, examination and disciplinary action. Advertisement of vacancies should be a normal procedure. In special cases, however the alternative of "search committees", with a majority of external members, may be tried with advantage.

(Para 8.16.1.)

104. Any reduction in staff that may be necessary in a few units should be absorbed by re-deployment to other units. In re-deployment care should be taken that low paid staff are not transferred from one Centre to another against their will. If there are a few who cannot be absorbed by re-deployment, they should be kept on in service as supernumerary until the process of attrition makes it possible to absorb them in a regular vacancy.

(Para 8.16.2.)

105. In ISI, the process of amendment of Regulations is the same and as time consuming as that of the Memorandum of Association. Both have to be first approved at the Annual General Meeting of the Institute, after three-months' notice, by three-fourths of the members voting, and thereafter approved by the Government of India. The last amendment took several years' time. This has introduced an undue rigidity, which may prevent timely adjustment to changing situations and create serious difficulties for the Institute in future. The Memorandum of Association of an Institute is comparable to the Constitution and the Regulations to the law of a country. The amendment of a law is always easier than that of a Constitution and with good reason. Laws have to be adjusted more frequently than constitutions to changing situations. We suggest that ISI and the Government of India should consider either (i) making amendment of Regulations more easy than that of the Memorandum of Association, or (ii) putting some of the detailed provisions now included in the Regulations (e.g. tenures of Dean and Professors-in-charge of Divisions, names and composition of Divisions) in the Bye-Laws instead.

(Para 8.16.4.)

GOVERNMENT OF INDIA
MINISTRY OF PLANNING
DEPARTMENT OF STATISTICS

Sardar Patel Bhavan,
Sansad Marg, New Delhi-110001
Dated the 27th Aug. '62.

NOTIFICATION

S.O. In pursuance of the provisions of sub-section (1) of section 9 of the Indian Statistical Institute Act, 1959 (57 of 59), the Central Government hereby constitutes a Committee consisting of the following persons:—

- | | | |
|-----|---|-----------|
| 1. | Dr. S. R. Sen, Chairman, International Food Policy Research Institute & former Executive Director, World Bank, 41, Poorvi Marg, Vasant Vihar, New Delhi-57. | Chairman |
| 2. | Prof. T. S. Bhanumurthi, Director, Ramanujam Institute of Mathematics, Madras University, Madras. | Member |
| 3. | Shri Ravi Matthai, Indian Institute of Management, Ahmedabad. | Member |
| 4. | Dr. A. L. Nagar, Professor, Delhi School of Economics, Delhi University, Delhi. | Member |
| 5. | Prof. N. S. Ramaswamy, Director, Indian Institute of Management, 33, Langford Road, Bangalore-27. | Member |
| 6. | Dr. Jagjit Singh, former General Manager, South Eastern Railways and former Chairman, I. D. P. L., New Delhi. | Member |
| 7. | Dr. S. P. Gupta, Adviser, Perspective Planning Division, Planning Commission, New Delhi-110001. | Member |
| 8. | Dr. Bimal Jalan, Chief Economic Adviser, Deptt. of Economic Affairs Ministry of Finance, New Delhi-110001 | Member |
| 9. | Shri C. Rangarajan, Deputy Governor, Reserve Bank of India, Central Office, Shaheed Bhagat Singh Road, New Central Office Building, Bombay-23. | Member |
| 10. | Dr. K. C. Seal, Director General, Central Statistical Organisation, Ministry of Planning, New Delhi-110001. | Member |
| 11. | Shri R. N. Saxena, Director (Retired), Ministry of Planning Department of Statistics, New Delhi. | Secretary |
2. The terms of reference of the Committee will be:
- (i) to review the work done by the Institute and the progress made by it;
 - (ii) to inspect its buildings, equipments and other assets;
 - (iii) to evaluate the work done by the Institute; and

(iv) to advise the Government on the following matters:

- (a) to what extent and in what manner the research activities of the Institute should be continued or modified in areas other than development of statistical theory and techniques and their practical applications;
- (b) what should be the liability of the Govt. to finance the activities of the Institute and in what manner the Institute should increase its own financial resources;
- (c) in what manner the administrative set up, management and personnel policy of and financial and budgetary control in the Institute should be improved to make them more effective;
- (d) whether and to what extent the consultancy work done by the Institute, particularly, in the fields of operational research and statistical quality control, should be operated on commercial or self-financing basis;
- (e) whether in the light of the experience gained so far, any amendments to the Indian Statistical Institute Act, 1959 or to its Memorandum of Association are necessary to facilitate the working of the Institute; and
- (f) whether the audit of the accounts of the Institute should be entrusted solely to the Comptroller and Auditor General of India under section 20 of the Comptroller and Auditor General's (Duties, Powers and Conditions of Service) Act, 1971 by suitably amending the provisions of section 6 of the Indian Statistical Institute Act, 1959;

Which in the opinion of the Central Government are of importance in connection with the work of the Institute.

3. In accordance with the provisions of sub-section (2) of section 9 of the Indian Statistical Institute Act, 1959, the Institute has been informed about the setting up of the Committee and asked to appoint a representative who shall have the right to be present and be heard at the review, inspection or evaluation made by the Committee.

4. The Committee may settle its own procedure of work. It may appoint such sub-committees as it may consider necessary from amongst its members and may take the advice of consultants and experts on any point or matter arising out of its terms of reference from within the country or outside, as it may deem necessary.

5. The Committee shall submit its report within six months from the date of issue of this Notification.

6. The headquarters of the Committee shall be at New Delhi.

Sd/-

(A. B. MALIK)

Secretary to the Government of India.

F. No. M-12011/5/80-ISI.

To

The General Manager,
Government of India Press,
New Delhi.

GOVERNMENT OF INDIA
MINISTRY OF PLANNING
DEPARTMENT OF STATISTICS

Sardar Patel Bhavan,
Sansad Marg,
New Delhi—110001,

Dated the 25th March, 1983.

NOTIFICATION

S.O. In partial modification of this Department Notification No. M-12011/5/80-ISI, dated 27th August, 1982, the Committee, set up under sub-Section (1) of Section 9 of the Indian Statistical Institute Act, 1959, to review and evaluate the work of the Indian Statistical Institute, Calcutta, has been given further time upto 31st August, 1983 to submit its report to the Central Government.

Sd/-
(R. M. SUNDARAM)
Under Secretary to the Govt. of India.

No. M-12011/5/80-ISI

To

The General Manager,
Government of India Press,
Ring Road, Mayapuri,
New Delhi,

Appendix—III

COMPOSITION OF THE SUB-COMMITTEES

| Sl. No. | Name of the Sub-Committee | Composition | | |
|--|--|-------------|-----------------|----------|
| I. Technical Sub-Committee | | | | |
| | Review and Evaluation of the work done by the Institute Scope of the activities of the Institute, performance audit. | Prof. | AL Nagar | Convener |
| | | Prof. | TS Bhanu Murthy | Member |
| | | Dr. | SP Gupta | Member |
| | | Dr. | KC Seal | Member |
| | (Items (i), (iii) & (iv) (a) of the terms of reference) | | | |
| II. Resources Sub-Committee | | | | |
| | Physical resources (buildings, equipments & other assets)—Manpower (Human)—Finance (including resources & control)—External control (Comptroller and Auditor General). | Prof. | NS Ramaswamy | Convener |
| | | Dr. | C. Rangarajan | Member |
| | | Dr. | SP Gupta | Member |
| | (Items (ii), (iv) (b), (iv) (c) & (iv) (f) of the terms of reference). | | | |
| III. Organisation Sub-Committee | | | | |
| | Administration Personnel Management—Organisational set up—ISI Act—Memorandum of Association—Audit of Accounts. | Prof. | Ravi J Matthai | Convener |
| | | Prof. | NS Ramaswamy | Member |
| | | Dr. | Jagjit Singh | Member |
| | (Items (iv) (c), (iv) (c) & (iv) (f) of the terms of reference). | | | |
| IV. Consultancy Sub-Committee | | | | |
| | Consultancy work done by the Institute—Statistical Quality Control—Operational Research Consultancy in other fields. | Dr. | Jagjit Singh | Convener |
| | | Prof. | Ravi J Matthai | Member |
| | | Dr. | KC Seal | Member |
| | (Item (iv) (d) of the terms of reference). | | | |

Appendix—IV

LIST OF PERSONS WHO MADE WRITTEN AND/OR VERBAL SUBMISSION TO THE COMMITTEE

(a) *Former and present Staff Members of ISI.*

1. Dr. C. R. Rao,
Department of Mathematics & Statistics, Faculty of Arts and Sciences, University of Pittsburgh, U. S. A. (Former Director of ISI)
2. Dr. G. Kallianpur,
Alumni Distinguished Professor, Department of Statistics, University of North Carolina at Chapel Hill, Chapel Hill, NC 27154, (Former Director of ISI)
3. Prof. Ashok Rudra,
Department of Economics, Visva Bharti, Santiniketan, (West Bengal)
4. Prof T. V. Hanurav,
Stat-Math Division, Indian Statistical Institute, Hyderabad.
5. Dr. T. N. Srinivasan,
Professor, Department of Economics, Economic Growth Centre, Yale, (Former Professor of Economics, ISI, New Delhi)
6. Dr. M. N. Murthy,
Statistical Institute for Asia & Pacific, Tokyo, Japan.
7. Professor T. Krishnan,
Indian Statistical Institute, Calcutta.
8. Prof. J. Roy,
Indian Statistical Institute, Calcutta.
9. Prof. B. S. Minhas,
Secretary-General, Afro-Asian Rural Reconstruction Organisation, New Delhi.
10. Dr. K. S. Parikh,
Programme Leader, Indian Institute for Applied Systems Analysis, (Laxenburg, Austria)
11. Prof Pranab Bardhan,
Deptt. of Economics, University of California Berkeley.
12. Prof. S. Chatterjee,
Head, Psychometry Unit, Indian Statistical Institute, Calcutta.
13. Prof. L. S. Bhat,
Professor, Regional Planning, Indian Statistical Institute, New Delhi.
14. Mr. T. Maitra,
System Analyst, Computer Science Unit, Indian Statistical Institute, Calcutta.
15. Prof. Mani Mukherjee,
Retd. Professor of Economics, Indian Statistical Institute.
16. Prof. J. K. Ghosh,
Professor, Indian Statistical Institute, Calcutta.

(b) *Foreign Experts*

1. Dr. Peter J. Bickel,
Department of Statistics, University of California, Berkeley, California—94720

1. Dr. Angus Deaton,
Professor of Economics, Department of Economics, University of Bristol, 40, Berkeley Square
Bristol, (U.K.)
2. Prof. W.T. Federer,
Professor of Biological Statistics, New York State College, (N.Y.).
3. Prof. R.L. Kirk,
Head of Department, Australian National University, *Canberra, (Australia)*.
4. Prof. James D. Howard,
University System of Georgia, *Georgia, (U.S.A.)*.
5. Prof. Ake Sumborg,
Department of Physical Geography, University of Uppsala, Sweden.
6. Prof. Edwin H. Colbert,
Museum of Arizona, *Arizona*.
7. Prof. C. Berge,
Centre for Mathematics, Boulevard, *Paris*.
8. Prof. Henrik Forscus,
Head, Deptt. of Ophthalmology, University of Oulu, Finland.
9. Prof. D.F. Roberts,
Deptt. of Human Genetics, The University of New Castle Upon Tyne, U.K.
10. Prof. William J. Schull,
Director, Population Genetics, University of Texas, U.S.A.
11. Dr. R. Altevogt
Zoological Institute, University of Munster, Germany.
12. Prof. N.W. Pirie,
Rotham Stud, Experimental Station, England.
13. Prof. T. Lancaster,
Deptt. of Economics & Commerce, University of Hull, *England*.
14. Prof. N.H. Stern,
Deptt. of Economic University of Warwick, *Coventry*.
15. Prof. Martin Shubik,
Deptt. of Economics, Yale University, *Connecticut*.
16. Prof. R.W. Goldsmith,
Deptt. of Economics, Yale University, Hill House Avenue, Yale Station.
17. Dr. Donald Von Eschen,
Associate Professor, Deptt. of Sociology, M.C. Gill University.
18. Prof. J.H. Dreze,
Centre for Operations and Econometric, University of Catholique, *Belgium*.
19. Dr. A.T.A. Learmonth (Retired),
Professor of Geography, Open University, *Milton, Keynes*.
20. Dr. R. Daniel Mauldin,
Deptt. of Mathematics, North Texas University, U.S.A.
21. Prof H. Morimoto,
Deptt. of Mathematics, Osaka University, *Tokyo*.

23. Prof. Hener Helson,
Deptt. of Mathematics, University of California, U.S.A.
24. Prof. Salah E. Elmaghraby,

Kuwait Institute of Scientific Research, *Kuwait*
25. Prof. D.J. Kostic,
Scientific Adviser, Institute for Experimental Phonetics & Speech Pathology, Belgrade,
Yugoslavia.
26. Prof. William D. Sudderth,
Deptt. of Theoretical Statistics, School of Statistics, Minneapolis, Minnesota, U.S.A.
27. Prof. Dwain W. Parrack,
Division of Science & Mathematics, Essex Community College, *Baltimore*, U.S.A.
28. Prof. David Blackwell,
Deptt. of Statistics, University of California, U.S.A.
29. Prof. A.J. Ellis,
Professor of Mathematics, University of Hongkong, *Hongkong*.
30. Prof. Luigi Pasinetti,
University of Cattolica Del, *Milano-Largo, Italy*.

(f) *Others*

1. Prof. P.K. Bose,
Retired Professor of Statistics, Calcutta University, Calcutta, (Member ISI Council).
2. Prof Asok Mitra,
Professor of Population Studies, Jawaharlal Nehru University, New Delhi.
3. Dr. S.C. Bhattacharyya,
Director, Bose Institute, Calcutta.
4. Prof A.K. Choudhury,
Head, Computer Sciences, University College of Technology, Calcutta.
5. Dr. (Mrs) A.R. Rajeswari,
Deptt. of Science & Technology, Calcutta.
6. Prof S. S. Shrikhande,
Director, Mehta Research Institute in Mathematical Physics, Allahabad.
7. Prof. Amitav Bagchi,
Indian Institute of Management, Calcutta.
8. Prof A. M. Goon,
Department of Statistics, Presidency College, Calcutta.
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17. Prof. Amartya Sen,
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18. Dr. S. Subramaniam,
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19. Dr. Yogendra K. Alagh,
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20. Dr. P.N. Misra,
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26. Dr. V. Soundarajan,
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27. Prof. M.S. Narasimhan,
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2. Prof. V.K. Verma,
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3. Prof. Ashish Kumar Bose,
Institute of Economic Growth, University of Delhi, *Delhi*.
4. Prof. Surajit Ch. Sinha,
Professor of Social Anthropology, Centre for studies in Social Sciences, *Calcutta*.
5. Dr. A. E. Harper Jr.,
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6. Prof. J.D. Mehra,
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7. Prof. E.V. Krishnamurthy,
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8. Shri Narendra Singh,
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9. Prof. H.Y. Mohan Ram,
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10. Dr. (Smt.) Gomti Gopi Nath,
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All India Institute of Medical Sciences, *New Delhi*.
11. Dr. Prem Narain,
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LIST OF REPORTS AND DOCUMENTS SUBMITTED BY ISI

1. Preamble to the Accounts of Scientific Activities (1970--82).
2. A short biography of Professor P.C. Mahalanobis.
3. Brochure regarding Golden Jubilee.
4. A brief description of the Institute.
5. A copy of speeches of Prime Minister Jawahar Lal Nehru while piloting the ISI Bill.
6. Summary of Activities from 1970 to 1982 of the Divisions of :
 - (i) Theoretical Statistics and Mathematics,
 - (ii) Applied Statistics, Surveys and Computing,
 - (iii) Social Sciences,
 - (iv) Physical and Earth Sciences,
 - (v) Biological Sciences,
 - (vi) Statistical Quality Control and Operations Research,
 - (vii) Teaching and Training ; and
 - (viii) Information about the constitution and administration of the Institute covering the the same period.
7. Report on the activities of Statistical Quality Control and Operations Research.
8. Report of Planning Unit--(Delhi) of the Social Sciences Division.
9. Report on the Activities of the Economic Analysis Unit 1979--82.
10. Report of the Activities of Documentation Research and Training Centre 1962--82.
11. Supplementary Report on Activities of SQC & OR Division 1969-70 to 1981--82.
12. Statistical Quality Control and Operations Research--160 case studies in Indian Industries.
13. Proceedings and papers of 4th, 5th, 6th and 7th All India Conferences on Quality Control.
14. Excerpts from Examiners Reports of Ph.D. thesis of internal candidates 1970--82.
15. Eleven copies of Publications issued by various Divisions of ISI from time to time.

PREAMBLE TO THE ACCOUNT OF SCIENTIFIC ACTIVITIES
OF THE
INDIAN STATISTICAL INSTITUTE

(1970—1982)

1. *Introduction*

Before a review is undertaken of the scientific activities of the Institute it is pertinent and necessary to examine the nature of statistics as a discipline and its relationship with other scientific disciplines. It is also necessary to see how during the history of its growth the Institute has kept this undertaking in view and how the Central Government has lent support to this growth. A review of the activities and management of the Institute should be preceded by an understanding of the nature of statistics as a discipline, the objectives of the Institute in relation to the nature of the discipline of statistics and the manner in which the Institute has so far endeavoured to fulfil these objectives.

2. *Nature of statistics as a discipline and its relationship with other scientific disciplines*

Briefly, the discipline of statistics consists of (a) formulating probabilistic models and theories where the phenomena are governed by laws of chance; (b) designing experiments or sample surveys where aggregates cannot be studied and all inference about them have to be based on samples; (c) processing and summarising data obtained from experiments and surveys to bring out the salient features and (d) making probabilistic inferences about aggregates from the sample data of experiments or surveys.

Therefore statistics is potentially an integral part of any scientific endeavour where a theory is sought to be constructed deductively taking cognisance of the existence of uncertainty or of the collective behaviour of a large number of units or where theories and laws governing aggregates are sought to be based on empirical observations made on samples taken from the aggregates. Reflection will show that there is hardly any effort at building theories which is outside one or the other of the above two characterisations and hence it is noticed that more and more of scientific theories, whether deductive or empirical, are stated in probabilistic and statistical terms. What is true in the case of scientific theories is lately becoming true of operations of man in technology and in the efficient management of large system, with the ever-growing realisation that, however, perfectly designed, industrial production processes and large complex systems are inherently endowed with uncertainty and the compulsion of decision-making from partial knowledge. This explains the vast development and application, particularly since the Second World War, of statistical techniques in achieving product quality and reliability and efficiency of operations.

This almost universal relevance of statistics to scientific research, technology and the operation of complex systems is well-known. It is therefore unnecessary to establish this fact by illustrations which would run through theories of physics, genetics and evolution, molecular biology, agriculture, economics, sociology, psychology and other social sciences, communication sciences, industrial production and management of complex systems.

While the universal applicability, actual or potential of statistics and probability to numerous fields is well recognised, what is not commonly known is the historical fact of the *genesis* of most of important statistical theories and methods in the requirements of other disciplines and activities. Statistics is a relatively young discipline—statistical techniques began to develop in an isolated manner only in this century, with early works of Galton, Yule and Pearson, to mention the most important names. This early work arose mainly in the process of understanding biometric and astronomical phenomena. The logic of statistical inference and the systematisation of methods and theories really began with R.A. Fisher, often called the father of modern statistics, in the early twenties. Working at the Rothamstead Experimental Station, Fisher's early

work on the design of experiments, analysis of variance and the theory of estimation arose from the needs of agriculture and genetics. Since then statistics has seen a rapid development, but it is possible to show that a large majority of statistical methods have their origin directly in the specific requirements of some other field of science or technology. Examples of the development and refinement of existing statistical methods due to such specific needs would be more numerous. The same historical trend of the development of statistics continues today. Without burdening this text with too many details, we enumerate below a selected list of important statistical methods along with the disciplines in understanding which the methods were invented or developed.

| Field of research or operation | Statistical methods originated or developed |
|--|---|
| Agriculture | Design of experiments ; analysis of variance ; sampling theory and survey sampling. |
| Genetics, anthropology and other biological problems | Regression and correlation ; estimation theory ; multivariate analysis ; probit analysis ; stochastic processes ; discriminant analysis. |
| Psychology and sociology | Factor analysis ; principal components, rank statistics and non-parametric methods ; scaling techniques ; analysis of categorical data ; survey techniques. |
| Physical sciences | Axiomatics of probability ; probability and inference in abstract space ; stochastic processes. |
| Economics | Time series analysis ; stochastic processes, particularly stationary, second order and evolutionary processes ; simultaneous equation models and many econometric methods. |
| Communication technology | Entropy & information theory ; coding theory ; filtering techniques ; stochastic processes. |
| Industrial quality control and other problems | Control chart methods ; single, double & sequential sampling ; reliability theory ; sequential experimental designs, response surface & critical path methods ; orthogonal array design techniques. |

It is true that each statistical theory or method, once invented, has had its autonomous development and has been applied to other fields than the field from the needs of which it was invented. However, it would be discordant with the nature and history of the discipline of statistics to view it as a fixed set of techniques to be applied elsewhere. Live association with various fields of the natural and social sciences and technology has been the prerequisite for the major trends of development of statistics so far and this association must be encouraged to grow in statistical research is not to degenerate into sterile exercises. A comparison with other disciplines will show that this intimate two-way interdependence is a unique feature of statistics as distinct from others.

3. Statistics as a "key technology" and organisational conclusions

To codify the twin aspects of statistics—its general applicability to other disciplines and its dependence on other discipline for its own development—R.A. Fisher had coined the term "key technology" of the century for statistics. In the late fifties, when Fisher was a frequent visitor to the Institute and J.B.S. Haldane was working on its scientific staff, the above term characterising statistics was a result of discussions among Fisher, Haldane and Mahalanobis. It should be noted that these three great scientists have amply shown through their own work that there is no boundary between statistics and other disciplines.

During the same period, Mahalanobis began to conceive of the subsequent development of the Institute in concordance with the above understanding of the nature and role of statistics. His

conception of the future growth of the Institute was also influenced by the fact at this time Mahalanobis was deeply involved in national planning after having formulated the draft Second Five-Year Plan with the help of numerous economic and statistical studies conducted by himself and other scientists of the Institute.

The Indian Statistical Institute, visualised as the premier institution for the overall development of statistics, would therefore engage in the following activities :

- (a) Theoretical and mathematical statistics.
- (b) Applied statistics.
- (c) Probability theory and its applications.
- (d) Areas of mathematics on which the development of probability and statistics are heavily dependent.
- (e) Applications of statistics for the understanding and improvement of economic, industrial and other systems.
- (f) Operational research and its use for the efficiency of management.
- (g) Quantitative and statistical economics for the purpose of national development.
- (h) Scientific disciplines which make constant use of statistical methods, have in the past been responsible for the genesis of statistical methods and have a *known* potential for further development of such methods.
- (i) A few areas of social and natural sciences which have not yet made substantial use of statistics, because of the *expectation* that with the pursuit of research in these areas and in collaboration with statisticians, new developments of statistical methods will take place to meet the requirements of these researchers.
- (j) Computing techniques and numerical analysis (software and hardware) for large scale data processing and complex computations which are essential aspects of statistical work.
- (k) Teaching and training in statistical theory and applications and related subjects at different levels.

It will be seen that for the last 25 or more years the Institute has been pursuing the above activities, although under different organisational arrangements at different periods of time. An analysis of the objectives of the Institute as stipulated in its Memorandum of Association will also show that these activities are in conformity with the objectives.

4. *Support of the Central Government for the activities of the Institute*

(a) A review of the history of each broadline of current activity of the Institute will show that they are, with diversification and enlargement over time, continuations from the latter half of the fifties when the Indian Statistical Institute Act was passed by the Parliament in 1959. In recognition of the work of the Institute and its national and International reputation at that time the Act, presented to the Parliament in the form of a bill by the late Prime Minister Jawaharlal Nehru himself, declared the Institute as an "Institution of national importance", thus assuring support of the Central Government in the pursuance of its activities.

(b) In 1962, when the Department of Statistics which oversaw the affairs of the Institute was in the Cabinet Secretariat, the Central Government formally recognised the role of statistics as a "new technology" and sent the following communication to the Institute (15 June 1962).

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

(c) The First Review Committee of the Institute, in its recommendations made in 1967, did not suggest any major changes in the broad lines of activity of the Institute but did, however, suggest a limit of the budget allocation to "science research units" to 20% of the budget of the then Research and Training School and also the discontinuation in the Institute of two or three specific items of work. The Council of the Institute disagreed with these recommendations after they were examined by a committee with C.D. Deshmukh as Chairman, and the view of the Council were communicated to the Government. On receipt of the views of the Council on the recommendations of the First Review Committee Shri D.S. Joshi, Cabinet Secretary, held a discussion with a delegation of the Council, during which the reasons behind the views of the Council were explained. As a result of this discussion the Government did not insist on the acceptance of the above recommendations (see Prime Minister's statement on the recommendations of the First Review Committee placed on the table of Parliament in February 1968).

(d) The recommendations of the First Review Committee on the objectives and organisation of the Institute were extensively discussed by the scientists of the Institute as well as by the Council and General Body. Finally, on the recommendation of the Council and after modifications, the General Body approved a revised version of the Memorandum of Associations, including objectives and regulations in July 1974. As provided in Section 7(b) of the Indian Statistical Institute Act, no such revision is permitted without prior permission of the Central Government, and hence the proposed revised text of objectives of the Institute and regulations were communicated to the Government. After receiving the approval of the Government, the new Memorandum, including the objectives, were implemented in July 1976.

The objectives of the Institute, as approved by Government and implemented in July 1976, are as follows :

1. to promote the study and dissemination of knowledge of statistics, to develop statistical theory and methods, and their use in research and practical applications generally, with special reference to problems of planning of national development and social welfare.
2. to undertake research in various fields of natural and social sciences, with a view to the mutual development of statistics and these sciences.
3. to provide for, and undertake, the collection of information, investigations, projects and operational research for purposes of planning and the improvement of efficiency of management and production."

(e) According to the provisions of the ISI Act, the Central Government has a unique way of providing funds to the Institute. An expert committee is constituted every year under Section 8(1) of the Act, which examines every project of work in the Institute and recommends the provision of funds. From 1960-61 to 1982-83, following this procedure, the Central Government has been providing funds for all the activities of the Institute.

Thus, from the acceptance of the nature of statistics as a "new technology" as far back as in 1962, to the approval of the current objectives of the Institute as recently as in 1976, on the basis of which the activities of the Institute are designed, the Central Government has been providing firm support to the work of the Institute as visualised and given effect to by Mahalanobis.

5. *Ensuring high quality of research and teaching*

The constant policy of the Institute is to ensure high quality of research and teaching. In order to help the scientists of the Institute in maintaining the quality of research and to see that their work is in tune with the level and content of work being pursued in other centres of excellence in the country, each scientific Division has a Technical Advisory Committee consisting of eminent active scientists from all over the country. The projects of research are compulsorily discussed, reviewed and formulated annually at meetings of the scientists of the Divisions, with the participation of the members of the Technical Advisory Committees.

Another method of ensuring quality, followed traditionally by the Institute, is to encourage the visits of scientists from different countries. A large number of such visits take place every year, and some times result in continuing collaboration over years.

An idea of the quality of research can be made from a scrutiny of the standard of journals in which research papers are published and a study of books published by the scientists and the

reviews thereof. At the same time, the Ph.D. theses submitted under the guidance of the Institute's scientists maintain a high quality, too, and frequently receive profuse appreciation from well-known scientists all over the world who examine them.

One important indicator of the quality of work in science is the recognition by the relevant professional community. It can be easily verified that not only in theoretical and applied statistics, the Institute is considered by the respective professional communities a distinguished centre of research in several other fields.

One recent demonstration of this recognition was the response to the conferences and symposia organised since the middle of December 1981 in connection with the golden jubilee of the Institute. Seven international conferences and four smaller symposia were organised at Calcutta, Delhi and Bangalore. It may be noticed that the participation was very wide and distinguished and, if one goes through the papers contributed, it can also be seen that the level of the discussions was extremely high, with substantial participation from the scientists of the Institute. The proceedings of these conferences are already in press and it is certain that each of these volumes will be of significance to the subject, as well as will uphold the scientific stature of the Institute.

The Institute conducts a great volume of teaching and training in statistics and allied subjects—undergraduate, postgraduate, doctoral, post-Master's specialisations, lower-level evening courses, etc. In all cases not only is the quality of students ensured by admissions through selection tests, but the courses themselves are kept under constant review to keep pace with developments. The Institute is, of course, an internationally recognised centre of the teaching of statistics and its applications. Besides, having been a pioneer in the country in the use and design of electronic computer, the Institute is also recognised in the country as one of the best centres of the teaching of computer science. For the last 32 years, in collaboration with the International Statistical Institute, the UNESCO and the Government of India, the Institute, has been conducting the International Statistical Education Centre for trainees from countries of Asia and Africa.

6. *Results of collaboration between statistics and other disciplines*

The policy of the Institute with regard to scientific research in all fields is to encourage the production of high quality research without any compulsion for scientists in fields other than statistics to try to use statistics. Mutual benefit between statistics and these fields is sought to be obtained through the arousing of interest and voluntary collaboration. If one looks at the research publications of some of the natural and social sciences of the Institute, the imprint of their being in a statistical research institution will be evident. What is more important is that in a number of cases, new and exciting statistical problems have cropped up, as was originally hoped, and interesting new statistical research generated. A few examples from the work of recent years are :

- (a) From human genetics—genefrequency estimation method in the presence of dominance without the assumption of panmixia ; goodness of fit test for cluster sampling.
- (b) From geology—development of the theory of circular distributions ; models for sediment transport; research on directional data through "circular distribution".
- (c) From molecular biology—deterministic and stochastic models for the understanding of certain rhythm phenomena in transcription and translation during embryogenesis.
- (d) From sociology—development of probabilistic graph theory methods to study influence networks.

Although genetics and sociology are known sources of inspiration for new statistical methods, geology and molecular biology do not have a long and substantial history of relationship with statistics. These examples of the fulfilment of the purpose of close proximity between research in statistics and other disciplines will be emulated and enlarged by the Institute in future.

VIEWS IN BRIEF OF THE INDIAN STATISTICAL INSTITUTE ON THE TERMS OF REFERENCE OF THE SECOND REVIEW COMMITTEE OF THE INSTITUTE

1. *To review the work done by the Institute and the progress made by it*

The review of the scientific work of the Institute would naturally be the most important task of the Committee. In this respect, the original intention of "performance audit" behind the Indian Statistical Institute Act of 1959 should be borne in mind. For this purpose, each identifiable scientific activity of the Institute should be examined by competent scientists from the following points of view :—

- (a) History of the particular activity in the Institute; did the Institute have a pioneering role in this activity.
- (b) Have the contributions of the Institute in this activity been of a standard which is well recognised compared to the national standard of work in the same activity. Have these contributions merited international recognition.
- (c) Is there any special feature of this activity because of its pursuance in the Institute.

Detailed descriptions of almost all of the scientific activities of the Institute have already been submitted to the Review Committee. However, a correct appreciation of the quality, extent and nature of work can be acquired only through detailed discussions with scientists concerned and a first hand study of research papers published by the scientists of the Institute, the these submitted under their guidance and the project reports prepared by them. It is hoped that the Review Committee will undertake this detailed task.

2. *To inspect its buildings equipments and other assets*

Details of building space, scientific equipment etc. have already been prepared and they may be examined. Physical examination would be welcome. Future expansion requirements of buildings in Calcutta, Delhi and Bangalore have been formulated and the Institute hoped to continue to receive funds from the Government. One of the most essential requirements is staff housing. All categories of staff are in difficulty in all centres of the Institute with regard to housing. The need is particularly great for faculty housing. Apart from the acute difficulty felt by existing scientists due to exorbitant rents, it is virtually impossible to recruit new talent unless official quarters are offered. In order to attract good scientists and, particularly, to retain the all-India character of scientific staff, more than adequate salaries it is necessary to be able to provide accommodation at reasonable rent. So far the Institute has not been able to undertake a substantial construction programme for staff quarters, but is now trying to do so. It may be mentioned that undertaking of such a programme was one of the specific recommendations of the First Review Committee and accepted by Government but, unfortunately, very few quarters have been constructed except a small number in the Delhi Centre Campus.

3. *To evaluate the work done by the Institute*

The difference between the term "evaluation" and the term "review" of para 1 above is not clear. However an evaluation of the work would have to be made against certain known objectives, and these can only be the "objects" of the Institute as specified in its Memorandum of Association, apart from the all-important criterion of the quality of work. Analysing the components of the objects as enumerated in sections 2.1, 2.2 and 2.3 of the Memorandum, the Institute's performance can be stated briefly as follows, and this can be checked out in detail.

(a) *To promote the study and dissemination of knowledge of statistics*

The Institute's continuing contribution and standing are well-known. A pioneer in the teaching of statistics and its applications since the thirties the teaching and training activities of the Institute have been widely diversified, and are well-known in the professional world of statistics for their high standard.

The Institute holds many conferences and summer schools, which are very well appreciated.

The journal of the Institute, *Sankhya*, continues to be one of the world's foremost journals in statistics and receives articles from well known statisticians belonging to many countries of the world.

(b) *To develop statistical theory and methods*

The contributions of the Institute to the theory and methods of statistical inference, multi-variate analysis, linear methods, design of experiments, sampling and sample surveys, probability and stochastic processes, etc. are too well-known to be described in detail. Also, in certain fields of mathematics closely associated with the development of statistics the Institute has a high reputation.

(c) *To develop the use of statistical theory and methods in research and practical applications generally,*

The vast literature produced by the scientists of the Institute on the application of the statistics to such fields as econometrics and statistical economics, population studies, sociology, psychometric measurement, anthropometry and human genetics, pattern recognition and signal analysis, Crop science, biometry, and even geology and molecularbiology may be examined. There is a definite and unique stamp of the Institute and its statistical atmosphere on all these studies, as may be verified by examining the contents of papers and theses. The enormous work done by the Institute in the application of statistical methods to the problems of quality, reliability and operational efficiency of industry is unparalleled in the country. Extremely interesting statistical work on linguistics, mixed cropping and the economics of leaf protein production and use is being undertaken.

(d) *To develop Statistical theory and method with special reference to problems of planning for national development and social welfare*

The Institute's contributions in the building of models, inter-industry transaction tables, perspective planning etc. are well-known. By an unfortunate decision of the Government of India, following from a recommendation of the First Review Committee, the organic link between the Planning Commission and the Institute was severed. However, the Institute continues researches on specific areas of national development, very frequently by collecting first hand data and their statistical analysis.

(e) *To undertake research in various fields of natural and social sciences with a view to the mutual development of statistics and these sciences*

The nature of the discipline of statistics in relation to other scientific activities has been explained in the document entitled "preamble to the Account of scientific activities", submitted together with detailed documents describing the scientific work of the Institute for the last 12 years. As indicated in para (c) above, many scientific activities in the Institute have derived great benefit from the use of statistics. The reverse, viz., the development of statistics itself arising out of the requirements of research in other sciences, would understandably be less frequent, but the Institute has quite a creditable record of this, too.

As has been listed in the "preamble" certain new lines of statistical research have been opened up in connection with statistical work on geology, human genetics sociology, etc., and some new requirements have been identified for use in communication sciences.

(f) *To provide for, and undertake, the collection of information, investigations, projects and operational research for purposes of planning and the improvement of efficiency of management and production*

The major activity of the Institute from 1950 to 1972 in the matter of collection of socio-economic information for purposes of planning was embodied in the National Sample Survey Project, and all the well-known expertise of the Institute in survey sampling was engaged in this work. Again, on the basis of a recommendation of the First Review Committee, the Government of India decided to take over this activity from the Institute. This resulted in denuding the Institute of its expertise in a field in which international recognition had been obtained and it is doubtful if the National Sample Survey Project has improved in statistical content, quality of efficiency since 1972. However the Institute continues to undertake numerous projects of statistical data collection on important socio-economic or other subjects, directly or indirectly related to needs of planning.

Projects and operational research for the improvement of efficiency of management and production continue vigorously.

4. To advise the Government on the following matters :

(a) in what extent and in what manner the research activities of the Institute should be continued or modified in areas other than development of statistical theory and techniques and their practical applications.

In view of what has been said in the "preamble" and the above paragraphs and the nature and history of the discipline of statistics itself, this differentiation between "development of statistical theory and techniques and their practical applications" and "areas other than" this development is illogical, restrictive and detrimental to the development of statistics. A premier institution for the development of statistics should have the opportunity of pursuing lines of research in social and natural sciences not only in areas where significant applications of statistics are known but also in some others where such application is yet not known. The Parliament and the Government have, for a long time, taken this enlightened view. In fact, when the Indian Statistical Institute Act was adopted by Parliament in December 1959, most of the current activities which are now being labelled as "other than, the development of statistics, were already being vigorously pursued. These are computer science and computer systems development, biometry (with crop science and agricultural experimentation), demography, sociology, psychometry, anthropology and human genetics, geology, etc., apart from a good deal of economics. It cannot but be presumed that the Government, when drafting and moving the ISI Bill, would have known of these activities and had the intention of implicitly approving them by the enactment. Government's intention was further explicitly clarified when, after a discussion between Professor Mahalanobis, Shri S. S. Khera (Cabinet Secretary), Shri P.C. Mathew and Dr. K.R. Nair, a communication dated 15th June 1962 was received from Shri S.S. Khera which contained the following.

"Research and study Units in subjects other than theoretical and applied statistics :

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

Since the passing of the ISI Act and the above statement of the views of the Government, the Institute has been carrying on activities on the same broad lines, although a few groups have disappeared and another few have been undertaken. The First Review Committee, in spite of several misunderstandings, had not forbidden the undertaking of activities 'other than' the development of statistics, but had recommended a limit of expenditure on them to 20 per cent of the total research budget.

It is strange to notice that whereas on the one hand there is a great deal of talk in every scientific gathering of the breaking of barriers between sciences, of interaction between sciences, on the other hand and at the same time the official attitude towards the work of the Institute is becoming restrictive and compartmentalised. This has become acute since 1978 when, strangely, several formulations have emanated from the Ministry of Finance in this tone through official communications and statements made by its representatives in the successive Section 8(1) Committee. It would be proper to know the scientific basis on which these views of the Ministry of Finance are arrived at. Documents of correspondence, record notes of discussions in Section 8 (1) Committee meetings etc., may be studied in this context.

It can be easily seen that the Institute does not undertake any activity which has no potential for the development of statistics or which may not be benefited by the proximity of statisticians and probabilists. There is no activity which is not within the spirit of the ISI Act of 1959. The stated policy of Government in 1962 for the objects of the Institute, which have the approval of Government as late as in 1975. It is therefore surprising that the same Government chooses to ask the Review Committee about the "continuation or modification" of these activities, without any advice being sought for the possible development and expansion of any activity of at all, whether statistical or otherwise.

It must also be remembered that apart from statistical research, training and applications in the strict sense, the Institute has played a pioneering role in several other fields and is still considered a good one for them. Any hasty decision discouraging them would only be to the detriment of the advancement of science.

- (b) *What should be the liability of the Government to finance the activities of the Institute and in what manner the Institute should increase its own financial resources.*

Since all the broad lines of activity of the Institute are historically established from before the adoption of the ISI Act, since they have a scientific rationale following from the nature of statistics, since they have Governments policy approval for the last 20 years and since they fall within the purview of the objects of the Institute which have been approved by Government, the Institute claims full financial support from Government. The Institute pays its staff according to the system and rates prevalent in the Central Government or the Central Universities, it has much more modest physical resources compared to many Institutions of higher learning in the country, and any reduction of Governments financial liability to the Institute does not stand to reason. The term "own financial resources" of the Institute is not clear and the Review Committee is requested to ascertain its meaning from Government.

- (c) *in what manner the administrative set up, management and personnel policy of and financial and budgetary control in the Institute should be improved to make them more effective.*

The administration of the institute is broadly determined by the Regulations accompanying the Memorandum of Association, the Service Standing Orders, the Categorisation Manual and various resolutions of the Council. These may be studied and discussion held. Already, the sub-Committee on organisation has had extensive discussions with various sections of the staff of the Institute. Documents relating to financial and budget control have also been submitted to the Review Committee.

- (d) *whether and to what extent the consultancy work done by the Institute, particularly in the fields of operational research and statistical quality control should be operated on commercial or self financial basis.*

As has been stated, consultancy work by the Institute is mainly in the area of operational research and statistical quality control, through Institute's network of SQC & OR Units in several industrial centres of the Institute. The primary purpose of this activity undertaken since 1948 is to acquaint industry and other organisations. With the benefits of statistical and OR techniques for the maintenance and improvement of product quality system reliability and efficiency of operations. The Institute has also taken on the task of developing and adapting these techniques in the country, and of training the SQC & OR personnel for Indian industries. It is well known that in some other countries, particularly Japan, these methods have been continuously used, encouraged and developed in a very large way and they have proved to be an important element in the enhancement of the quality and competitiveness of Japanese industrial production. Although the methods had mainly originated in the USA there had been a downswing in their use in this country. A recent visit by the Director of the ISI to several large industrial corporations of the USA and detailed discussions with their quality assurance staff revealed that a renewed interest in SQC & OR methods has been created in that country because of the example of Japan and that vigorous attempts are being made to receive and expand their use.

It has also come to be realised that as, in the present economic situation in the world, the potential for the generation of additional capacity is getting restricted, the importance of improved efficiency of installed capacity is becoming paramount. In the USSR, every increase in production has to be shown separately as due to increase in capacity and due to improvement of efficiency. Since the method of SQC & OR are potent for the improvement of quality reliability and efficiency, there is emphasis now on their use in every developed country.

Unfortunately, in India there has been no sustained effort on the part of Government to impress upon Indian Industry, even in the public sector, to use these methods. The efforts of the Institute have probably been the only continuing ones. The Indian Statistical system, mainly engaged in the collection and analysis of socio-economic data, has ignored the post Second World War developments of statistics in science and technology and the immense possibilities of the use of statistical and other quantitative methods in industrial technological and other operations. The First Review Committee had no doubt desired financial self sufficiency of the Institute consultancy work in this field, but had also recommended that the use of these methods be made obligatory in the public sector at least. The Government had agreed with this second recommendation but enquiry seems to reveal that the

Department of Statistics had written a letter to the Ministry of Commerce at some point. No other evidence of implementing this recommendation is available. However, the insistence on earning more money by the Institute has been repeated.

About three years ago the Government had constituted a committee to review the national statistical system. After the report was presented to Shri N.D. Tewari, the then Minister for Planning, it was pointed out on behalf of the Institute that the national statistical system should be expanded to incorporate the methods of SQC & OR and other quantitative techniques to industries, communication and transport operations, etc. in the Government and public sectors. A paper written to this effect was made a special item of the agenda of a meeting held on 5 April 1981 of all Ministers in charge of statistics at the Centre and the States. The Institute was congratulated for bringing this idea to the notice of Government and there was universal agreement in the extensive use of the techniques.

If the Government is sincere in its own professions and wished to make an extensive use of SQC & OR techniques, there will be an obvious and important role to be played by the Institute which holds the largest and most experience staff in the field. This role would be of promotion, training, demonstration and technique development. To forget this background completely and to mention only the every unimportant fact of earning more money by the Institute is a travesty of his history. The Review Committee is requested to examine whether the techniques of SQC & OR are essential for the country and, if so how the Departments of Government which are concerned with quality, productivity and operational efficiency, be impelled to use them and what role the Institute should play. The activities of promotion, training, demonstration and technique development cannot be measured in money easily and must be considered as investment. The Institute would not agree to the emphasis on earning, since it is detrimental to science.

(c) *whether in the light of the experience gained so far, any amendments to the Indian Statistical Institute Act, 1959 or to its Memorandum of Association are necessary to facilitate the working of the Institute.*

The ISI Act of 1959 has so far not hampered or inconvenienced the work of the Institute and no amendment is suggested. The Memorandum of Association was completely revised through intensive discussions and implemented only in July 1976. None of the clauses of the Memorandum or the accompanying Regulations has been of disadvantage to the management of the Institute either from the scientific or the administrative points of view. No change in them is suggested.

(f) *whether the audit of the accounts of the Institute should be entrusted solely to the Comptroller and Auditor General of India under Section 20 of the Comptroller and Auditor General's (Duties, Powers and Conditions of Service) Act, 1971 by suitably amending the provisions of Section 6 of the Indian Statistical Institute Act, 1959.*

At present, and since 1960, the auditors are appointed on the advice of the Government which, under Section 6 of the ISI Act, 1959, communicates the name of a company of auditors after consultation with the Comptroller and Auditor General of India. Under the same Section, the Government may and does issue "such directions to the auditors in the performance of their duties as it thinks fit".

We are not aware of the details of the CAG Act, 1971, but it appears that the CAG may perform the audit of institutions like the ISI either under Section 14 or Section 20. Presumably, under Section 14 the CAG performs only a part audit periodically, whereas under Section 20 the audit is full and carried out every year. It is our understanding that since 1971 the CAG has chosen to perform the audit of the Institute under Section 14 of the CAG Act, 1971. In this connection the following facts may be noted:

- (i) A perusal of the statutory audit reports of the last 10 years will show that no irregularities of transaction have been reported by the auditors.
- (ii) The Review Reports of the CAG over the same years, which constitute a sample cross check on statutory audit, also have not pointed out any irregularities.
- (iii) The Review Reports of the CAG have not mentioned any deficiencies or shortcomings of statutory audit.
- (iv) The overall budget control of the Institute, which reflects financial discipline, is satisfactory, as can be verified from a study of receipts and expenditure over the years. This financial discipline has been sought to be further strengthened by the formation of a Budget Cell and Internal Audit Cell.

In the above circumstances, the Institute finds no reason for any change in the system of audit. In fact such a change, particularly if recommended by the Review Committee and brought about by an amendment of the ISI Act, 1959, will have an adverse publicity value of lack of financial discipline which is not borne out by facts. This will, in an unfair manner, harm the image of the Institute.

It may be mentioned that the system of accounting and financial management of an institution are a matter different from the audit agency. The Institute would welcome suggestions for the improvement of the system, as it has continually been doing, but does not think that any change in the audit agencies is not called for.

As the Chairman, Dr. S.R. Sen, had rightly pointed out at the first meeting of the Review Committee, an important guiding principle behind the Section 6 of the ISI Act, 1959, was to initiate what the late Prime Minister Jawaharlal Nehru had called "performance audit" of a scientific institution, in place of the conventional governmental audit of monetary transactions which he thought was more suitable for the administrative departments of the Government. A study of Nehru's reply in Parliament to the debate on the ISI Bill would clarify this. Therefore, if it is found that during the last decade the Institute's performance in scientific work has been satisfactory and its financial discipline adequate, not jeopardizing the "interests of Government", the experiment proposed by Nehru should be continued. If there are any deficiencies suggestions for improvement would be welcome.

5. *General comments on the terms of reference*

The content and language of most of the terms of reference listed in items (iv) (a) to (f) are disappointing. Except for (c) and (e), which would understandably be there, all the remaining items have a taste of reduction of activity, withdrawal of support from Government, a wish to convert a scientific institution into a business organisation and governmental control through audit. Going by a literal interpretation of these terms of reference, Government does not wish to seek the advice of the Review Committee in the direction of further development and the enhancement of resources for different facilities. This general tone, which neither reflects an attitude of scientific liberalism nor shows a recognition of the Institute as an institution not only of national but of international importance, is unfortunate. The Institute earnestly hopes that the Review Committee would adopt a liberal and scientific attitude, try to appreciate the glorious history and recent performance of the Institute, appreciate some of the interesting features of the Institute and frame its recommendation accordingly.

SECOND ISI REVIEW COMMITTEE

SUMMARY RECORD OF DISCUSSIONS HELD WITH SHRI P.N. HAKSAR, CHAIRMAN OF THE COUNCIL OF THE ISI ON THE 12TH MAY 1983

1. Shri Haksar began by saying that he became associated with the Indian Statistical Institute at a difficult turning point of its history. The founder of the Institute, Prof. P.C. Mahalanobis had died. And since the Institute was built around him, the problems of transition were complex and difficult, even though Dr. C.R. Rao had succeeded him and lent distinction to the Institute. But Dr. Rao had no stomach for administration and did not like living in Calcutta. Shri Haksar said that he had been now associated with the Institute for a little over 11 years.
2. Institutions, Shri Haksar continued, had a life of their own. The ISI was no exception. It has a history which could not be brushed aside.
3. Prof. Mahalanobis created ISI. He also contributed, in a decisive manner, to the science of Statistics. He made Government sensitive to the importance of this area of knowledge.
4. Institutions built around a man of genius have certain advantages during the period of its origin, growth and development. There were disadvantages as well. Professor Mahalanobis could take any decision. The General Body of the Institute was an instrument to ratify the decisions he took. Such an arrangement could not, obviously, survive the death of Prof. Mahalanobis. Consequently one had to devise a structure predicated upon the assumption that institutions must be run by the collective wisdom of several people rather than the creative genius of one man.
5. The first review committee appointed by the Government of India pointed out the deficiencies in the structure of the Institute. However, it signally failed in not taking into account that reforms, however well conceived in logic, fail in their purpose if they did not take into account history, traditions and the specific circumstances in which an Institution had grown. Inevitably, the first review committee created more problems than it could solve. Shri Haksar added that he was familiar with these problems as he was then in the Prime Minister's office and had much to do with trying to sort things out.
6. The ISI was now in its second phase without the advantage of the presence of Prof. Mahalanobis. Under a new Constitution, which came into force around 1974-75, attempts were made to create an institutional framework for the proper functioning of the Institute. The leading idea was to democratize the Council to curb the power of the General Body. The democratic norms were to apply at the lower levels as well. By and large, this Constitution has worked fairly satisfactorily. This is evident by the fact that when a most every educational institution has been through a period of great turmoil, the ISI did not close even for a day. It was not subjected to a gherao, either of its Director or of its Chairman, despite the fact that Professor Mahalanobis' generous impulses had saddled the Institute with an unconscionably large number of staff in the so-called class III and class IV categories. However, it was felt that the organized scientific and non-scientific employees should have a voice in the working of the Council and their representation was assured. Also, representation of the academic staff was similarly assured. We had, in addition, representatives from distinguished academic bodies like the Indian National Science Academy and the Indian Council of Social Science Research. So, the Institute has now a constitution which have assured us a continuity.
7. In actual practice, the orderliness in functioning is largely due to the linkages established at the ground level. The Chairman, who fortunately has no powers under the Constitution, has to spend great deal of his time and energy carrying on a continuous dialogue with the members of the ISIWO. The Director too has to spend a very large segment of his time in sorting out administrative matters.
8. Shri Haksar referred to the problem left even from the past history of the Institute. These could not be sorted out as it were, in one go. One had to deal with these problems as best as one could. Be that as it may, the existing Constitution, the mechanisms of constant consultations,

the Director, the divisional committee of scientific workers—all by and large function smoothly and effectively. The weakest element has been the timely preparation of Accounts. But there was some improvement.

9. There were, of course, Government representations both within the Council and, of course, in the Statutory Committee. Shri Haksar added that he had the privilege of serving on various institutions for fairly long stretches of time. He had observed that the attitude of the Government representatives needed to be changed. They must not come for the meeting of these bodies only with their power of representing the Government. They need to be as persuasive as anybody else. He had noticed a tendency on their part not to come prepared with Government's views on various items of the agenda. The result is enormous delay in decision making processes. Mr. Haksar added that when he was a member of the Atomic Energy and Space Commissions when Government was represented at the level of Secretaries, including Secretary to the Ministry of Finance, he never had the occasion to hear the Finance Secretary say that he was not ready to express Government's views and consequently the subject matter on the agenda must be held over. He, himself, representing the Prime Minister's office, never took a position that he must consult the Prime Minister. If such consultations were necessary, these had to be done prior to the holding of the meeting rather than as an obstructive device to hold over decision making process. Mr. Haksar added that he was not blaming the officers concerned, who attended the meeting of the ISI Council, but was referring to a lack of understanding that autonomous bodies need to be respected even where Government was the dominant shareholder. Shri Haksar added that in his view the relative roles of the Finance Ministry, the Department of Statistics, the Planning Commission and the Statutory Committee was getting blurred. The Finance Ministry tended to obtrude even in respect of Plan allocation.

10. Mr. Haksar felt sure that the members of the ISI Review Committee were aware of Prof. Mahalanobis' conceptual framework within which he grew the ISI. According to him, Statistics bring the key technology, there had to be a necessary interaction between Statistics and various branches of knowledge. Accordingly, he developed within the Institute large number of disciplines which required Statistics and which, in turn, generated problems to be solved by development of mathematical statistics, theories of probability etc.

11. Shri Haksar added that the Government should acquire a vested interest in strongly supporting the wide and varied applications of mathematical statistics. He added that when he was Dy. Chairman of the Planning Commission, he became acutely conscious of the paucity of data in trying to comprehend precisely the nature of India's socio-economic and cultural reality. One tended to plan on the basis of very crude data. There was also lack of uniformity in the way data was compiled by CSO and statistical organisations in various States. The result was endless confusion.

12. In this view of the matter, all areas which contributed to the development of science and technology side-by-side with the development of Statistics, should be a legitimate domain of the ISI. Where it could be shown that certain units existed purely for historical reasons rather than for the contribution they make for the development of mathematical statistics as a key technology, would be phased out through an evolutionary process.

13. Shri Haksar strongly felt that there was a tendency in India for the Government to finance various institutions as autonomous bodies and having founded them, they made no use of them in any meaningful manner. There were large number of such examples. And the one with which the ISI is concerned was the way of the first review committee some what thoughtlessly severed the relationship of the planning Unit and the Planning Commission. The result was impoverishment of both. It also meant unnecessary wastage of resources of man-power and money. This lack of linkage between producer of knowledge and its consumer is well large on the face of India. The CSIR system is another example. Much of the Defence Research system is another example. The result of lack of linkages is that those working in research and teaching establishments tend to become too academic and get out of touch with the present-day realities.

14. Shri Haksar referred to the various campuses of the ISI. He referred to the slogan of autonomy of these campuses. Of course, autonomy is important. However, the plea for autonomy should not be an invitation to disorderliness. In the broad areas of personnel policies, emoluments, standards of recruitment, there cannot be autonomy. On the contrary, there should be commonality in approach. There cannot be autonomy in the development of syllabi. Common syllabi and common standards must be maintained. Subject to this, the day-to-day administration

of the units should enjoy autonomy. It was Shri Haksar's judgement that the various administrative orders issued would bear testimony to the fact that autonomy already existed.

15. In response to a question by a member of the Committee whether the Council had any detailed discussion about the academic policies and programmes, Shri Haksar stated that the Council as such never discussed these matters. It was his understanding that the leadership in academic matters must come from the Director and the Academic Council. In fact, during the time of Dr. Gopinath Kallianpur, who was the Director of ISI, great deal of discussions took place. It was Dr. Kallianpur's idea to build a Centre in Bangalore dedicated to the advancement of certain areas of mathematics and mathematical statistics which we could not ignore. Dr. Kallianpur also was very concerned that mathematics was being neglected in our country. Shri Haksar added that it was the duty of the Director to bring matters pertaining to the academics to the notice of the Council if their decision was required.

16. Shri Haksar stated that it was not possible to legislate the motivation among academics. Or indeed, any other segment of society. Consequently, one may lay down the law that Academic Council must devote its time to constantly reviewing of various disciplines and in dealing with interdisciplinary matters. The common experience in India was that there was a wide gap between what ought to be done and what is actually done. The theory and practice differ widely. Academics and others are rather more concerned about their own individual crown than about what happens to an Institution.

17. Shri Haksar expressed his agreement with the view that informal structures can function very well provided there was a great deal of scope for free communication. Such a situation obtains in the ISI. However, the result was that very large proportion of the time and energy of the Director and of the Chairman was devoted to sorting things out outside the deliberations of the Council of the ISI. Thus, the informal structure work but put on a great deal of burden on administration and especially on the Director. But this was both necessary and inescapable in the circumstances obtaining in the country.

18. In response to a question about Statistical Quality Control and Operations Research (SQC & OR) Shri Haksar felt strongly that the Government must support, strongly the efforts of the Institute. Although knowledge in the SQC & OR had been in India for considerable time since the end of the II World War, our industrial system refused to operationalize it. In Japan, in contrast, SQC has spread throughout industry. In Shri Haksar's view, quality control and quality assurance were resisted by production engineers and production people in India as a bit of a nuisance. This was understandable because Indian industry, by and large, operated under protected conditions and was therefore under no compulsion for quality control and quality assurance. The SQC & OR Division of ISI have been doing promotional work and their role can only be promotional. There can be no separate commercial way of dealing with SQC & OR. It was Shri Haksar's impression that Government thought that ISI could earn a great deal of money by the services rendered by it to industry. This was, in Shri Haksar's view, neither possible, nor, indeed desirable.

19. On the general questions raised from time to time by the government that ISI should be able to earn lots of money and reduce its dependence on government funding, Shri Haksar strongly felt that there was profound conceptual error in treating ISI with a spirit of commercialism and not nursing it and nurturing it as an educational institution of a special kind devoting itself to teaching and research. This would not, however, mean that legitimate project should not be accepted but it was another thing to suggest that we should put ourselves in the market, as it were, to seek projects. Shri Haksar was also opposed to imposing upon ISI the sort of consultancy which the CSIR did.

20. In Shri Haksar's view, the ISI should concentrate on Mathematical Statistics, Theories of Probability, new areas of Mathematics dealing with decision making, information theory, Stochastic Processes etc. They should also grow and develop the area of computer science, demography, psychometry. There was a need for restoring the linkage between the Planning Unit of the ISI and the Planning Commission. There was an urgent need for growing within the ISI study and research in the area of world economy. It was, indeed, surprising that in India there was no such place where problems of world economy were studied with any degree of expertise.

21. Responding to a question put by a member of the Committee on extending the principle of democracy to the unit level in the ISI, Shri Haksar said that the idea was an attractive one in terms of any theory of democracy. But in India, at any rate, until such time that we, as individuals learn to think of institutional needs, separating it from individuals ambitions, the democracy principle may not produce the desired result. Shri Haksar added that the new Constitution should be worked for a

longer span of time to see whether the democracy principle was working and respected as a means of building an institution and for generating an atmosphere of scientific excellence. In this view of the matter, Shri Haksar would not, at this stage, support the idea put forward by Prof. Mathai. Shri Haksar concluded by saying that many of our organizational behaviour systems were rooted in Western experience which did not correspond to cultural patterns and value systems operational at present in India.

22. In response to another question by a member of the Committee about the feasibility of multiple funding of ISI, Shri Haksar stated that he was not very clear as to what precisely was meant by multiple funding. He was not opposed to it if one could identify sources of such funding. But if multiple funding meant sizeable step up of project funding, he had already expressed his opinion on this subject. The basic character of ISI, as an educational and research institution must be preserved.

23. In response to a question whether the ISI should continue to have its linkages with the government through the Department of Statistics, Shri Haksar said that in his view the present arrangement was quite satisfactory as far as he was concerned subject, of course, to the observations he had earlier made that the Government representatives on the Council of the ISI must be participants in the decision making, promoters of such decision making and not a representative, as it were, of a sovereign State. The level of representation of the government, which varied a great deal, has to be stabilized at a fairly high level of responsibility and capacity for decision making.

24. As far Government audit, Shri Haksar said that he should have no objection to government audit. However, he felt that government being burdened already with vast amount of audit functions even after the separation of accounts, he was not certain whether the government auditing would facilitate matters. He would therefore still recommend continuation of the present audit system with the government reserving the right to carrying on spot checks.

STATEMENT SHOWING ACTION TAKEN ON THE RECOMMENDATIONS OF THE 1ST ISI REVIEW COMMITTEE

| Sl. No. | Recommendation (Chapter XI of the Report) | Action taken (As laid on the Table of Lok Sabha in 1968) | Action taken by ISI (As reported to the IInd Review Committee) | Remarks |
|----------------|---|--|--|---|
| 1 | 2 | 3 | 4 | 5 |
| <i>Objects</i> | | | | |
| 1. | <p>The objects of the Institute as given* in the Memorandum of Association should be modified so as to read :</p> <p>(i) to promote the study and dissemination of knowledge of and research on statistics and related sciences and planning for national development and social welfare ;</p> <p>(ii) to provide for and undertake, the collection of information, investigations, projects and operational research for purposes of planning and the improvement of efficiency of management and production ;</p> <p>(iii) to undertake any other ancillary activity in fulfilment of (i) and (ii) above.</p> | <p>This has been substantially accepted by the Institute for implementation.</p> | <p>These objects, after some elaboration, have been incorporated; in the new Memorandum of Association of the Institute adopted in the year 1974 with prior approval of the Government. Article 2.1 to 2.4 of the new Memorandum may be referred to.</p> | <p>The objectives report in the new Constitution read as under :—</p> <p>(i) to promote the study and dissemination of knowledge of statistics, to develop statistical theory and method, and their use in research and practical applications generally, with special reference to problems of planning of national development and social Welfare.</p> <p>(ii) to undertake research in various fields of natural and social sciences, with a view to the mutual development of statistics and these sciences.</p> <p>(iii) No change.</p> <p>&</p> <p>(iv)</p> |

Research and Training School

2. The Work of the Research and Training School should be expanded and strengthened.

This has been welcomed by the Institute. Implementation will be a phased programme depending on the availability of resources in money and personnel.

Since 1976, the organisational structure of the scientific divisions have been completely changed through a revision of the Memorandum of Association and Regulations, with approval from Govt., and there is no division named Research and Training School. However, of the activities which were grouped in the Research and Training School at the time of the first Review Committee, the following have undergone substantial development :—

- (a) Research in Statistics, Probability and Mathematics : These activities have been undertaken at the Delhi Centre since 1970 & are now being undertaken and developed at the newly created Bangalore Centre.
- (b) Research in Computer Science : Both software and hardware aspects are being developed. A third generation computer has been acquired recently, which is likely to help in this development.

3. The duration of M. Stat. course should be two years for every one and efforts should be made to get a larger number of students from outside the Institute.

4. The Institute may start and maintain small units in the Research and Training School for purposes of research. Subjects for research should be selected with great care and there should be intensive work in a few selected fields instead of frittering away time and resources over a wide range. Only those units should be continued or started which satisfy the specified criteria. There should be periodic assessment to ensure that these criteria are being satisfied. Besides, the continuance or start of each unit should have the specific approval of the Academic Council of the Research and Training School. Expenses on such specialised units should not exceed twenty percent of the Research & Training School budget. The Institute should collaborate with other organisations in such fields of research to ensure the best results.

(a) This has not been accepted by the Institute for academic reasons.

(b) Selection for admission to M. Stat. course is made by the Institute on an all-India basis on merits.

These have been accepted with the modification that expenditure on specialised units would not normally exceed 20% of the Research and Training School budget.

(c) Teaching Programmes : Specialisations to cater to the needs of the country have been developed. Master's, doctoral & specialisation course teaching is being undertaken at the Delhi Centre also. An M. Tech. course in computer science has been started in Calcutta.

This has not been accepted by the Institute for academic reasons. Selection for admission to M. Stat. course is made by the Institute on an all-India basis on merits.

Subjects for research are generally selected with great care and this criteria is also followed while opening up a new unit. New units are opened only with the specific approval of the Council of the Institute, and very few have been started since the first Review Committee. Several research projects have been undertaken either in collaboration with other research organisations or governmental departments, or financed by such bodies. Eminent outside scientists are members of the Technical Advisory Committees of each division (several units from a division) and new research programmes are formulated through joint discussions with them. The Divi-

With the setting up of new Divisions the Research and Training School has been abolished. As such it is not possible to ensure the implementation of the recommendation made by the Committee.

Planning Division

5. The Planning Division should be reorganised into a Department of Economic Planning & Social Sciences to carry out training, research & appraisal in the field of planning. It should constitute a part of the Research and Training School and organise courses, short and long-term for the personnel engaged in planning at various levels. The Head of the Department may be stationed at Delhi. If this is done he could also function as regional head of the Institute at Delhi.
6. The Delhi Unit of the Planning Division should have no operational link with the Government. For this purpose, it would be desirable to shift the Unit at present located in the building of the Planning Commission to other premises.
7. The information required by the Institute for its work, whether in possession of the Planning Commission or other departments of the Govt., should continue to be available. The Institute should also be in a position to study and wherever possible participate in the process of thinking involved in the formation of plans.

This has been accepted by the ISI with the modification that the matter of academic and administrative coordination between Planning Division at Calcutta and planning unit in Delhi be settled by the Director RTS in consultation with members of the staff concerned and the Governing Body, where necessary. Government has accepted the modification suggested by ISI.

sional Committee along with members of the TAC are also entrusted with the assessment of the work of the Division.

Immediately after the first Review Committee, the council had decided to make the Planning Division a constituent of Research and Training School. However, as part of the reorganisation in 1976, the erstwhile Planning Division now forms the largest constituents of the Division of Social Sciences which also included other social sciences units. It is for Government to decide if they would desire governmental planning personnel to be trained by the Institute.

Planning Unit in Delhi has been shifted from the Yojana Bhavan and now located in the Institute to campus at Delhi. There is no operational link except for conducting projects or providing advice when asked for.

It is for the Government to decide whether they would like the Institute to participate in the process of thinking in the formulation of Plans.

Planning Unit of Delhi presently forms part of the Social Sciences Division. The Head of the Division is located at Calcutta.

National Sample Survey

8. The entire National Sample Survey work consisting of designing, data collection processing and interpretation should be brought under one unified control. This work, except for the State of West Bengal, should be entrusted to a new autonomous organisation under the Government which would take over the existing work both in the Institute and the National Sample Survey Directorate. All stages of the work relating to West Bengal should be done by the Institute. The responsibility for finalising the design, including that for West Bengal prepared by the Institute, will be that of the proposed new organisation. In order to avoid dislocation of work, the new arrangement may be brought into force from 1st April 1968. The autonomous organisation proposed above should have an effective Programme Advisory Committees to fix priorities.
- This recommendation is being considered separately.
- The entire National Sample Survey work which had been entrusted to the Institute, including the work for the State of West Bengal, has been departmentalised by Government.
- The NSS work of West Bengal has also been given to the Government.
9. The collection of operational statistics by the normal administrative machinery should be strengthened and the Ministries concerned should assume full responsibility for data collection in respect of their own needs.
- This will be considered by Government in due course after a decision on recommendation 8 is taken.
- For the Government.
10. Out of ten Honeywell computers which the Government is receiving from USA, one should be allotted to the Institute.
- A Honeywell computer system has been allotted to the Institute.
- This was done. The Honeywell H-400 is outdated and is being disposed of. The Institute now has a 3rd generation Ryad EC 1033 from the USSR and a few mini-computers.

11. The questionnaire should be simplified so as to fall into two parts—(a) general which would be the same for the whole country and (b) regional which would contain questions relevant to a particular region.

This will be considered by Government in due course after a decision on recommendation 8 is taken. For the NSSO.

12. At present, there are heavy arrears relative to National Sample Survey work in the Institute. The Department of Statistics should immediately take a decision which part of arrears of National Sample Survey work should be completed. This work should be isolated and tackled by the new organisation.

This will be considered by Government in due course after a decision on recommendation 8 is taken. For the NSSO.

13. No employee of the Institute should be thrown out of employment as a result of the proposed re-organisation.

While-re-organising NSS work, every effort will be made to safeguard the interests of workers. This was adhered to.

Statistical Quality Control

14. The Statistical Quality Control Division of the Institute should be adequately strengthened by the provision of necessary funds and trained personnel.

These have been welcomed and accepted by the Institute. Implementation will however depend on the availability of resources.

The new units, one at Hyderabad and another at Pune have been started and the work of the Divisions has been expanded to cover many of the public sector undertakings like Hindustan Steels Ltd., Hindustan Photofilms Ltd., BHEL, ECIL, FCI, Ordnance Factories etc. Further expansion depends on the availability of funds as well as response from the Organisations.

There has been no further expansion of the SQC & OR Division.

15. Diploma course in SQC should be started at Delhi, Bombay and Bangalore. As above.

Diploma courses have been started in Bombay and Madras and certificate courses in Bangalore and Hyderabad. Extension of training facilities in other centres/units are under active consideration. M. Stat. specialisation in SQC & OR is available at Delhi.

The SQC course has not yet been started in Delhi.

16. The SQC Policy Advisory Committee should be reactivated.

The Institute has already taken action to implement it.

Since implemented, but has to be reconstituted.

The SQC Policy Advisory Committee has not yet been reactivated.

17. The Commerce Ministry should give a fillip to SQC work by making it obligatory for (a) public sector undertakings (b) large factories (c) industries with an export orientation, and by providing adequate subsidy for SQC activities.

The Ministries concerned have been requested to implement the recommendation to the extent possible.

Within the knowledge of the Institute there has been no such obligation enforced by Government.

Miscellaneous Activities.

(1) Society-type Activities.

18. The Institute should pay special attention to its society-type activities by arranging conferences, etc., at headquarters and branches and publishing reports thereof and by reactivating dormant branches and opening new ones. It should be given an adequate earmarked grant for this purpose and after five years the question of separating the society-type activities from the Institute may be re-examined.

This has been accepted.

The recommendation in regard to the society type of activities is being followed.

(2) *Electronics Division*

19. The Work of designing and fabricating computers and their components is not a legitimate activity of the Institute.

It has been decided that the ISI Jadavpur University project relating to the development of an electronic computer which is in its final stages should be completed. It has also been agreed that before the Institute undertakes any further work in this direction an appraisal of the work already done should be made by a representative committee of experts in the field.

The project has since been closed down and the Division is no longer engaged in the work of construction and fabrication of electronic computers.

(3) *Documentation Research and Training Centre*

20. For the time being, the Centre may continue as a part of the Institute but the position should be re-examined after five years.

The Institute will be advised to take action at the appropriate time.

Noted.

Though a period of 16 years has passed no review has yet taken place.

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(4) *The Kalyanshri Unit*

21. The Unit should be transferred to the state Government or a suitable voluntary organisation.

This has been accepted by the Institute.

Since closed down.

(5) *Appraisal Division*

22. This work of the Appraisal Division is not relevant to the Institute's main objectives. To the extent its work is necessary early, the Unit should form part of the Research and Training School.

The Institute considers the work of the Appraisal Division to be its legitimate activity. The Division has however, been made a part of the Research and Training School. As such the financial limit mentioned against recommendation No. 4 will apply.

The Appraisal Division has been discontinued.

(6) *Family Planning*

23. The Family Planning Unit should be placed under an appropriate organisation in the Ministry of Health. The Family Planning Unit will continue to remain with the Indian Statistical Institute. The Family Planning Unit no longer exists.
24. Crop Museum, Agricultural Chemistry Unit and Agricultural Farm should be placed under appropriate organisations in the Ministry of Food and Agriculture. This has not been accepted by the Institute. It has, however, been made clear to them that if their activities are to continue, the financial limit of 20% mentioned against recommendation No. 4 will apply. Crop Museum has since been closed. The other units are continuing its research and teaching activities under Biological Science Division under a different nomenclature. The Council did not agree to the transfer of these units.

(7) *Visiting Scientists*

25. The visits of foreign scientists and scholars to the Institute should be carefully planned. A programme of invitations should be drawn up every year by the Director concerned and approved by the Executive Committee. This has been accepted by the Institute. Collaboration with wellknown scientists from other countries has been a special feature of the Institute. Except for short-term visitors who come on their initiative, such visits are carefully planned. Inter-country Scientific exchange programmes are used. For three years, a Ford Foundation grant was also used after approval from Government.

Buildings and Equipment

26. Full assessment of the present and future utilisation of lands and buildings in possession of the Institute at Baranagar should be made. A comprehensive lay-out should be drawn up for the building activities in the Baranagar area for the next five years. This has been accepted by the Institute. Comprehensive master plan for development of Baranagar campus of the Institute was prepared and this was approved by the Government. A composite 9-storeyed library building is under construction and upto 6th floor has been completed. Out of the two Boy's Hostels proposed in the plan, one has since been completed. Further construction is dependent on the availability of funds from the Government.

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| <p>17. The Institute should make plans as to how it proposes to utilise lands owned by it at different places. Lands not required in the foreseeable future should be disposed of.</p> | <p>The Institute has been advised to take action as suggested by the Review Committee.</p> | <p>Plans for utilisation of land at Delhi and Bangalore have been made. The construction work of Delhi campus has been completed. The work at Bangalore is under progress. Further plans have been prepared to utilise the land of the outlying stations at Madras and Hyderabad.</p> | | |
| <p>18. Premises of the Research & Training School should be remodelled and more space provided for research workers.</p> | <p>This has been accepted. Implementation will depend on availability of resources.</p> | <p>This is under active consideration. Some units of the scientific divisions will be shifted to the 5th and 6th floors of the new composite library building when completed.</p> | <p>Availability of further space depends on the release of funds by the Government for construction purpose.</p> | |
| <p>19. There should be a properly planned and phased programme for providing housing to essential academic and non-academic staff.</p> | <p>This has been accepted. Implementation will depend on availability of resources.</p> | <p>A programme for construction of staff quarters for Calcutta has been drawn and submitted to the Govt. for approval, which is still awaited. However some staff quarters for housing both academic and non-academic staff at Delhi Centre has been constructed with the approval of the Govt. The Institute needs funds for further construction of housing accommodation for academic staff and hopes that Government will provide necessary funds.</p> | | |

30. Various units including records located in different parts of Calcutta should be shifted to Baranagar. The premises at 9B, Esplanade East, may, however, be retained.
- This has been accepted. Implementation will depend on availability of resources.
- This has since been implemented. All offices in the city except the city office at 27-B, Camac Street, have been shifted to headquarters.
31. (a) Before any new construction is taken in hand, the Executive Committee of the Institute should satisfy itself that extra accommodation is needed.
- (b) For all construction, open tenders should be invited and approved.
- (c) All new construction should be entrusted to a reputed firm of architects on mutually agreed terms.
- (d) Construction should be supervised by a fully qualified engineer attached to the Institute.
- (e) Separate accounts for building operations should be maintained and a system of internal audit introduced.
- These have been accepted by the Institute with the modification against (b) that the Institute would be free to undertake construction work on departmental basis in case of petty items limited to Rs. 1,000 in each case.
- All these recommendations have been accepted by the Institute and duly implemented.
32. The Guest House at Delhi should be immediately closed. The guests of the Institute should be accommodated in the Central Government hostels in Delhi or in a hotel. The position about guest houses at Calcutta and Giridih should also be examined.
- The Institute has not agreed to the closing down of the Guest House at Delhi. It has, however, been advised to ensure that this Guest House is utilised to the maximum possible extent and to examine the position about the Guest Houses at Calcutta and Giridih.
- The guest house at Delhi is no longer located in a rented building. It is now located within the campus of the Institute. In Giridih also a guest house has been constructed on the Institute land making use of the available stock of building materials.
33. The practice of using hired premises for the combined purpose of official use and residence of staff should stop. Official requirements should be consolidated in one set of premises and separate premises may be hired, wherever necessary for residential purposes.
- The Institute has decided that each case would be considered on merits.
- This has been implemented.

Organisation and Management

- 34. The authorities of the Institute should be:
 - The President
 - Two Vice-Presidents
 - The Executive Committee consisting of 14 members
 - The Council consisting of 50 members
 - The General Body.

The General Body should consist of members with such academic & professional qualifications as may be prescribed.

The Institute has accepted the recommendation that it should have an Executive Committee though with a modified and somewhat smaller composition. This, it is felt will improve the administrative tone of the Institute. Other changes recommended by the Review Committee have not been agreed to. As the Institute is an autonomous body and these other changes are not considered vital, Govt. may have accepted the views of the Institute.

The Institute actively considered the need for organisational restructuring and adopted the new Memorandum of Association on 26 July 1974, and this was actually implemented from July, 1976.

Academic and professional qualifications for general body members have been prescribed.

The recommendations of the Committee about the setting up of an Executive Committee has also not been implemented.

- 35. There should be the following office bearers :
 - (1) Chairman who will be a whole-time paid incumbent with the status of Vice-Chancellor of a University.

The Institute has not agreed to the appointment of whole-time paid Chairman. If the entire NSS work is taken away from the Institute (via: recommendation 8), the Research and Training School will be its main activity. The School has a whole-time paid Director. The Institute has decided that the Director of RTS will also be the Director for the whole Institute. In the circumstances, Govt. has accepted that a separate whole-time paid Chairman for the Institute may not be necessary.

Refer to the new Regulations.

(2) Directors (i) Administration (ii) Budget and Finance; (iii) Research & Training School; (iv) National Sample Survey; and other heads of Divisions to be appointed on the recommendation of duly constituted selection committees.

The Institute has decided upon modified nomenclatures for some posts and retention of the posts of Secretary (for society-type activities only) and Treasurer. For the reasons stated against recommendation No 34, Government has accepted the views of Institute.

The posts of Secretary, Treasurer, Joint Secretaries & Assistant Secretaries should be abolished; so also the Board of Management.

36. The Executive Committee will be responsible for the management of the affairs of the Institute. It will pass the annual budget in accordance with the five years' programme approved by the Council. It will also lay down subject to budget provisions, the limits of expenditure which the heads of Departments or Divisions will have the competence to incur. It will also lay down specific rules for recruitment, promotion, leave, punishment and appeal for all posts in the Institute.

These have been accepted by the Institute.

Refer to the new Regulations. Executive Committee has not even been set up.

37. The Council will approve a five-year programme of work of the Institute.

The Institute will be advised to take action at the appropriate time.

The Council does formulate 5-years plans which are submitted to Government. However, since the Section 8(1) committee has to submit its reports on an annual basis, the Council of the Institute also approves each year's programme of work of the Institute.

This has also not been implemented.

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| 38. There should be the following five departments in the Institute. (a) Research and Training School (b) National Sample Survey (c) Statistical Quality Control (d) Library (e) Administration and Miscellaneous | This has been accepted by the Institute except that Library will be a part of the RTS and not a separate Department. | Same as in items 34-36. | The recommendation was accepted but in view of the new Constitution, was not implemented. | |
| The Planning Division as reconstituted as also the Electronic Division will form part of the Research and Training School. | | | | |
| 39. In regard to matters within a Department/Division, the Director/Officer-in-Charge will be assisted and advised by a staff committee. For coordination amongst various Divisions, there will be a Co-ordination Committee consisting of Directors/Officer-in-Charge, with Director of Administration as co-convener. | This will be considered by the Institute in due course on the basis of information regarding practice in this matter obtaining in other academic bodies. | Same as in items 34-36. | | |
| 40. The Research and Training School should have an Academic Council on the pattern of universities. The Academic Council should include some scientists from other academic bodies. The existing Governing Body should be abolished. | This has been accepted by the Institute. | Same as in items 34-36. | | |
| 41. There should be a Library Committee in which all Departments and Divisions in the Institute are suitably represented. | This has been accepted by the Institute. | Same as in items 34-36. | | |
| 42. (1) The Staff in the Institute should be immediately classified on a functional basis. (2) There should be no part-time employment in the administrative staff. (3) The age of superannuation should be 60 years except in the case of the Chairman where it may be 65 years. | These have been substantially accepted by the Institute. | Since implemented. | | |

Budget and Finance

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| 43. The Institute should have a whole-time Director, Budget and Finance. | The Institute has agreed to have a Finance Officer instead of a Director Budget and Finance. The Finance Officer will work under the Director of the Institute. | The Institute has employed a whole-time Senior Executive to be in-charge of administration and Finance. |
| 44. Each Department of the Institute should frame its own budget proposals which should be consolidated by the Director Budget and Finance. The consolidated estimates will go to the Finance Committee, the Executive Committee and finally to the Govt. A firm time-table for all these stages should be laid down. | This has been accepted by the Institute. | Since implemented. |
| 45. The present system of allocating common service charges to various units should stop. Each unit should include in its budget all items of expenditure pertaining to it. Only the residue, e.g. central library, vehicles, etc. should be included in common services. Expenditure under this head should form a separate budget and should not be proportionately allocated to other units. | This has been accepted by the Institute. | Since implemented. |
| 46. Adequate procedures should be prescribed for periodical report of actual expenditure and its overall control with reference to the budget allotment so that excess and deficit financing are avoided. A system of internal audit should also be introduced. | This has been accepted by the Institute. | Since implemented. |
| 47. There should be a Finance Committee of the Executive Committee consisting of not more than 5 members to scrutinise the budget before it is approved by the Executive Committee. | This has been accepted by the Institute in principle. Actual composition of the Finance Committee will be decided by the Executive Committee of the Institute. | Finance Committee constituted under the new Memorandum of Association consider the budget proposals before placing it to the Council of the Institute and finally sending to the Government. |

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| 48. Statutory Committee under Section 8(t) of the Indian Statistical Institute Act should be appointed once every five years to help in the framing of the five year programme of the Institute. | It is not possible to implement this recommendation due to legal difficulties as a statutory committee appointed under section 8 of the ISI Act has to submit its report on an annual basis. | Implementation of this recommendation is awaited from the Government. |
| 49. All funds in the Institute other than Gratuity Fund & Provident Fund should be amalgamated and merged in the general receipts of the Institute. A separate Reserve Fund may be credited to permit discretionary expenditure of an unforeseen nature relating to technical development. Accumulation in this fund should not exceed Rs. 2.5 lakhs. | These have not been accepted by the Institute. In view of the importance of these recommendations from the financial view point, the Institute has been advised to reconsider the matter. | The question of merger of funds has also been considered separately by the Arrear Claims Committee appointed by the Government of India and their recommendations have been implemented. |
| 50. Gratuity Fund should be registered and all borrowings from it should be repaid. | The Institute has decided to retain the Gratuity Fund and has also agreed that borrowings from the Fund will be repaid. | The Gratuity Fund is no longer under operation. |
| 51. Provident Fund should be immediately registered and the amount borrowed by the Institute should be repaid. | This has been accepted by the Institute. | Since implemented. |
| 52. (a) In order to enable the Institute to meet its liabilities, all claims pending with Govt. in regard to completed rounds should be settled by expediting the Report of the Settlement Committee. | | NSS has been taken over by the Government from 1-6-72. The question of arrear claims of the Institute was considered by the Arrear Claims Committee and its recommendations have been implemented. |

- (b) The Work in arrears relating to incomplete rounds should be transferred to the new National Sample Survey Organisation and payment for the work so transferred should be made on the basis proposed by the Committee on the National Sample Survey contract work appointed by the Indian Statistical Institute in 1962;
- (c) the money which may be available as a result of the closure of Funds as recommended by the Committee may also be utilised for the purpose; and
- (d) the balance, if any, after taking into account any possible sale of surplus land should be made up by an *ad-hoc* grant by Government.

If after action as suggested by the Review Committee has been taken, the Institute has an uncovered deficit. Government has in principle agreed to give *ad-hoc* grant to wipe out the deficit, subject to availability of funds.

- 53. Government must immediately give to Institute adequate funds to discharge its existing liabilities
- 54. The system of encashment of leave should be discontinued in the Research & Training School also.

This has not been accepted by the Institute. At the instance of the Government, however, they have agreed to look into the matter further.

The previous system of encashment of leave has been totally discontinued. However, workers are entitled to encashment earned leave at the time of their retirement as per Government rules.

- 55. There should be a test audit of the accounts of the Institute by the Comptroller & Auditor General of India once in 5 years to commence in a year before the Statutory Committee begins its work.

This has been accepted by the Institute.

This has since been implemented and the test audit is being conducted by the A.G. Central (Calcutta).

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| 56. | An amount equal to a quarter's expenditure should be paid in advance so that the Institute has funds to meet committed expenditure. | This has been accepted by the Government. | Government to take action. | |
| 57. | At the end of the financial year, the Institute must be given funds to enable it to meet its expenditure during the previous month. | This has been accepted by the Government. | Government to take action. | |

ACADEMIC STAFF IN ISI DIVISION-WISE/UNIT-WISE AS IN OCTOBER 1982

| Sl. No. | Division/Unit | Professor or equivalent | Asso. Prof. or equivalent | Senior Lecturer | Lecturer | Total |
|---------|---|-------------------------|---------------------------|-----------------|----------|-------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| 1. | Theoretical Statistics & Mathematics Division | 13 | 11 | 6 | 13 | 43 |
| | Calcutta | 5 | 9 | 5 | 10 | 29 |
| | Delhi | 7* | 1 | — | 2 | 10 |
| | Bangalore | — | 1 | 1 | — | 2 |
| | Hyderabad | 1 | — | — | — | 1 |
| | Madras | — | — | — | 1 | 1 |
| 2. | Applied Statistics Surveys & Computing | 3 | 17 | 2 | 6 | 28 |
| | Computing Unit | 2 | 17 | 2 | 6 | 28 |
| | Biometry Unit | 1 | | | | |
| 3. | Social Sciences Division | 9 | 12 | 19 | 13 | 53 |
| | Calcutta | 5 | 9 | 16 | 7 | 37 |
| | Economic Research Unit | 3 | 4 | 9 | 2 | 18 |
| | National Income Res. Unit | — | 1 | — | — | 1 |
| | Sociology Research Unit | — | 1 | 2 | 4 | 7 |
| | Demography Res. Unit | — | 3 | 1 | 1 | 5 |
| | Psychometric Res. Unit | 2 | — | 2 | — | 4 |
| | Linguistic Research Unit | — | — | 1 | — | 1 |
| | Pre-Census Population Studies Unit | — | — | 1 | — | 1 |
| | Delhi | | | | | |
| | Planning Unit | 3 | 3 | 3 | 6 | 15 |
| | Bangalore | | | | | |
| | Economic Analysis Unit | 1 | — | — | — | 1 |

| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|-----|---|-----|-----|-----|-----|-----|
| 4. | Biological Sciences Divn. | 1 | 7 | 1 | 2 | 11 |
| | Anthropometry & Human Genetic Unit | — | 4 | — | — | 4 |
| | Botany Research Unit | 1 | — | — | — | 1 |
| | Embryology Res. Unit | — | 1 | — | — | 1 |
| | Bio-Chemistry Res. Unit | — | 1 | — | 1 | 2 |
| | Crop Science Unit | — | — | — | — | — |
| | Entomology Laboratory | — | — | — | 1 | 1 |
| | Leaf Protein Unit | — | 1 | 1 | — | 2 |
| 5. | Physical & Earth Sciences Division | 7 | 6 | 4 | 21 | 38 |
| | Electronic Unit | 3 | 3 | 1 | 8 | 15 |
| | Electronic & Communication Sciences Unit | 1 | 1 | 2 | 9 | 13 |
| | Geological Studies Unit | 3 | 2 | 1 | 2 | 8 |
| | Chemistry Unit | — | — | — | 1 | 1 |
| | Physics Unit | — | — | — | 1 | 1 |
| 6. | Statistical Quality Control & Operations Research Divn. | 6 | 13 | 17 | 18 | 54 |
| | Calcutta | 1 | 2 | 6 | 2 | 11 |
| | Delhi | 2 | 1 | 1 | 4 | 8 |
| | Bangalore | 1 | 2 | 1 | 4 | 8 |
| | Hyderabad | — | 3 | — | 2 | 5 |
| | Madras | 1 | 4 | 2 | 1 | 8 |
| | Coimbatore | — | — | 2 | 1 | 3 |
| | Trivandrum | — | — | 2 | 1 | 3 |
| | Bombay | 1 | 1 | 2 | 1 | 5 |
| | Baroda | — | — | — | 2 | 2 |
| | Pune | — | — | 1 | — | 1 |
| 7. | Teaching & Training Divn. | | | | | |
| 8. | Documentation Research & Training Centre | 1 | — | — | — | 1 |
| 9. | Library | 1 | — | — | — | 1 |
| | Total : | 43 | 67 | 51 | 73 | 234 |

Appendix—XII

NUMBER OF PAPERS PUBLISHED BY SCIENTISTS OF INDIAN STATISTICAL INSTITUTE DURING 1970 TO 1980

Notations :

Vertical } I = Indicates papers published in Indian Journals
 Column } F = Indicates papers published in Foreign Journals

Horizontal } I = Indicates papers prepared independently
 Row } J = Indicates papers prepared jointly

N.B. : Joint papers have been shown against the first author only

1. Theoretical Statistics and Mathematics Division of ISI

1. Calcutta Centre

| S. No. | 1970 | | 1971 | | 1972 | | 1973 | | 1974 | | 1975 | | 1976 | | 1977 | | 1978 | | 1979 | | 1980 | |
|--------|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|
| | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F |
| 1. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 2. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 3. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 4. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 5. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 6. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 7. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 8. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 9. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 10. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 11. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 12. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 13. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |

| S. No. | 1970 | | 1971 | | 1972 | | 1973 | | 1974 | | 1975 | | 1976 | | 1977 | | 1978 | | 1979 | | 1980 | | | |
|-----------------------------|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|---|---|
| | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | | |
| 14. | I | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | |
| | J | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | |
| 15. | I | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | |
| | J | : | : | : | 2 | 1 | : | 1 | : | : | 1 | 1 | : | 1 | : | : | : | : | : | : | : | : | : | |
| 16. | I | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | |
| | J | : | : | : | : | 1 | 3 | 3 | : | 1 | 3 | 2 | : | 1 | : | 3 | 4 | : | 1 | : | : | : | : | |
| 17. | I | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | |
| | J | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 | |
| 18. | I | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | |
| | J | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 | : | : | : | : | : | : | |
| 19. | I | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | |
| | J | : | : | : | : | : | : | : | 1 | : | : | : | : | : | : | : | : | 1 | : | : | : | : | : | |
| 20. | I | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 | 1 | 1 |
| | J | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 | : | : | 1 |
| 21. | I | : | : | : | : | : | : | 1 | : | : | : | : | : | 1 | 1 | 2 | : | : | : | : | : | : | : | : |
| | J | : | : | : | : | : | : | : | 1 | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : |
| 22. | I | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 | 1 | : | : | : | : | : | 1 | : | : |
| | J | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : |
| 23. | I | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 | : | 1 | : | : | : | : | : |
| | J | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : |
| 24. | I | : | : | : | 3 | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 | : |
| | J | : | : | : | : | : | : | : | 1 | 1 | 1 | 1 | 1 | : | : | : | : | : | : | : | : | : | : | : |
| 25. | I | : | : | : | : | : | : | : | : | : | : | : | 1 | : | : | 2 | : | 1 | : | : | : | 1 | : | : |
| | J | : | : | : | : | : | : | : | : | : | : | 2 | : | : | 2 | : | 2 | 2 | : | 1 | : | 1 | : | : |
| 26. | I | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 | 2 | : | : | 1 | : | : | : | : | : |
| | J | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 | : | : |
| 27. | I | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : |
| | J | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : |
| 28. | I | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : |
| | J | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : |
| <i>II. Bangalore Centre</i> | | | | | | | | | | | | | | | | | | | | | | | | |
| 29. | I | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 | 2 | : | : |
| | J | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : |
| 30. | I | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 | : | : | : |
| | J | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : |
| <i>III. Delhi Centre</i> | | | | | | | | | | | | | | | | | | | | | | | | |
| 31. | I | : | : | : | 1 | 1 | 2 | 1 | : | 1 | 1 | : | 1 | : | 1 | : | 1 | : | 1 | : | 1 | 1 | : | : |
| | J | : | : | : | : | : | 1 | : | 1 | 1 | 2 | 2 | 1 | : | 3 | : | 1 | : | 1 | : | 1 | : | : | : |
| 32. | I | : | : | : | 1 | 1 | : | 1 | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : |
| | J | : | : | : | 1 | 1 | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : |

| S. No. | 1970 | | 1971 | | 1972 | | 1973 | | 1974 | | 1975 | | 1976 | | 1977 | | 1978 | | 1979 | | 1980 | |
|--------|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|
| | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F |
| 33. | I | . | . | . | . | . | . | . | 1 | 1 | . | . | 1 | 1 | . | . | 1 | 1 | . | . | 1 | 1 |
| | J | . | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 34. | I | . | . | . | . | . | . | . | . | . | . | 1 | . | 3 | 4 | 1 | 2 | . | . | 1 | . | 1 |
| | J | . | . | . | . | . | . | . | . | . | . | 2 | 3 | . | 1 | . | . | . | . | . | . | . |
| 35. | I | . | . | . | . | . | . | . | . | 1 | . | 4 | 2 | . | . | . | 5 | . | . | . | . | . |
| | J | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 36. | I | . | . | . | . | . | . | . | . | . | . | 1 | 2 | 3 | 1 | 2 | 3 | 2 | 1 | . | . | . |
| | J | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 37. | I | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . |
| | J | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |

2. Applied Statistics, Survey and Computing Division

| | | | | | | | | | | | | | | | | | | | | | | |
|-----|---|---|---|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | I | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . |
| | J | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | 1 |
| 2. | I | . | . | 3 | . | . | 3 | 1 | 8 | 8 | 1 | 1 | 8 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | J | . | . | 3 | 2 | 1 | 1 | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . |
| 3. | I | . | . | 1 | 1 | 1 | . | 1 | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | . | . | . | . | . | |
| | J | . | . | 1 | . | . | . | . | . | . | 1 | 2 | 2 | 2 | . | . | . | . | . | . | . | . |
| 4. | I | . | . | 1 | 1 | 4 | . | . | 2 | . | 1 | 1 | . | . | . | . | . | . | . | . | 2 | |
| | J | . | . | . | 1 | 3 | 2 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 5. | I | . | . | . | 2 | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 |
| | J | . | . | . | . | 2 | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 6. | I | . | . | . | . | . | . | . | . | 1 | . | 4 | . | . | . | . | . | . | . | . | . | 2 |
| | J | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 7. | I | . | . | 1 | 1 | 1 | . | 1 | 3 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | . | . | . | . | 1 | |
| | J | . | . | 1 | . | . | . | . | . | . | 1 | 2 | 2 | . | . | . | . | . | . | . | . | . |
| 8. | I | . | . | . | 1 | 2 | . | 1 | . | . | . | . | 5 | . | . | . | . | . | . | . | . | . |
| | J | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 9. | I | . | . | 1 | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | . | . | . | . | 1 |
| | J | . | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . |
| 10. | I | . | . | . | 2 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | J | . | . | 1 | 2 | 1 | . | 1 | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . |
| 11. | I | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | J | . | . | 2 | 11 | 2 | 1 | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . |
| 12. | I | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 |
| | J | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 |
| 13. | I | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | J | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 14. | I | . | . | . | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | J | . | . | . | . | . | . | 1 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . |

| S. No. | 1970 | | 1971 | | 1972 | | 1973 | | 1974 | | 1975 | | 1976 | | 1977 | | 1978 | | 1979 | | 1980 | | |
|--------|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|---|
| | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | |
| 15. | I | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | J | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 16. | I | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | J | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 17. | I | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | J | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 18. | I | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | J | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 19. | I | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | J | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 20. | I | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | J | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 21. | I | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | J | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 22. | I | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | J | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 23. | I | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | J | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 24. | I | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 2 | . | . | 2 | . | . |
| | J | . | . | . | . | 5 | 3 | 1 | 1 | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . |
| 25. | I | . | . | . | . | 2 | . | 1 | 1 | . | . | . | 1 | 1 | . | . | . | . | . | . | . | . | . |
| | J | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 26. | I | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | J | . | . | . | . | . | 2 | 3 | . | 4 | 1 | . | 2 | 2 | . | 3 | . | . | . | . | . | . | |
| 27. | I | . | . | . | . | . | . | . | . | . | . | . | . | 2 | . | . | . | . | . | . | . | . | . |
| | J | . | . | . | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . |

3. Social Sciences Division

I. Economic Research Unit

| | | | | | | | | | | | | | | |
|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | I | . | . | 3 | 2 | 5 | 5 | 2 | 4 | 2 | 4 | 5 | 5 | 5 |
| | J | . | . | . | . | 3 | . | . | . | . | 1 | . | . | 1 |
| 2. | I | . | . | . | . | . | 1 | 2 | 2 | . | . | . | . | 1 |
| | J | . | . | 5 | 2 | 4 | 2 | 5 | 1 | 1 | 2 | . | 1 | 1 |
| 3. | I | . | . | 1 | 1 | 2 | . | 1 | 1 | 2 | 1 | 2 | . | 2 |
| | J | . | . | . | . | . | . | . | . | 1 | 1 | 3 | 5 | 1 |
| 4. | I | . | . | 2 | 1 | . | . | . | . | . | . | 3 | 2 | . |
| | J | . | . | . | . | . | . | . | 1 | . | . | 3 | 1 | . |
| 5. | I | . | . | . | . | . | 1 | 2 | . | 1 | . | 2 | 1 | 1 |
| | J | . | . | . | . | . | 1 | . | 2 | . | . | 1 | . | 1 |

| S. No. | 1970 | | 1971 | | 1972 | | 1973 | | 1974 | | 1975 | | 1976 | | 1977 | | 1978 | | 1979 | | 1980 | |
|--|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|
| | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F |
| 6. I | | | | | | | 1 | | | | 1 | 1 | | | | | | | | | | |
| J | | | | | 1 | | 1 | | | | | | 1 | | | | | | | | | |
| 7. I | | | | | | | | | | | | | | | | | | | | | | 2 |
| J | | | | | | | | | | | | | | | | | | | | | | |
| 8. I | | | 1 | | | 1 | | | | | 2 | | | | | | | | | | | |
| J | | | | | | | | | | | 3 | | | | 2 | | | | | | | 1 |
| 9. I | | | | | | 1 | | 2 | 2 | 2 | | 1 | | | | | | | | | | |
| J | | | | | | | 2 | 1 | | | | 1 | | | | | | | | | | |
| 10. I | | | 1 | | 1 | 1 | 1 | | 2 | | | | 1 | | 1 | | | | | | | |
| J | | | | | | | 1 | | | 3 | | | | | | | | | | | | |
| 11. I | | | | | | | | | | | | | | | | | | | | | | |
| J | | | | | | | | | | | | | | | | | | | | | | |
| 12. I | | | | | | | | | | | | | | | | | | | | | | 1 |
| J | | | | | | | | | | | | | | | | | | | | | | |
| 13. I | | | | 1 | | | | | 1 | 2 | | | | 1 | 4 | 4 | | | | | | 3 |
| J | | | | | | | | | | | | | | | | | | | | | | |
| 14. I | | | | | | | | | | | | | | | | | | | | | | |
| J | | | | | | | | | | | | | | | | | | | | | | |
| 15. I | | | | | | | | 2 | 3 | | | | 7 | 7 | 3 | | | | | | 5 | |
| J | | | | | | | | 1 | | | | | | | | | | | | | 2 | |
| 16. I | | | | | | | | | | | | | | | 1 | | | | | | | |
| J | | | | | | | | | | | | | | | | | | | | | | |
| 17. I | | | 2 | 1 | | | | 4 | 6 | 4 | 2 | 5 | 2 | 5 | 2 | 1 | | | | | | 1 |
| J | | | | | | | | | | | | | 2 | 2 | 1 | | | | | | | |
| 18. I | | | 2 | | | 1 | | 1 | 1 | | | | 1 | | | | | | | | 1 | |
| J | | | | | | 1 | | | | | | | | | 1 | | | | | | | |
| 19. I | | | | | | | | 1 | | | | | | | | | | | | | | |
| J | | | | | | | | | | | | | | | | | | | | | | |
| 20. I | | | | | | | | | | | | | | | | | | | | | 2 | 2 |
| J | | | | | | | | | | | | | | | | | | | | | | |
| <i>II. National Income Research Unit</i> | | | | | | | | | | | | | | | | | | | | | | |
| 21. I | | | 3 | | 1 | 3 | 1 | 1 | 1 | 1 | 6 | 3 | 3 | 3 | 3 | 3 | | | | | 3 | 3 |
| J | | | | | | | | | | | | | | 1 | | | | | | | 1 | 1 |
| 22. I | | | | | | | | | | | | | | | | | | | | | | |
| J | | | | | | | | | | | | | | | | | | | | | | |
| 23. I | | | 4 | 4 | 8 | 4 | 3 | 8 | 6 | 1 | 1 | | | | | | | | | | | |
| J | | | 1 | 3 | 5 | 2 | 2 | 3 | 1 | 2 | 2 | | | | | | | | | | | |

| S. No. | 1970 | | 1971 | | 1972 | | 1973 | | 1974 | | 1975 | | 1976 | | 1977 | | 1978 | | 1979 | | 1980 | |
|--------|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|
| | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F |
| 24. | I | : | : | : | | | | | | | | | | | | | | | | | | 1 |
| | J | : | : | : | 1 | 2 | | | | | | | | | | | | | | | | |
| 25. | I | : | : | : | | | 1 | 1 | 3 | | | | | | | | | | | | | |
| | J | : | : | : | | | | | | | | 1 | | | | | | | | | | |
| 26. | I | : | : | : | 1 | | | | 1 | 1 | 1 | | | | | | | | | | | 1 |
| | J | : | : | : | 1 | 1 | 2 | 2 | 3 | | | 1 | 2 | | | | | | | | | |
| 27. | I | : | : | : | | | | | | | | | 1 | | | | | | | | | |
| | J | : | : | : | | | | | | | | | 1 | 1 | 1 | 1 | 1 | | | | | 1 |
| 28. | I | : | : | : | | | | | | | | | | | | | | | | | | |
| | J | : | : | : | | 1 | | | | | | | | | | | | | | | | |

III. Precensus Population Studies Unit

| | | | | | | | | | | | | | | | | | | | | | |
|-----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|--|--|--|---|
| 29. | I | : | : | : | 2 | 1 | 1 | | | | 1 | 3 | 4 | | | | | | | | 2 |
| | J | : | : | : | | | 1 | 1 | 1 | 2 | 2 | 2 | 5 | 1 | 1 | | | | | | 1 |

IV. Sociological Research Unit

| | | | | | | | | | | | | | | | | | | | | | | |
|-----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30. | I | : | : | : | | | | | | | | | | | | | | | | | | 1 |
| | J | : | : | : | | | | | | | | | | | | | | | | | | |
| 31. | I | : | : | : | | | | | | | | | 1 | | | | | | | | | |
| | J | : | : | : | | | | 1 | 4 | | | | | | | | | | | | | |
| 32. | I | : | : | : | 1 | | | | 2 | | | | | 1 | | | | | | | 2 | 1 |
| | J | : | : | : | | | | | | | | | | | | | | | | | | |
| 33. | I | : | : | : | | | | | | | | | | | | | | | | | | |
| | J | : | : | : | | | | | | | | | | | | | | | | | | |
| 34. | I | : | : | : | | | | | | 1 | | | | | | | | | | | | |
| | J | : | : | : | | | | | | | | | | | | | | | | | | |
| 35. | I | : | : | : | | | | | | | | | | | | | | | | | | |
| | J | : | : | : | | | | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 |
| 36. | I | : | : | : | 1 | | | 2 | 1 | | | | | 1 | | | | | | | | 3 |
| | J | : | : | : | | | | | | | | | | | | | | | | | 2 | |
| 37. | I | : | : | : | | | | | | | | | | 1 | 2 | | | | | | | 5 |
| | J | : | : | : | | | | | | | | | | 1 | 2 | | | | | | | |
| 38. | I | : | : | : | 3 | 1 | 7 | 7 | 8 | 1 | 2 | 3 | 2 | 2 | 3 | 1 | 3 | 2 | | | | |
| | J | : | : | : | 1 | 1 | | | | | | | | | | | | | | | | |

V. Demography Research Unit

| | | | | | | | | | | | | | | | | | | | | | | |
|-----|---|---|---|---|---|---|---|---|---|--|--|---|--|--|---|---|---|--|--|--|--|--|
| 39. | I | : | : | : | 1 | 8 | 1 | 1 | 2 | | | 1 | | | 1 | 4 | 1 | | | | | |
| | J | : | : | : | | | | | 1 | | | | | | 1 | | | | | | | |

| S. No. | 1970 | | 1971 | | 1972 | | 1973 | | 1974 | | 1975 | | 1976 | | 1977 | | 1978 | | 1979 | | 1980 | |
|--------|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|
| | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F |
| 40. | I | . | . | . | I | . | . | . | 5 | . | . | . | I | I | . | . | 2 | . | I | . | . | . |
| | J | . | . | 2 | . | I | I | 2 | 2 | . | . | . | I | I | I | . | . | . | I | . | . | I |
| 41. | I | . | . | . | . | I | I | I | I | I | I | . | . | . | . | . | 2 | . | 2 | . | . | 2 |
| | J | . | . | . | I | I | I | . | . | . | I | . | . | . | . | . | . | . | 2 | . | . | 2 |
| 42. | I | . | . | 1 | . | I | I | . | I | . | . | I | I | . | . | . | . | . | 2 | I | . | I |
| | J | . | . | 2 | I | I | I | . | . | . | . | I | I | . | . | . | . | . | 1 | . | . | 1 |
| 43. | I | . | . | 1 | . | . | . | . | I | . | . | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | . | . | 2 |
| | J | . | . | . | I | . | . | . | . | . | . | I | . | . | . | . | . | . | 1 | . | . | 1 |

VI. Linguistic Research Unit

| | | | | | | | | | | | | | | | | | | | | | | | |
|-----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 44. | I | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | * |
| | J | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |

VII. Psychometric Research & Service Unit

| | | | | | | | | | | | | | | | | | | | | | | | |
|-----|---|---|---|----|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 45. | I | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | J | . | . | 11 | 3 | 10 | 4 | 6 | . | . | I | 4 | 3 | 1 | 1 | . | . | . | . | . | . | . | |
| 46. | I | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | J | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 47. | I | . | . | . | I | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | J | . | . | 3 | I | I | I | . | . | . | . | . | I | . | . | . | . | . | . | . | . | . | |
| 48. | I | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | J | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | |

VIII. Planning Unit—Delhi

| | | | | | | | | | | | | | | | | | | | | | | | |
|-----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 49. | I | . | . | 2 | . | 2 | 2 | . | . | . | . | . | . | . | I | 4 | . | . | . | . | . | . | . |
| | J | . | . | . | . | 2 | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 50. | I | . | . | . | 3 | . | . | 1 | 2 | 1 | I | . | . | . | . | . | . | . | . | . | . | . | . |
| | J | . | . | 1 | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 51. | I | . | . | . | . | . | . | 1 | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | 1 |
| | J | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 52. | I | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 |
| | J | . | . | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 53. | I | . | . | . | . | . | . | 3 | . | . | . | . | . | 1 | 1 | . | . | . | . | . | . | . | . |
| | J | . | . | . | . | . | . | . | 4 | 1 | 2 | 1 | . | . | . | . | . | . | . | . | . | . | . |
| 54. | I | . | . | 1 | . | . | . | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | . | . | . | . | . | . | . | . |
| | J | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 55. | I | . | . | . | . | . | . | . | 1 | 2 | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | J | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |

| S No. | 1970 | | 1971 | | 1972 | | 1973 | | 1974 | | 1975 | | 1976 | | 1977 | | 1978 | | 1979 | | 1980 | |
|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|
| | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F |
| 36. | I | . | . | . | . | . | 1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | J | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 |
| 37. | I | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | J | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| <i>EX. Economic Analysis Unit—Bangalore</i> | | | | | | | | | | | | | | | | | | | | | | |
| 38. | I | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 |
| | J | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 |
| <i>4. Division of Biological Sciences</i> | | | | | | | | | | | | | | | | | | | | | | |
| <i>I. Anthropological and Human Genetics Unit</i> | | | | | | | | | | | | | | | | | | | | | | |
| 1. | I | . | . | . | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | J | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 |
| 2. | I | . | . | 4 | 1 | 1 | 1 | 1 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| | J | . | . | 1 | 1 | 1 | 2 | 3 | 3 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 3. | I | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | J | . | . | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 1 |
| 4. | I | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | J | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 5. | I | . | . | . | . | . | . | . | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| | J | . | . | . | 5 | 3 | 1 | 6 | 2 | 1 | 1 | 1 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| <i>II. Leaf Protein Unit</i> | | | | | | | | | | | | | | | | | | | | | | |
| 6. | I | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | J | . | . | . | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 7. | I | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | J | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 |
| <i>III. Embryology Unit</i> | | | | | | | | | | | | | | | | | | | | | | |
| 8. | I | . | . | . | . | . | . | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| | J | . | . | . | 2 | 2 | 1 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 9. | I | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | J | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| <i>IV. Botany Research Unit</i> | | | | | | | | | | | | | | | | | | | | | | |
| 10. | I | . | . | . | . | . | . | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| | J | . | . | . | . | . | . | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| <i>V. Bio-Chemistry Unit</i> | | | | | | | | | | | | | | | | | | | | | | |
| 11. | I | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | J | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 12. | I | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | J | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |

| S. No. | 1970 | | 1971 | | 1972 | | 1973 | | 1974 | | 1975 | | 1976 | | 1977 | | 1978 | | 1979 | | 1980 | |
|--------|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|
| | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F |

VI. Crop Science Unit

| | | | | | | | | | | | | | | | | | | | | | | |
|-----|---|---|---|---|---|---|---|--|---|--|--|--|--|--|--|--|--|--|--|--|---|---|
| 13. | I | . | . | . | 2 | 3 | | | | | | | | | | | | | | | 1 | 1 |
| | J | . | . | . | | | 1 | | 1 | | | | | | | | | | | | | |

VII. Entomology Laboratory

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|-----|---|---|---|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| 14. | I | . | . | . | | | | | | | | | | | | | | | | | | |
| | J | . | . | . | | | | | | | | | | | | | | | | | | |

5. Division of Physical and Earth Sciences

I. Electronics Unit

| | | | | | | | | | | | | | | | | | | | | | | | |
|-----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|---|---|---|
| 1.1 | I | . | . | . | | | | | | | | | | | | | | | | | | 1 | |
| | J | . | . | . | 1 | 1 | | | | | | | | | | | | | | | | | |
| 2.1 | I | . | . | . | | | | 1 | | | | | 1 | 1 | 2 | | | | | | 1 | | |
| | J | . | . | . | | | | | | | | | | | | | | | | | | | |
| 3. | I | . | . | . | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | | | | | | | | | | | |
| | J | . | . | . | 4 | 5 | 3 | 4 | 2 | 1 | 2 | 1 | 3 | 4 | 1 | 7 | | | | | 2 | | |
| 4. | I | . | . | . | | | | | | | | | | | | | | | | | | | |
| | J | . | . | . | | | | | | | | | | | | | | | | | | | |
| 5. | I | . | . | . | | | | | | | | | 2 | 1 | 4 | 1 | 2 | 1 | 2 | | | 1 | 3 |
| | J | . | . | . | | | | | | | | | | | | | | | | | | | |
| 6. | I | . | . | . | | | | | | | | | | | | | | | | | | | |
| | J | . | . | . | | | | | | | | | | | | 2 | | | | | 1 | 1 | 1 |
| 7. | I | . | . | . | | | | | | | | | | | | | | | | | | | |
| | J | . | . | . | | | | | | | | | | | | | | | | | | 1 | 1 |
| 8. | I | . | . | . | | | | | | | | | | | | | | | | | | | |
| | J | . | . | . | | | | | | | | | | | | 2 | 3 | | | | 2 | 2 | |
| 9. | I | . | . | . | | | | | | | | | | | | | | | | | | | |
| | J | . | . | . | | | | | | | | | | | | | | | | | | | |
| 10. | I | . | . | . | | | | | | | | | | | | | | | | | | | |
| | J | . | . | . | | | | | | | | | | | | | | | | | | 1 | 1 |

II. Electronics and Communication Sciences Units

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|-----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11. | I | . | . | . | 2 | 1 | 2 | | 1 | | 2 | 1 | 2 | | 2 | 1 | | 6 | 1 | 1 | 2 | 2 | |
| | J | . | . | . | 1 | 3 | | 2 | 2 | 5 | 4 | 1 | 3 | 1 | 4 | 3 | 4 | 2 | 2 | 2 | 7 | 3 | 5 |
| 12. | I | . | . | . | | | 1 | | 1 | | 2 | | 1 | | | | | | | | | | |
| | J | . | . | . | | | | | | | | | 1 | | | | | | | | 2 | 1 | 2 |
| 13. | I | . | . | . | | | | 1 | | | 1 | | | | | | | | | | | | |
| | J | . | . | . | | | | | | | | | | | | | | | | | 2 | 3 | 1 |
| 14. | I | . | . | . | | | | | | | | | | | | | | | | | | | |
| | J | . | . | . | | | | | | | | | | | | | | | | | | 1 | 1 |
| 15. | I | . | . | . | | | | | | | | | | | | | | | | | | | |
| | J | . | . | . | | | | | | | | | | | | | | | | | | 1 | 1 |

| S. No. | 1970 | | 1971 | | 1972 | | 1973 | | 1974 | | 1975 | | 1976 | | 1977 | | 1978 | | 1979 | | 1980 | |
|--------|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|
| | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F |
| 16. | I | : | : | : | | | | | | | | | | | | | | | | | | |
| | J | : | : | : | | | | | | | | | | | 1 | 3 | 3 | 2 | | 1 | | |
| 17. | I | : | : | : | | | | | | | | | | | | | | | | | | |
| | J | : | : | : | | | | | | | | | | | | | | | | | | |
| 18. | I | : | : | : | | | | | | | | | | | | | | | | | | |
| | J | : | : | : | | | | | | | | | | | | | | | | | | |
| 19. | I | : | : | : | | | | | | | | | | | | | | | | | | |
| | J | : | : | : | | | | | | | | | | | | | | | | | | |

III. Geological Studies Unit

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| 20. | I | : | : | : | | | 2 | | 1 | 1 | | | | | | 2 | | 1 | | 1 | 3 |
| | J | : | : | : | | | | | | 1 | | | | 1 | | | | 1 | | | |
| 21. | I | : | : | : | 2 | | | | | | | | | | 1 | | | | | | |
| | J | : | : | : | | | | | | | | | | | | | | | | | |
| 22. | I | : | : | : | | 1 | | 1 | | | | | | | | | | | | | |
| | J | : | : | : | | | | 1 | | | | | | | | | | | | | |
| 23. | I | : | : | : | | | | | | | | | | | 1 | | | | | | |
| | J | : | : | : | | | | | | | | | | | | | | | | | |
| 24. | I | : | : | : | 3 | 1 | | 1 | | 5 | 1 | 1 | | | 1 | | 4 | 2 | | | |
| | J | : | : | : | 2 | | 1 | 2 | | 1 | | | | | | | 2 | 1 | 1 | | |
| 25. | I | : | : | : | | | | 1 | | 1 | | | | | | | | | | | |
| | J | : | : | : | | | | | | | | | | | | | | | | | |
| 26. | I | : | : | : | | | | | | | | | | | | | | | | | 2 |
| | J | : | : | : | | | | | | | | | | | | | | | | | 1 |
| 27. | I | : | : | : | | | | | 1 | 1 | | | | | | 1 | | | | | 2 |
| | J | : | : | : | | | | | 1 | | | | | | | | | | 1 | | |

IV. Chemistry Unit

| | | | | | | | | | | | | | | | | | | | | | |
|-----|---|---|---|---|---|--|--|---|---|--|--|--|--|---|--|--|--|--|--|--|--|
| 28. | I | : | : | : | | | | | | | | | | | | | | | | | |
| | J | : | : | : | 1 | | | 1 | 1 | | | | | 1 | | | | | | | |

V. Physics Unit

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|-----|---|---|---|---|--|--|--|--|---|---|--|--|--|--|---|--|--|---|--|---|--|
| 29. | I | : | : | : | | | | | | | | | | | | | | | | | |
| | J | : | : | : | | | | | 1 | 1 | | | | | 2 | | | 1 | | 1 | |

| S. No. | 1970 | | 1971 | | 1972 | | 1973 | | 1974 | | 1975 | | 1976 | | 1977 | | 1978 | | 1979 | | 1980 | |
|--------|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|
| | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F |

6. Statistical Quality Control and Operations Research Division

| | | | | | | | | | | | | | | | | | | | | | | | |
|-------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. I | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 |
| J | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : |
| 2. I | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : |
| J | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 2 |
| 3. I | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 |
| J | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : |
| 4. I | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : |
| J | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 |
| 5. I | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 |
| J | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 |
| 6. I | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 |
| J | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : |
| 7. I | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 |
| J | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : |
| 8. I | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 |
| J | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : |
| 9. I | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 2 |
| J | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 |
| 10. I | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 2 |
| J | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : |
| 11. I | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 |
| J | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 |
| 12. I | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 2 |
| J | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 5 |
| 13. I | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 |
| J | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 |
| 14. I | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 |
| J | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 |
| 15. I | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 |
| J | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 |
| 16. I | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 |
| J | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 |
| 17. I | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 |
| J | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 1 |
| 18. I | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 4 |
| J | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 2 |

| S. No. | 1970 | | 1971 | | 1972 | | 1973 | | 1974 | | 1975 | | 1976 | | 1977 | | 1978 | | 1979 | | 1980 | |
|--------|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|------|---|
| | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F | I | F |
| 19. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 20. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 21. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 22. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 23. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 24. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 25. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 26. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 27. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 28. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 29. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 30. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 31. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 32. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 33. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 34. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 35. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 36. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 37. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 38. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 39. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |
| 40. | I | | | | | | | | | | | | | | | | | | | | | |
| | J | | | | | | | | | | | | | | | | | | | | | |

Appendix—XIII

**ANNUAL OUTPUT OF SELECTED ITEMS OF WORK DONE BY THE SCIENTISTS
OF INDIAN STATISTICAL INSTITUTE, CALCUTTA.**

Notation:

*—On leave

B—Books published

S—Scholars guided

P—Papers published

T—Hours taught

PR—Projects carried out

N.B.:—This table does not give separately information on joint/independent papers published.

I. Theoretical Statistics and Mathematics Division.

| Sl. No. | 1980—81 | | | | | | | 1981—82 | | | | | 1982—83 | | |
|---------|---------|----|-----|----|----|----|----|---------|----|----|----|----|---------|----|----|
| | F | B | T | S | PR | P | B | T | S | PR | P | B | T | S | PR |
| 1 | 5 | .. | 160 | 7 | 1 | 5 | .. | 200 | 5 | 1 | 3 | .. | 240 | 5 | 2 |
| 2 | 1 | .. | 130 | 1 | .. | .. | .. | 100 | .. | .. | .. | .. | 130 | 1 | .. |
| 3 | 1 | .. | 45 | 1 | .. | 4 | 1 | * | .. | .. | 3 | .. | 135 | .. | .. |
| 4 | 4 | .. | 240 | 1 | 1 | .. | .. | 240 | .. | 1 | 3 | .. | 240 | .. | 1 |
| 5 | .. | .. | 90 | 1 | .. | 2 | .. | 120 | 1 | .. | 2 | .. | 120 | .. | .. |
| 6 | 1 | .. | 120 | 1 | .. | 2 | .. | 60 | .. | .. | .. | .. | 120 | .. | .. |
| 7 | * | .. | * | .. | .. | .. | .. | .. | .. | .. | .. | .. | * | .. | .. |
| 8 | .. | .. | 164 | .. | .. | .. | .. | 148 | .. | .. | .. | .. | 160 | .. | .. |
| 9 | 2 | .. | 120 | 2 | .. | 2 | .. | 120 | 2 | .. | 4 | .. | 120 | 2 | .. |
| 10 | .. | .. | 60 | .. | .. | 1 | .. | 120 | .. | .. | 1 | .. | 120 | .. | .. |
| 11 | 1 | .. | 110 | .. | .. | 1 | .. | 110 | .. | .. | 2 | .. | .. | .. | .. |
| 12 | .. | .. | 180 | 1 | .. | 1 | .. | 120 | 1 | .. | 1 | .. | 120 | 1 | .. |
| 13 | 1 | .. | 90 | .. | .. | 1 | .. | 90 | .. | .. | .. | .. | 48 | .. | .. |
| 14 | 2 | .. | 100 | 2 | .. | 3 | .. | 50 | 2 | .. | 2 | .. | 50 | 1 | .. |
| 15 | 1 | .. | 128 | 1 | .. | 1 | .. | 128 | 1 | .. | .. | .. | 112 | 1 | .. |
| 16 | .. | .. | 90 | 1 | .. | 1 | .. | 120 | .. | .. | .. | .. | 180 | .. | .. |
| 17 | 4 | 1 | 60 | .. | .. | 2 | .. | 60 | 1 | .. | 3 | 1 | 60 | 1 | .. |
| 18 | .. | .. | 120 | .. | .. | .. | .. | 120 | .. | .. | .. | .. | 120 | .. | .. |
| 19 | 1 | .. | 60 | .. | .. | .. | .. | 30 | .. | .. | .. | .. | 64 | .. | .. |
| 20 | 1 | .. | 120 | .. | .. | 1 | .. | 120 | .. | .. | .. | .. | 120 | .. | .. |
| 21 | 3 | .. | .. | .. | .. | 3 | .. | 120 | .. | .. | .. | .. | 120 | .. | .. |
| 22 | 1 | .. | 40 | .. | .. | .. | .. | 120 | .. | .. | .. | .. | 120 | .. | .. |
| 23 | 2 | 1 | .. | .. | 1 | 1 | .. | .. | .. | .. | 1 | .. | .. | .. | .. |
| 24 | 1 | .. | 80 | .. | .. | .. | .. | 80 | .. | .. | 1 | .. | 80 | .. | .. |
| 25 | 1 | .. | 160 | .. | 1 | 3 | .. | 90 | .. | .. | 2 | .. | 45 | .. | 2 |
| 26 | 3 | .. | .. | .. | .. | 3 | .. | .. | .. | .. | 4 | .. | 140 | 2 | 12 |

2. Applied Statistics Survey and Computing Division

| Sl.No. | 1980-81 | | | 1981-82 | | | 1982-83 | | | | | | | | |
|----------------------------|---------|----|-----|---------|----|----|---------|-----|----|----|----|----|-----|----|----|
| | P | B | T | S | PR | F | B | T | S | PR | F | B | T | S | PR |
| 1 | 2 | .. | 190 | 1 | 5 | 1 | .. | 150 | 1 | 2 | 1 | .. | 100 | 1 | 2 |
| 2 | .. | .. | .. | .. | .. | 1 | 1 | 80 | 1 | 1 | 1 | .. | 80 | 1 | 1 |
| 3 | 3 | .. | 90 | 1 | 2 | 3 | .. | 90 | 1 | 1 | 4 | .. | 105 | 1 | 1 |
| 4 | 3 | 2 | .. | .. | 1 | 2 | 2 | .. | .. | 2 | 1 | 1 | .. | .. | 2 |
| 5 | .. | .. | 100 | .. | .. | .. | .. | 180 | .. | .. | .. | .. | 100 | .. | 1 |
| 6 | 2 | .. | 208 | .. | .. | 1 | .. | 128 | .. | .. | .. | .. | 128 | .. | .. |
| 7 | 2 | .. | 48 | 1 | .. | 2 | .. | 192 | 1 | .. | 1 | .. | 192 | .. | .. |
| 8 | 1 | .. | 300 | 1 | .. | 2 | .. | 300 | 1 | .. | 1 | .. | 120 | 1 | 1 |
| 9 | 1 | .. | .. | .. | .. | 2 | .. | 135 | .. | 1 | 1 | .. | 150 | .. | 1 |
| 10 | 1 | .. | 120 | 1 | .. | .. | .. | 120 | 1 | .. | 3 | .. | 120 | 1 | .. |
| 11 | .. | .. | 55 | .. | 1 | .. | 1 | 55 | .. | 1 | .. | .. | 40 | .. | 1 |
| 12 | 1 | .. | 323 | .. | 4 | 1 | .. | 353 | .. | 3 | .. | .. | 128 | .. | 1 |
| 13 | .. | .. | 140 | 1 | .. | .. | .. | 150 | .. | 2 | .. | .. | 100 | .. | 2 |
| 14 | 1 | .. | 60 | .. | 2 | .. | .. | 40 | .. | 2 | .. | 1 | 40 | .. | 1 |
| 15 | .. | .. | 210 | .. | .. | .. | .. | 210 | .. | .. | .. | .. | 210 | .. | .. |
| 16 | .. | .. | 100 | .. | .. | .. | .. | 100 | .. | .. | .. | .. | 100 | .. | .. |
| 17 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | .. | .. | .. | .. |
| 18 | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | 1 | .. | .. | .. | .. |
| 19 | .. | .. | 214 | .. | 1 | .. | .. | 223 | .. | 1 | .. | .. | 232 | .. | 2 |
| 20 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 3 | .. | 80 | .. | .. |
| 21 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 3 | .. | 40 | .. | .. |
| 22 | 4 | .. | .. | .. | .. | 6 | .. | 30 | .. | .. | 3 | .. | 30 | .. | 1 |
| 3. Social Science Division | | | | | | | | | | | | | | | |
| 1 | 1 | .. | 60 | 1 | 2 | 1 | .. | 60 | 1 | 3 | .. | .. | 6 | .. | 3 |
| 2 | 3 | .. | 200 | 3 | 2 | .. | .. | 200 | 3 | 2 | .. | .. | 200 | 1 | 2 |
| 3 | 1 | .. | 60 | 6 | .. | 1 | .. | 60 | 5 | .. | .. | .. | 15 | 5 | .. |
| 4 | .. | .. | 90 | 7 | .. | .. | .. | 90 | 5 | .. | .. | .. | 45 | 4 | .. |
| 5 | 1 | .. | 190 | .. | 1 | .. | .. | 190 | 1 | 1 | .. | .. | 140 | 2 | .. |
| 6 | .. | .. | 85 | 1 | 2 | .. | .. | 65 | 1 | 3 | .. | .. | 45 | .. | 4 |
| 7 | 3 | .. | .. | .. | .. | .. | .. | 80 | .. | .. | 2 | .. | 60 | .. | .. |
| 8 | .. | .. | 85 | 1 | 1 | .. | .. | 120 | 2 | 2 | .. | .. | 55 | 2 | 2 |
| 9 | .. | .. | 40 | .. | 2 | .. | .. | 40 | .. | 2 | 1 | .. | 9 | .. | 2 |
| 10 | .. | .. | 90 | .. | 2 | 1 | .. | 90 | .. | 2 | .. | .. | 45 | 1 | 1 |
| 11 | .. | .. | 75 | .. | .. | .. | .. | 75 | .. | .. | .. | .. | 75 | .. | .. |
| 12 | .. | .. | 65 | .. | 1 | 3 | .. | 75 | .. | 2 | 3 | .. | 95 | .. | 1 |
| 13 | 4 | .. | 41 | .. | 1 | 2 | .. | 41 | .. | 1 | 3 | .. | 9 | .. | 2 |
| 14 | .. | .. | 30 | .. | .. | .. | .. | 77 | .. | .. | 2 | .. | 32 | .. | .. |

| Sl. No. | 1980-81 | | | | | 1981-82 | | | | | 1982-83 | | | | | |
|---|---------|----|-----|----|----|---------|----|----|----|----|---------|----|-----|----|----|--|
| | P | B | T | S | PR | P | B | T | S | PR | P | B | T | S | PR | |
| <i>II. National Income Research Unit</i> | | | | | | | | | | | | | | | | |
| 15 | 1 | 1 | 36 | .. | 3 | 1 | .. | 96 | .. | 9 | 2 | .. | 46 | .. | 3 | |
| 16 | .. | .. | .. | .. | .. | 1 | .. | 20 | .. | .. | 1 | .. | 50 | .. | 1 | |
| <i>III. Precensus Population Studies Unit</i> | | | | | | | | | | | | | | | | |
| 17 | 3 | 1 | .. | .. | 6 | 1 | 1 | .. | .. | 6 | 3 | 1 | .. | .. | 5 | |
| <i>IV. Sociological Research Unit</i> | | | | | | | | | | | | | | | | |
| 18 | 1 | .. | 2 | .. | .. | 1 | .. | 1 | 1 | .. | .. | 1 | 2 | 1 | .. | |
| 19 | ** | ** | ** | .. | .. | .. | .. | .. | 1 | 2 | .. | .. | .. | 1 | 1 | |
| 20 | 2 | 1 | .. | 1 | 3 | .. | .. | .. | 1 | 3 | .. | .. | .. | .. | 3 | |
| 21 | .. | 1 | .. | .. | 2 | .. | .. | .. | .. | 2 | .. | 1 | .. | .. | 1 | |
| 22 | 1 | .. | .. | .. | 1 | 1 | .. | .. | .. | 1 | 1 | .. | .. | .. | 1 | |
| 23 | 3 | .. | .. | 1 | 3 | 1 | .. | .. | 1 | 3 | .. | .. | .. | 1 | 3 | |
| 24 | 2 | .. | 6 | .. | 1 | .. | .. | .. | 1 | 1 | 2 | 1 | .. | 1 | 1 | |
| 25 | 1 | .. | .. | .. | .. | 2 | 1 | .. | .. | 1 | 1 | 1 | 45 | .. | 1 | |
| <i>V. Demography Research Unit</i> | | | | | | | | | | | | | | | | |
| 26 | 2 | 1 | 30 | 3 | 3 | 2 | 1 | 52 | 4 | 2 | 2 | 1 | 60 | 3 | 2 | |
| 27 | 2 | .. | 40 | .. | 1 | 1 | .. | 45 | .. | 2 | 1 | .. | 60 | .. | 1 | |
| 28 | 3 | .. | 147 | .. | .. | 1 | .. | 80 | .. | 1 | .. | .. | 145 | .. | 1 | |
| 29 | 3 | .. | 61 | .. | 1 | 3 | .. | 85 | .. | .. | .. | .. | 113 | .. | 2 | |
| 30 | 3 | .. | 30 | .. | 1 | .. | .. | 85 | .. | 1 | 1 | .. | 90 | .. | .. | |
| <i>VI. Linguistic Research Unit</i> | | | | | | | | | | | | | | | | |
| 31 | .. | .. | .. | .. | 5 | .. | .. | .. | .. | 5 | 1 | 3 | .. | .. | 5 | |
| <i>VII. Psychometric Research and Services Unit</i> | | | | | | | | | | | | | | | | |
| 32 | 1 | .. | .. | 1 | 3 | 2 | .. | .. | 1 | 3 | 3 | .. | .. | 1 | 3 | |
| 33 | 1 | .. | 24 | .. | .. | .. | .. | .. | .. | .. | 3 | .. | .. | .. | 3 | |
| 34 | .. | .. | .. | .. | 1 | .. | .. | .. | .. | 1 | .. | .. | .. | .. | 1 | |
| 35 | .. | .. | .. | .. | 1 | .. | .. | .. | .. | 1 | .. | .. | .. | .. | 1 | |
| <i>4. Biological Sciences Division</i> | | | | | | | | | | | | | | | | |
| <i>I. Anthropology & human Genetics Units</i> | | | | | | | | | | | | | | | | |
| 1 | 5 | 1 | .. | 4 | 3 | 7 | .. | .. | 5 | 4 | .. | 2 | .. | 4 | 5 | |
| 2 | 7 | 1 | .. | 1 | 2 | 4 | .. | .. | 2 | 2 | 3 | .. | .. | 2 | 3 | |
| 3 | 5 | .. | .. | .. | 3 | 5 | .. | .. | .. | 2 | 5 | .. | .. | .. | 2 | |
| 4 | 1 | .. | .. | .. | 1 | 3 | .. | .. | .. | 1 | 4 | .. | .. | .. | .. | |
| 5 | 6 | .. | .. | .. | 3 | 5 | .. | .. | .. | 4 | 2 | .. | .. | .. | 5 | |

| Sl. No. | 1980-81 | | | | | 1981-82 | | | | | 1982-83 | | | | | |
|--|----------------------|----|-----|----|----|---------|----|----|-----|----|---------|----|----|-----|----|----|
| | P | B | T | S | PR | P | B | T | S | PR | P | B | T | S | PR | |
| <i>II. Leaf Protein Unit</i> | | | | | | | | | | | | | | | | |
| 6 | 2 | .. | .. | .. | 4 | 2 | .. | .. | .. | 4 | .. | .. | .. | .. | 4 | |
| 7 | 4 | .. | .. | .. | 3 | 1 | .. | .. | .. | 3 | 2 | .. | .. | .. | 3 | |
| <i>III. Embryology Unit</i> | | | | | | | | | | | | | | | | |
| 8 | .. | 1 | .. | .. | 2 | 2 | .. | .. | .. | 2 | 1 | .. | .. | .. | 2 | |
| 9 | 1 | .. | .. | .. | 1 | 1 | .. | .. | .. | 1 | 1 | .. | .. | .. | 1 | |
| <i>IV. Botany Research Unit</i> | | | | | | | | | | | | | | | | |
| 10 | 2 | .. | .. | 1 | 4 | .. | 1 | .. | 1 | 5 | 1 | 2 | .. | .. | 6 | |
| <i>V. Bio-Chemistry Unit</i> | | | | | | | | | | | | | | | | |
| 11 | .. | .. | .. | 1 | 2 | 1 | .. | .. | 1 | 2 | 2 | .. | .. | 1 | 1 | |
| 12 | .. | 1 | .. | .. | 5 | 2 | .. | .. | .. | 5 | .. | .. | .. | .. | 5 | |
| <i>VI. Entomology Laboratory</i> | | | | | | | | | | | | | | | | |
| 13 | 1 | .. | .. | .. | .. | 1 | .. | .. | .. | .. | 1 | .. | .. | .. | .. | |
| <i>VII. Crop Science Unit</i> | | | | | | | | | | | | | | | | |
| 14 | .. | .. | .. | .. | 3 | .. | .. | .. | .. | 3 | .. | .. | .. | .. | 3 | |
| <i>5. Physical and earth Sciences Division</i> | | | | | | | | | | | | | | | | |
| <i>I. Electronics Unit</i> | | | | | | | | | | | | | | | | |
| 1 | 2 | .. | 155 | 7 | .. | 1 | .. | .. | 85 | 6 | .. | 2 | .. | 180 | 5 | .. |
| 2 | 1 | .. | 236 | .. | 1 | .. | .. | .. | 236 | .. | 1 | 1 | .. | 315 | .. | 1 |
| 3 | 2 | .. | .. | 2 | .. | .. | .. | .. | .. | 2 | .. | 5 | .. | .. | 1 | .. |
| 4 | .. | .. | 302 | .. | 1 | .. | .. | .. | 168 | .. | 1 | .. | .. | 185 | .. | 1 |
| 5 | 6 | .. | .. | .. | 1 | 4 | .. | .. | .. | .. | 1 | 5 | .. | .. | .. | 1 |
| 6 | 2 | .. | 158 | .. | 1 | 1 | .. | .. | 518 | .. | 1 | 2 | .. | 110 | .. | 1 |
| 7 | 1 | .. | 518 | .. | 1 | 1 | .. | .. | 302 | .. | 4 | .. | .. | 110 | .. | 1 |
| 8 | 3 | .. | 48 | 1 | 1 | 5 | .. | .. | 48 | 3 | 1 | 3 | .. | 48 | 3 | 2 |
| 9 | Appointed in Apr. 82 | | | | | .. | .. | .. | .. | .. | 1 | .. | .. | 465 | .. | 1 |
| 10 | 2 | .. | .. | .. | .. | 2 | .. | .. | .. | .. | .. | 2 | .. | .. | .. | .. |
| 11 | 3 | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | 2 | .. | 50 | .. | .. |
| 12 | 2 | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. |
| 13 | Appointed in Jun. 83 | | | | | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. |
| 14 | Appointed in Apr. 82 | | | | | .. | .. | .. | .. | .. | .. | 5 | .. | 380 | .. | 1 |
| <i>II. Electronics & Communication Sciences Unit</i> | | | | | | | | | | | | | | | | |
| 15 | 16 | 1 | 40 | 7 | 4 | 18 | 1 | .. | 40 | 6 | 5 | 12 | 1 | 20 | 5 | 5 |
| 16 | 7 | .. | .. | 1 | .. | 5 | .. | .. | .. | 2 | .. | 5 | .. | .. | 2 | .. |
| 17 | 2 | 1 | 30 | 1 | 2 | 3 | .. | .. | 30 | 1 | 3 | 3 | .. | 25 | 1 | 2 |

| S. No. | 1980-81 | | | | | 1981-82 | | | | | 1982-83 | | | | |
|------------------------------------|------------------------|----|----|----|----|---------|----|----|----|----|---------|----|-----|----|----|
| | P | B | T | S | PR | P | B | T | S | PR | P | B | T | S | PR |
| 18 | 3 | .. | .. | .. | 2 | 3 | .. | .. | .. | 3 | 4 | .. | .. | 1 | 3 |
| 19 | 6 | .. | 40 | .. | .. | 6 | .. | 60 | .. | .. | 6 | .. | 75 | .. | 1 |
| 20 | 5 | .. | .. | 1 | 1 | 4 | .. | .. | 1 | 1 | 6 | 1 | .. | 1 | 1 |
| 21 | Appointed in Apr. 1982 | | | | | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. |
| 22 | Appointed in Apr 1982 | | | | | .. | .. | .. | .. | .. | .. | .. | 50 | .. | .. |
| 23 | .. | .. | .. | .. | .. | .. | .. | 50 | .. | .. | 1 | .. | 120 | .. | .. |
| 24 | .. | .. | .. | .. | .. | 2 | .. | 6 | .. | 1 | .. | .. | .. | .. | .. |
| <i>III. Geologica Studies Unit</i> | | | | | | | | | | | | | | | |
| 25 | 3 | .. | .. | .. | 2 | .. | .. | .. | .. | 2 | 1 | .. | .. | .. | 2 |
| 26 | .. | .. | .. | 2 | 3 | 1 | .. | .. | 2 | 4 | .. | .. | .. | 1 | 5 |
| 27 | .. | .. | .. | .. | 2 | .. | .. | .. | .. | 1 | 1 | .. | .. | .. | 2 |
| 28 | .. | .. | .. | .. | 1 | .. | .. | .. | .. | 2 | 1 | .. | .. | .. | 1 |
| 29 | .. | .. | .. | .. | 1 | .. | .. | .. | .. | 1 | .. | .. | .. | .. | 1 |
| 30 | .. | .. | .. | .. | 3 | .. | .. | 48 | .. | 2 | 1 | .. | 2 | .. | 3 |
| 31 | 2 | .. | .. | .. | 1 | 1 | .. | .. | .. | 1 | 2 | .. | 24 | .. | 3 |
| <i>IV. Chemistry Unit</i> | | | | | | | | | | | | | | | |
| 32 | 1 | .. | 60 | 1 | 1 | 1 | .. | 60 | 1 | 1 | .. | .. | 60 | 1 | 2 |
| <i>V. Physics Unit</i> | | | | | | | | | | | | | | | |
| 33 | 4 | 1 | 48 | 1 | 1 | 3 | .. | 48 | 1 | 1 | 4 | 1 | 48 | 1 | 1 |

SUMMARY OF COMMENTS AND SUGGESTIONS OF EMINENT SCIENTISTS AND SUBJECT MATTER SPECIALISTS

(S : Former or present staff member of ISI
 F : Foreign Experts, O : Others)

I. *Theoretical Statistics and Mathematics Division*

1. The Stat -Math Division at Calcutta and Delhi are still qualitatively the best, although the faculty has been depleted in recent years. One of the major priority should be to rebuild their strength. (S)
2. Stat-Math Division has done excellent work in the field and received world recognition in the field. Its work has appeared in top class journals of world. There should be more exchange of staff between ISI and other institutes. (F)
3. The Scientific work of ISI and their training of students in statistical theory is of the highest calibre. The Statistician and probabilists are very able to do high quality research. (F)
4. The Stat-Math Division of ISI has covered all the relevant fields of mathematical statistics and produced many important results. As such it is recognised as one of the main centres of the world. Its staff has made great progress in theory of sufficiency and asymptotic theory of estimations. They have also produced key results in probability theory and set theory and maintained high standard in them. In this statisticians have benefited from mathematical background. (F)
5. In pure mathematics, the centres at Calcutta and New Delhi are important scientific Institutions in the world scene. This is because outstanding people are working there. The academic atmosphere is conducive to hard work and friendly collaboration. The Institute is one of the few centres in India where research training at a high level is provided. The dissertations submitted by the students are of high standard. (F)
6. The interest for the field of combinatorics has been growing in the ISI. They have developed a new interest for mathematical problems stemming from other disciplines. (F)
7. The standard of students and the commitment of the staff is impressive. (F)
8. ISI is known world wide as a first rate centre for research and teaching in Mathematical Statistics and probability theory. All major statistical centres in the United States have been benefited from contact with ISI members and graduates. It has first rate research and teaching facilities. (F)
9. The ISI has continued to have the high respect and admiration of statisticians throughout the world. Its students are of high quality. (F)
10. The Institute has done good work in theoretical statistics and turned out large number of graduates of good quality and research bent of mind. In this field, ISI should not try to compete with the statistical Departments of other universities. (O)
11. The ISI has done very useful work in inference and probability theory. (O)
12. In the ISI, there is fruitful collaboration between Mathematical Statisticians and Scientists. The Institute is a superle place to do theoretical as well as applied research. The ISI continues to produce outstanding Ph. D's. (O)
13. ISI is the best place in the country in the field of pure and applied statistics, probability, combinatorics, Graph theory, Quantum mechanics, Mathematical logic and Set theory. Interdisciplinary collaborations are going on between Stat-Math Division and other Division/Unit (Geology, Economics etc.) which benefit both sides. (O)

14. The institute has been one of the foremost institutes in the world in developing significant areas of research both in theory and practice in multivariate analysis, design of experiment and statistical inference. (O)
15. The ISI has played crucial role in development of research in Mathematics and Statistics in the country in post-independent days. The ISI has derived considerable prestige from the contribution by that Division. The group in Calcutta and Delhi are recognised to be among the foremost research groups in these fields in the country. All encouragement may be given to continue and strengthen the activities of this Division. The presence of a strong, group of mathematicians is absolutely necessary and effort should be made to build up a large group of first rate mathematicians at these centres. The interaction between mathematician and statistician would lead to richer contributions. (O)
16. The Institute has done commendable work in the field of stochastic process and mathematical statistics. However, of late there has been decline in the quantum of high quality research. The output in recent years is certainly on low side if input in terms of money that the Institute is spending is taken into account. Looking at a few university departments in terms of teaching and research, with almost no financial support, the institute should give much more to the nation in terms of research output and other services than it is delivering at present. (O)
17. Most of the members of the Math-Stat Division are mathematicians and probability theorists and not statisticians. They do not do any work in the field of statistics at all. (S)
18. The mathematicians, though brilliant, have contempt for anything to do with statisticians. It is also un-charitable to leave the training programme in statistics in the hands of mathematicians. There is an undesirably high degree of inbreeding in the recruitment of the faculty in the Stat-Math Division. Almost every Ph.D. produced from this Division is made lecturer with a large number of advance increments. (S)
19. There is imbalance between very pure mathematics and statistics. (F)
20. Teaching staff should devote more time in teaching than in their individual research. Stat-Math Division should collaborate with other Divisions so that there is greater application of statistics in physical and social sciences. (O)
21. ISI is the earliest Institution in the field of statistics, but has made little impact on teaching of statistics in Indian Universities. There should be greater interaction between these two. (O)
22. The mathematical aspects of statistics are over-emphasized in B.Stat. and M. Stat. courses and practical classes are neglected. There is less emphasis on descriptive statistics. The classes on descriptive statistics are quite often allotted to persons whose interest in teaching is secondary. The mathematicians dominate the Stat-Math Division and this Division rides roughshod over other Divisions. Quite a number of members of the Stat-Math Division have no statistical training and remain mathematicians. Even those who had such training take an ivory tower attitude toward real life statistical problems. Bulk of the papers produced by Stat-Math Divisions during 1970-82 related to mathematics. (O)
23. The Students of M-Stream in M-Stat have little exposure to statistics, as a result of which they fail to discharge the responsibility of a working statistician. (O)
24. In ISI teaching load is very low. The members of Theoretical Statistics and Mathematics Division do certain amount of teaching. The courses in ISI are over specialized. Those who do very well continue in ISI or go abroad to settle in USA. Those who do not do very well have a big problem as they do not fit in any other institution (O)
25. There is a policy of too much specialization. Though the trainees attain good standard, they fail to answer simple questions at the time of interview, because of specialization and too much emphasis on mathematics. (O)

H. Applied Statistics, Survey and Computing Division

1. Useful work in sampling is still being done by some research scholars. The success of the Institute will depend much upon the balance aimed at and achieved by the leadership between theoretical and applied work in statistics. (S)

2. Impressive work in sampling theory and application has been done by scientists of this Division. Strength of ISI is in areas of multivariate analysis and design of experiment, in which outstanding work was done during sixties but has diminished during seventies. Special attempt should be made to recruit specialists developing research environment. (S)
3. The Indian Statistical Institute has a world wide reputation as a centre of theoretical and applied statistics. It is somewhat disturbing to see the imbalance between very pure mathematics and statistics in the Institute. There should be more data analysts than functional analysis. The computing facilities in ISI to not match with what is customary in the West and there is an impression that they are not functioning at all. (F)
4. The Institute should restrict itself to remaining a Centre of excellence in theory and practice of Statistics. (F)
5. Indian Statistical Institute is the best place in the country in the field of pure and applied statistics and has done work of international standard in these fields. The education imparted in Statistics in various courses is comparable to the best anywhere. The computer units however, does not do much theoretical work in the subject. (O)
6. Since the take-over of National Sample Survey the heart has gone out of genuine applied Statistics work in the ISI. There are a few good people working in applied statistics. But to a large extent, their work is uncoordinated and lacking in overall leadership. No continuing research is being carried out in applied statistics and most of the activities are confined to project work. The Soviet built computer is underutilized because of frequent breakdowns, with the result that the work done is nowhere nearly commensurate with the potential of ISI. The development of a strong computer is essential if the Institute is to have important role to play in national planning and in large scale statistical surveys. (S)
7. There are following factors which stand in the way of realization of the full potential of ISI in applied statistical work : Very few talented young persons are attracted towards applied work because of career prospects, Promotion to categories like, professor and associate professor, depends on quantity of research papers and their mathematical content whereas in applied statistics the work is shared by a number of scientists and emphasis is on the importance of the problem solved and not on mathematical content. Organised institutional efforts are lacking in achieving a balance between academic research and practical application. The ASC Division is located in Calcutta whereas the agencies of Central Government from which projects in applied statistics emanate are located in Delhi. It is necessary for ASC Division to have a berth in Delhi. (S)
8. There is lack of professional statisticians, subject matter specialists and data processing experts in ASC Division. There is need for creating senior and middle level of technical officers as in SQC & OR Division in ASC Division. In ISI due recognition is not given to all work. The publish or perish criteria is applied even on system analysts, programmes and computer engineers. It is difficult for ASC Division to fulfil its responsibilities in areas where even excellent work may not result in published paper. Therefore, it is necessary that for assessment due recognition is given to participation in applied projects and consultancy and advisory service rendered to individuals and institutions, teaching, research guidance, organisation of courses, seminars, conferences, management and maintenance of computer and other equipment. Applied statistics projects emanate from Delhi where most of Central Government offices are located. ASC Division should have a berth in Delhi. A powerful electronic computer system is an essential tool for applied statistical work. The ASC Division is the principal user of ISI computing facilities. Therefore, the main computer should be located in ASC Division. (S)
9. The applied statistics work, which was the institute's main work, ceased after death of Prof. Mahalanobis. The ISI should be in a position to tell that this is the way that sample survey work should be done. They should suggest improved way of sampling, sub-sampling, error control (sampling & non-sampling) and estimation. The Kabir Committee's recommendation regarding setting up of 'Survey Research Centre' for which provision was also made in the past, should be implemented. (S)
10. The strength of Statisticians in Stat-Math and Applied Statistics and Computing Divisions is 1/3rd of the respective strength of these Division. Being in minority they are unable to discharge their role effectively. The Statisticians should be brought under one umbrella and a new Division of 'Theoretical and Applied Statistics' created for the purpose. (S)

11. In new syllabus of B.Stat., topics in applied statistics are few and they are not properly supported by the corresponding course in Basic Sciences. Practical classes on the collection, scrutiny and interpretation of data are held casually. (S)

12. Statistics has to do with application in addition to development of statistical theory. Scientists as a group in ISI are weak in the area of applying statistics to actual problems and in statistical consultancy. (F)

13. Applied Statistics Division should be strengthened to avoid tendency towards research in pure mathematics or theoretical statistics and for proper discharge of its function. It is not true that there is dearth of good applied statisticians in the country, only they languish under the shadow of mathematics. Undue importance to Stat-Math Division and neglect of ASC Division has been primarily responsible for our official statistical system being in state of stagnation. That collection of data, analysis of data and writing of report are important functions to be performed with care and zeal, seems to have been forgotten by the high-ups of the Indian Statistical Institute. (O)

III. Social Science Division

1. The ISI can make tremendous contribution to the economic development of the country and its planning unit has the potential for doing applied economic research. However, many of the best Indian economists have left the Institute and it has become most difficult to make reasonable offer to good people. (S)

2. The research standards of the economic Unit of ISI Delhi was quite impressive. In the context of theoretical and empirical research of India's economic problems, these activities could be enlarged. (F)

3. Researches into the production and distribution of Cement and Sugar was impressive. This is the sort of applied economics work which should be going on in India on a large scale but in fact this is being done by few people. There have been major developments in the USA and elsewhere on the econometric methodology of dealing with such problems using large scale data sets. These can be adapted to Indian problems and much can be learnt from such work in the Indian context. There is considerable debate in India on the best way of allocating commodities i.e. market/ or rationing schemes and much more need to be known about how the various possibilities affect people. ISI's work provides important first step in this direction. There is good work in economics going on in all three ISI's although none could be regarded as major centre of economics in the world context. The ISIs with intimate knowledge of NSS data are in best position to use it for research. This work is beginning in ISI and should be encouraged. Computing is real problem and each centre should be provided with micro-computer. (F)

4. The ISI is one of the most productive and academically distinguished organisations of this type in India and indeed anywhere else. Contributions to economics and to economic statistics are coming regularly and they are certainly valued by the academic community very high. (F)

5. The economic group at ISI, Bangalore, has made a good beginning. The Delhi Centre is doing good work. In particular, work on rationing and control deserves every support. The Economics Department in Calcutta seems to have been of a high standard but static. (F)

6. The quality of work done in National Income and Wealth by ISI is high. (F)

7. The Economists at ISI have made significant contribution to development planning and policy. They participated in work relating to formulation and development of consumption sub-models of the Sixth Plan. The Institute has also done important work in commodity pricing policy which has helped for formulation of policy for sugar. The Institute has also done interesting on regional planning. (O)

8. It was once the pride of ISI, that the economics taught at ISI was vigorous and modern and at the same time quantitative and policy oriented, particularly in the area of planning. With the demise of planning with Nehru, perhaps it is not surprising that ISI research has also drifted away. It is time to look into various disciplines taught in ISI to see how far these are better than in other universities. The standards in economics have definitely gone down. (S)

9. The economists of ISI, Delhi who made major contributions in Indian economics were facing deliberate policy of suppression and denied various facilities. The Delhi Centre should be recognised as the Centre of research in public policies. (S)

10. The Economics Department of ISI which is staffed with highly qualified persons, has restricted its activities to minor projects to supplement work of official agencies. Its true advantage lies in long term projects, critical review of working of official agencies, problem of economic policies. It would prepare students for Ph.D. Programme and award appropriate degree after completion of course work. (O)

11. ISI should carry studies in the field of fund allocation and utilisation in science and technology and studies of production and employment based on nation-wide surveys. (O)

12. The founder of the Sociology Unit was very active as researcher and has played an important role in the field of sociology at the national and international level. He also generated interest in quantitative research on social structure and change among members of the small unit. But it has to be admitted that during the long period of 25 years the unit did not emerge as a vigorous self-sustaining research group with a clear focus. The members of the unit who have developed expertise and special interest in utilisation of statistical tools should be encouraged. It should primarily concentrate its effort on the rural segment during next 5 years and the progress, in term of defined targets be carefully assessed at the intermediate and final phase. (O)

13. There is lot of other work going on in ISI, that is either very ethereoretical, being of real interest or rather slavish imitation of work done abroad, without exploiting the richness and institutional peculiarities of India herself. External contacts are very important in applied work which India needs. It is no good trying to replicate the model of consumer behaviour or labour supply in India. The models need rebuilding for Indian conditions and for such work personal contacts are very important. (F)

14. The ISI should give more emphasis upon econometrics and mathematical economics. (F)

15. The Planning Group in ISI should now re-adjust to the changed circumstances. (F)

16. There is a need to identify themes of research in academic and applied studies and to take measures for grouping together scientists of economics, sociology, geography for purpose of understanding and evaluating the economic development process operating under different regional condition. Regional planning is one such field. (S)

17. The Sociology Research Unit has had its presence felt in application of advance statistical technique in sociology. (O)

18. The first generation of demographers in ISI produced a corpus of knowledge which was a pathfinder in its days and gave fair promise of promoting statistics from a tool to a proper and versatile technology for social manipulations. ISI still enjoys the competence to proceed along that path and its scholars have much work of merit to their credit. But recently much of their work has hopped from one area to another, stopping short of producing research output that could claim a distinct and recognisable thrust. The bulk of output now adds up to not much more than competent footnotes to or elaboration of population research going round in other important centres of population and not much more beside. The Institute, with sound theoretical foundation and super structure of numerous departments of knowledge should be in a position to enable the faculty of demographers to assume its rightful place in its scheme of things. (O)

19. Sixty per cent of the Psychometry Units' staff do not do any work except politicking and inspite of adverse report, some of them are getting promotion. Under these circumstances coordinated team work is not possible. Situation may improve if this Unit is broken into Psychometry and Psychology Units. (S)

20. The Psychometry Unit has done outstanding work over the years in wide variety of fields related to educational and psychological tests, measurements and statistics. The work of the Unit is of nation importance. The Psychometric Unit work in selection testing is not only self financing, but must also be bringing income to the Institute. The unit has produced a large number of research papers, psychological tests and books. The research papers or reports produced are of excellent quality, both in research planning and clarity of reporting. No other organisation in India has done as much research on validation of objective testing procedures. (O)

21. Since late, fifties, the Demographic Research Centre had operated on a low key. In spite of the excellent facilities available at the ISI for inter-disciplinary research, Demography has depended heavily on the limited expertise in the Unit and the Studies conducted by them are basically exercise in quantification without broader perspective of the inter-relationship between demographic, economic and social factors. In the context of social and economic development, this unit has not made a significant contribution. They have failed to use massive census data in spite of the excellent computer facilities available in ISI. (O)
22. In view of the distance of ISI from main centres of research in Europe and America, there is need for continuing flow of scientific visitors between ISI and overseas to provide intellectual stimulation. (F)
23. The Institute's Social Science Division is suffering because of sub-standard appointments made in great haste in mid fifties and mid sixties. It is important to ensure that these do not rise to higher positions. (S)
24. The Psychometry Unit which ought to have engaged in statistical activity to justify its "Metry" appendage has done nothing and has concentrated in "Psycho" only. (S)
25. The Institute has been deprived of the revenue earned by this Unit by some senior scientific workers who have opened parallel Unit in spite of the fact that they are regular members of ISI and for which they contribute nothing to the Institute. Delhi Centre which traditionally used to have strong group of Econometricians but which have very few number now in senior position should be reorganised in this area. (S)
26. The quality of papers in ISI has gone down. There is tendency to cover entire syllabus and neglect the teaching in fields where research work is being done. After severance of link with Planning Commission, the scientists in ISI are not having original thinking about planning. (S)
27. The pre-census population studies unit is the largest knowledgeable source of quantitative historical data. Its work has, however, been obstructed by a dominating group. About one million rupees have been spent in this unit with considerable wastage. No action has been taken on the report of expert Committee which examined its functioning. (O)
28. The ISI should provide consultancy service on psychometric testing on Commercial lines. (O)

IV. *Biological Science Division*

1. Anthropometry and Human Genetics Unit of ISI is capable of organising and performing field expeditions of high international standards. The activities of this unit are intensive and of high quality. In February, 1982 Congress they were able to collect well known. Investigators including a Nobel Laureate who do not waste their time in low standard meetings. To keep up with the development in international anthropological research, ISI urgently needs advanced laboratory equipment and personnel. (F)
2. Human Genetics unit has done work of highest quality and the results have appeared in international journals. (F)
3. The work of protein research unit is sound and well implemented and of growing international recognition. (F)
4. The expedition to Andaman Islands became a success due to reputation of ISI. As a result of the expedition and scientific findings, the Sentinel Island has become a nature sanctuary protected by law. (F)
5. The group has done good work on leaf protein. They have little scientific contact with other members of ISI. But the group is self sufficient and needs little help from others. The group has done thorough agronomic studies of crops grown specially for leaf protein production and potentialities of bye-products of leaves. The group should make serious study of water hyacinth as source of leaf protein. (F)

6. Collaborative research in the field of Human ecology in Anthropometry and Human Genetics Unit of ISI, and resulting fertilization of ideas between Anthropology and Ecology, has proved most fruitful and led to a number of interesting publications. (O)

7. The project on behaviour of field rodent provides data to overcome the speculation basis of computing field losses. This information on rodent attack on plants and grain hoardings seems to be valuable. The project for critical evaluation of on going development programmes has brought out serious implications of the genesis and pursuit of such activities on which the public funds are spent. The project on rice breeding in the botany Unit, where social relevance is aimed at in developing dual purpose (Grain-cum-straw) cultivar, is more useful for the locality and region. The other projects (inter and intra specific competition etc.) are quite relevant in this present era of mono-culture agriculture which is solely concerned with immediate profit from sale of inputs and return from outputs. The work of crop science unit appears to be quite interesting and providing basic information, which may be useful in the long run for developing approaches for better productivity, quantitatively as well as qualitatively. (O)

8. The scientists working in ISI have made substantial and significant contribution in theoretical and applied aspects of human biology. The Unit has done notable research in social biology. In the sphere of genetics diversity and evolution of morphological traits, the unit has done considerable work on the mode of inheritance of morphological and dermatographic characters within and between group diversities and spatial/temporal valuation in consanguinity, marriage distance and village endogamy. The work on dermatography done by the unit is very useful and is unique in India. Such studies should be continued expanded and brought on permanent footing. The research projects under Human Ecology programme dealing with ecology of Cavil Dhangas their distribution, dependence of nomads on the wild animal life, and other studies were quite interesting and need to be encouraged. Such studies are of great help to the Government and/or ecologists in framing policies for economic and social development including conservation of natural resources and wild life. ISI should also carry out cost benefit studies and develop suitable statistical techniques to estimate the parameters of interest when carrying out quantitative study of data. Under Human Adaptability programme, studies primarily aim at evaluating the health status of various human communities of India in relation of their physical, biological and socio-economic environment and effect of the impact of altitude on population. Some work has also been done on the relationship between socio-economic conditions and nutrition and health in Mahisya caste. However, nutritional status may be properly defined before testing various hypothesis. Under Biochemical Programme, the unit has undertaken as many as 17 research projects involving studies on distribution of biochemical genetic makers in various populations of India. The work has led to a large amount of information about the blood groups serum proteins and various enzymes for a large amount of communities and their relationship with some disease. Anthropogenetic surveys among endo-gamous groups in Delhi, Maharashtra and North Western India in collaboration with John Curtin School of Medical Research Canberra, Centre for Demography and Population Genetics, Houston and University of Bremen, West Germany have been very useful and should be encouraged. ISI has created awareness of Indian work in this field in USA and USSR. Several eminent scientists from these countries have been visiting this institute for looking into the work done in this field and entering into useful regular collaboration. On the whole, the work done by the Institute in the field of Anthropometry and Human Genetics has been very useful and is one of its own kind in India. Such activities should not only be continued but expanded and made permanent. (O)

9. The research work done and completed by ISI on the whole is generally good. But there is much scope for development and improvement of research priorities. The ISI should devise and utilize different effective statistical models like D^2 Statistics devised by Prof. Mahalanobis for calculating morphologic distances, for genetic distance analysis and for analysing existing genetical data on Indian population. The creation of such models would be significant contribution of ISI to the existing but limited tools. This would also help in qualification of existing genetic data and would be more insightful and in depth for anthropologists and geneticists. The study of characteristics like hand clasping, tongue rolling etc. is dubious. It would be desirable to study the inheritance of some malformation disease and syndrome. It would be interesting to know what genetic data can be utilized to derive conclusions as to population history and population affinities. It would be appropriate to study Haemoglobinopathy in North Eastern region of India with particular reference to Haemoglobin (HBE), Thalassaemic and malarial. Work on human adaptability by ISI is meaningful but need more systematic surveys in specific areas. Human adaptability in other climatic conditions besides high altitude is also important. Some systematic studies in human growth and development should be undertaken.

by ISI on both longitudinal and cross-sectional types and on wider scale and not confined to West Bengal. (O)

10. The collaborative studies carried out by the unit are commendable. The studies on palm leaves, natural history of weaver bird and others have revealed important phenomena and are interesting. The leaf protein unit had done good work and now they should concentrate on extraction of leaf protein concentrate, so that it could reach a marketable state. They should also develop animal feed. (O)

11. The unit has carried out studies in the field of invertebrate embryology which have yielded excellent results and have been instrumental for applied research using antibiotics and other chemical agent. This may open up new avenues in cancer research and fertility control. Mathematical and statistical models are also being evolved on fundamental growth processes. These studies have provided insight into the Biological system with important theoretical predictions. The unit is carrying out excellent research work in the field of embryology and should be provided with all the facilities for theoretical and investigational research. (O)

12. Most of the critical problems of ISI stem from enormously expanded activities in subjects (Botany, Zoology etc.) whose connection with statistics proper may be considered remote. The work turned out by most of the units is either mediocre or duplicate in minor key what other research institutions are better equipped to handle. (S)

13. The Institute has a large number of scientific units which are irrationally divided. It is obvious that no scientist can prosper in his scientific field unless he works in close collaboration with fellow scientists. Except Anthropometry most of the units in this division do not interact with statistics and, therefore, have no reason to exist in ISI. It is best if such units and scientists are shifted to reputed laboratories or institutions, which consist of these disciplines. (S)

14. Most of the workers in different science units of the institute do not apply any statistical techniques whatsoever in their work. Therefore, the argument that their inter-action with statistics is crucial is simply bogus. A whole wing of Biological Sciences was opened when the famous Prof. Haldane joined ISI. A large number of Assistants were recruited to support the famous scientist. Prof. Haldane left after a few years, leaving behind him a large number of very ordinary people with no claim to scholarly merit. (S)

15. The Anthropology and Human Genetics Unit of ISI has been a neglected child and in recent past had Heads not trained in physical Anthropology. It suffers from internal schism and lack of co-operation between themselves and with other members of ISI. These difficulties have resulted from poor section leadership, largely due to lack of recognition by the top administration. This is also true for other sections of Biological Sciences. Though statistics play important role in areas of all sciences, the main impetus in natural sciences is in the experimental method and these draw inspiration from like minded sciences and where each is accorded equal status. Therefore, these units should be transferred to institutions which have similar environment and Government should provide funds for continuation of the research projects presently going on. (F)

16. The work on field rodent is descriptive in value. They should develop models for forecasting rodent problem. The Botany Unit has developed new cultivar of rice which has certain desirable traits. The variation and asymmetry aspect of plants and animals investigated by the unit has no relevance to either in terms of understanding the origin of diversity or in terms of development of new or novel statistics to explain the origin and evolution of biological variation. The work of the unit on iron metabolism in chlorophyll mutant is also not substantial and is of little utility. Information gathered on inter and intra-specific competition is of generalised nature and not significant in terms of understanding inter-action between living organism. (O)

V. *Physical and Earth Science Division*

1. Scientists in Geological Unit are diligent and dedicated. This Unit should be provided with improved office and laboratory conditions for its improved efficiency and productivity. (F)

2. The work in sedimentation and sedimentology is of very high standard and acknowledged internationally. (F)

3. Numerous important and significant publications on Geology have emanated from ISI which are valued through-out the world. (F)

4. The group working in Geology has reached a good international standard. (F)
5. The Geology unit has done some excellent work particularly in field work and first discovery of dinosaur in India. However, its further development is bound to be inhibited by being part of ISI with which it has little interest in common. (S)
6. Some very significant contribution have been made in electronics which have brought recognition and reputation to the Institute. However, a leading engineering institution in the country would probably be more suitable for such investigations. (O)
7. The Electronic Unit of ISI has done excellent work in research and development in electronics and Computer Sciences, besides training a large number of Computer professionals since early fifties. It should introduce a course of Master or Computer Application. There should be re-organisation of activities of Computer and allied fields. (O)
8. ISI has made significant contribution in areas of quantum mechanic and Mathematical Physics. (O)
9. Electronic and Communication Sciences Unit is doing very useful work in speech recognition, pattern recognition and image processing. Collaborative research with statistics is also being carried out. There are many competent persons (technologists) who possess technical skill and knowledge of hardware portion of the electronic computer but their services are not fully utilized. This unit should extend help to computer unit. However, in Physical and Earth Sciences Division only the Geological study unit has generated new data which could be used for research and teaching purposes in statistics. Member of this unit are also collaborating in research in this country and abroad. (O)
10. Geological studies Unit of ISI has made significant research contribution in fields of vertebrate Palaeontology and Sedimentology. In former, it has made important discovery of Mesozoic reptile in P.G. Valley in Andhra Pradesh and has developed expertise of international level in reptile fossils and related areas of vertebrate Palaeontology. In areas of sedimentary petrology, they have, in collaboration with statisticians, developed new techniques for sampling and analysis of directional data which has wide applications in India and abroad. However, this unit has received a set back in recent years and there is considerable need for recruiting outstanding scientists in the field. GSU has potential of developing as a National Centre for research in the field of Mathematical Geology. (O)
11. From humble beginnings twenty five years ago, today GSU has blossomed into a well-knit school, commanding prestige in national and inter-national level. The present advancement of our knowledge on the geology of the Pranhita-Godavari Valley is largely based on the work done by the GSU. The GSU has not only erected the Precambrian and Gondwana litho-stratigraphy in the valley, but as also brought into focus the complex faces of mosaic generated by near shore and fluvial processes. Now that Stratigraphic foundation has been laid and lines of approach have been defined, the unit should attempt to complete the stratigraphy in the remaining parts of the basin. It is high time that the unit should publish a synthesis of the stratigraphic studies together with the geological maps so far made by it and publish in parts in different journals. The dinosaur (*Barapasaurus tageri*) displayed in GSU Museum is a tribute to the sustained research efforts of the unit in the field of vertebrate Palaeontology. This unit, today, is considered to be a premier centre of research in vertebrate Palaeontology in India and abroad. Research by the Unit has thrown new light on the evolution and diversification of Mesozoic Vertebrates. Credit goes to it for the discovery of the first fauna of Permian reptiles and *Goelacanth* fish fossils in the Indian sub-continent as well as for the discovery of pelomedused turtle, the oldest occurrence of this lineage to turtle anywhere. This rich collection of fossils vertebrate has provided an excellent biostratigraphic basis for the classification of upper Gondwana rock in India. The GSU has made significant contribution on sedimentological evolution of the Gondwana and Preterzoic sediments in the valley with reference to their depositional, environments and palaeocurrent systems. In the course of studies of local importance, the unit has made certain significant findings of general and wider interest. The highlights in this regard are (i) development of statistical techniques for analysis of cross bedding data, (ii) pebble orientation in response to unidirectional current, (iii) the discovery of stromatolites in the Pakhal Group, (iv) sorting of grain size during sediment transport, (v) origin of lime pellet rock an marine an non-marine traces of fossils. In recent years, the academic health of the sedimentology group, in particular, has been affected by departure of persons holding senior positions. It is understood that no senior worker participated in research on Preterozoic stratigraphy and

sedimentation since 1966. Same is true for Gondwana sedimentology. This vacuum should be filled up immediately. The Collaboration between workers of this unit and statisticians seems to have faltered in recent years and attempts should be made to strengthen such collaboration. There is possibly no other Institute in the country or outside which can take up such studies the way ISI can afford to do. The GSU may also explore possibility of collaboration with organisations outside ISI. Its moderate size is asset for the Unit, therefore, there is no need of augmenting scientific manpower except filling up senior posts fallen vacant. However, there is considerable need for strengthening minimum infrastructural facilities for research. It seems ironic that despite being one of the leading schools in its own field, the GSU has no teaching programme of advance level. The unit has responsibility of passing over hard-earned expertise to the new generation. It should, therefore, induct research fellows and conduct Ph. D. programme. (O)

12. The ISI is pursuing high level research activities in the field of vertebrate palaeontology, stratigraphy, Sedimentology and Structural Geology. It has made important discovery of uncommon faunas and fossils first time in India and their value in detailed taxonomic studies are well demonstrated. Their discovery may help re-construct, certainly in better way, a model of the life during the Gondwana period, their movement, migration and ultimate extinction. The ISI has also made important and significant contribution to sedimentology and structural geology. The Geology Unit should corroborate with similar units in other institutions and should take up only as much project as it could handle in a certain time limit. (O)

13. In Electronic Unit, with the exception of one or two faculty members, the work appears to be directionless, mostly mediocre and totally unrelated to need and requirements of ISI. Such a Unit would find proper scope of growth within a institute of technology. Most of the critical problems of the ISI stem from such and some other activities in subjects whose connection with statistics proper may be considered remote (e.g. physics, chemistry etc.). (S) tries

14. The ISI has failed in its plan to develop computers over 4 decades. It has marginal contribution in digital system and computer hardware. It is unable to cope up with rapidly changing technology like IIT's. Any research activities carried out by it, would, therefore, suffer from technical obsolescence and there is hardly justification in continuation of this type of work, which has hardly any relevance in a statistical, mathematical and theoretical oriented Institute. Theoretical Physics and fluid mechanics are not the part of Electronic Unit. The electronic activities may be shut down and a division of mathematical sciences re-organised with talented people from Math Stat, Applied Statistics and Computing Unit, Electronic Unit and electronic and Communication Sciences Units. (O)

15. The claim of ISI that the work of Electronic and Communication Sciences Unit would contribute to the development of Third World only reveals incomplete understanding of both cybernetics and problems of Third World countries. The employment of so many engineers is questionable. There is also very little teaching, research or developmental work. The only contributions coming from ECSU worth mentioning are purely theoretical in nature and could be re-organised into the mathematical sciences programme. Compared to its activities, the Unit is overstaffed. This Unit should be reorganised with E.C.M.S. and A.S.G. Units. (O)

16. Certain studies like particle physics, cosmic rays, nuclear physics have been introduced in the curricula. The experts should examine how far these diverse disciplines enrich and diffuse the core discipline of statistics. Besides theoretical projects other application oriented projects which are relevant to the need of the country in general should be undertaken. (O)

17. Under Electronic Unit there are two sub-units whose activities are closer to physics than electronics. Therefore, Theoretical Physics and Fluid Mechanics sub-units should be merged with Physics Units. (O)

18. The Electronics and Communication Science Unit and Electronic Unit should be integrated and specialized Computer professionals should be recruited from India and abroad and there should be promotional avenues for them. (O)

VI. Statistical Quality Control and Operations Research

1. The SQC division of ISI has done and is continuing to do valuable consulting and servicing work for industry. The size of SQC Development fund is evidence of this fact. However, in all these years the work of the SQC Division has not contributed to any important development in the field. The reason for this is exclusive emphasis on consultancy work and isolation of the SQC faculty from

statisticians and probabilists. The consultancy experience and expertise of the present SQC Division is such that the question of separating SQC from ISI might be seriously considered as self-supporting or profitmaking organisation. In such a situation a small OR department may be setup to carry out theoretical research. (S)

2. The work of SQC/OR Division is still good. (S)
3. It would be the deathnell of SQC if it was made another Government Corporation. All that it should do is the promotional work. If SQC has not caught up then it is the production manager who is the main impediment in non-promotion of SQC. The SQC should be within a enterprise and not be provided by outsiders. (S)
4. Serious aberrations were introduced in ISI policy during seventies when it went all out for long term consultancy contracts with some public sector undertakings, thus restricting their services to selected few. It started low level evening courses and in-plant training in SQC/OR to non-statisticians (like engineers etc.) and thus created a feeling among industries that they can run their SQC cell's with engineers recruited mainly for engineering activities but with their half-baked or worse knowledge of statistics. Even in high level courses the engineers were admitted along with M. Stat students resulting in loss of job opportunities to professional statisticians. In view of the above it is suggested that emphasis should be laid on high level training and research in SQC or OR. All new recruitments should be gradually tapered off. If this results in some of the workers getting absorbed by clients this should be welcomed, as the policy of the Institute should be to release its output into the market keeping with it only the minium required to undertake the initial consultancies and to engage in research and high level teaching. It is an erroneous idea to 'separate' SQC and OR Division from the ISI and ask it to fend for itself. This is not feasible because the bulk of the revenue for this division comes from one or two major contracts only (BHEL is the major contributor) and when the client calls it a day to the contract, the division will be left out in the lurch and will again approach the Government to support it. And there is no reason why the Government should support private consultancy. On the other hand, it is undesirable and even a contradiction in terms that a statistical wing of ISI is to be separated from a Statistical Institute, while keeping all and sundry in the ISI. If individual workers of SQC and OR Division want to secede and start their own consultancy services, there is nothing to be alarmed about and this does not in anyway hurt the objectives of the Institute. (S)
5. The synergism expected from the operation of SQC units within ISI where academic research on statistics and operations research was going on has not materialized to a great extent. Whether SQC division should be divorced from ISI or whether it should be consulting service by ISI run on a commercial non-subsidised basis is a debatable question. In my opinion the promotional period for SQC should have been over long ago. There must be something wrong with these units if after opeprating over a quarter of century they cannot stand on their own. (S)
6. SQC Unit, whose function is not primarily academic should be dissociated from ISI. (S)
7. The Scientists at ISI are weak in area of appling statistics to actual problems and in statistical consultancy. Quality control unit did not impress me mathematically. (F)
8. The ISI which has mastery of theoretical aspects should apply it for doing applied research in the field of OR. Since OR is a relatively new field, there is need for creating a leadership of the same calibre as that of statistics and maintain the tradition of excellence in OR as well as Statistics. (F)
9. SQC activitties are like project activities and a research Institute like ISI should not be burdened with this type of work. The SQC Units should be located in places where there is concentration of industries. SQC activity must not be financed by Government and they should make their own earnings. (O)
10. The Indian Statistical Institute can provide consultancy services through its Statistical quality Control units to Industrial Organisations in areas of statistical quality control, operations research and managerial decision making. The scope of these activities should be widened so that such work can be taken up on a sound business lines. For this purpose there should be a central office of ISI which secures contracts and directs them to appropriate units and collects necessary fees. (O)
11. Statistical Quality Control and Operations Research work done by ISI should be priced in a cometitive manner and conducted on self financing basis. Provision should exist. to keep academic

excellence intact in all such work and the tendency to follow easy path of commercial consultancy should be avoided. (O)

12. It may not be entirely advisable at this stage to operate SQC services on commercial or self-financing basis. This should be kept in view particularly for small, medium and developing industries who have a large contribution to make in the quality promotion in our country. (O)

13. The SQC division of ISI has done research work in a number of fields like inspection plans, acceptance sampling, equitable quality levels, but reliability and process control which are also part of SQC, remain to be of little interest to the SQC division. The SQC units have failed to instal total quality control system in industries. There is, therefore, urgent need for enlarging and strengthening research areas in SQC if necessary by providing requisite training to SQC staff and organising seminars for exchange of ideas. The syllabi of various courses in SQC also need revision to incorporate latest techniques in SQC. The SQC units of ISI should work for preparation of statistical standards and quality control manuals for Indian industries. The concept of quality control circles which has contributed substantially towards increase of productivity in Japan should be introduced in Indian industries. (O)

vii General comments about ISI

1. ISI has done high quality research work and has able scientists. (F)
2. ISI has excellent academic atmosphere and broad range of activities. It has attained a high standard in these areas. (F)
3. ISI continues to have the highest respect and admiration of statisticians throughout the world. Its students are of highest quality. (F)
4. ISI is unique Institution among statistically based institutions which have made original contribution to sister sciences. (F)
5. ISI has stimulating, productive and intellectual atmosphere. It is one of those major institutions that are capable of keeping high prestige of India in the field of teaching and research. (F)
6. Academic atmosphere of ISI is characterised by mutual criticism and active participation. Here the statisticians, mathematicians and other scientists understand very well the problem of each other. This is exceptional in the present world of specialization. (F)
7. ISI indeed is an Institution of national importance and it deserves to be supported as broad educational institution rather than narrowly as a statistical institute. (F)
8. There is close collaboration between different disciplines, particularly between professional statisticians and scientists belonging to different disciplines, the fact could be attributed to unique structure of the Institute with units in every specialization working in close collaboration with mathematicians and statisticians. This is one of the reasons for the very high international reputation of the Institute. (F)
9. ISI has very agreeable and rewarding community of scientists and it should be maintained by Government as independent and self governing institute. (F)
10. The brain power in ISI is quite knowledgeable and level of everything is outstanding, specially in theoretical field. (F)
11. The library facilities are very good although now a-day it is very difficult for any library to keep abreast of the flood of publications. (F)
12. The spirit of enquiry and the ethics of scientific investigation that Prof. Mahalanobis had inspired are still throbbing with full vigour. ISI is able to provide inter-disciplinary co-operation and collaboration in time of need (o)
13. The research activities in diverse fields should be continued as these have contributed greatly in respective fields. (o)
14. The academic atmosphere of the Institute is excellent. There is good deal of team work and much exchange of views and comments. (O)

15. ISI should be source of information, professional competence and fearless criticism, suggestion and advice in national statistical affairs. Its professional independence should be maintained at all costs. Decentralization must be brought about by encouraging the growth of similar organizations at state level to tackle regional and local level problems. (O)
16. In spite of the international competition, the ISI continues to attract scholars of exceptional merit. Some credit goes to ISI for allowing the scholars academic independence and for creating environment in which scholarship is truly valued. The academic work carried out in the Institute is quite impressive. It continues to produce outstanding Ph. D's. (O)
17. The phenomenal growth of ISI was entirely due to the vision of Prof. Mahalanobis. It later on became famous for excellent work both in variety and depth. It is now difficult to maintain its reputation in all its diverse activities because of changed circumstances, increased uncertainties and lack of scientific leadership which ISI enjoyed before. A time has come for ISI to define its objectives clearly, expand only in areas, where it can develop special expertise and create atmosphere conducive to productivity and attractive to scientists. (S)
18. The idea of centre is good but the work of the centre should be designed to serve the regional educational training and research needs in statistics. The ISI has developed problems due to its rapid expansion of courses and non-scientific staff. (S)
19. Success of multi-locational institute has greatly been reduced by lack of operational autonomy and thoughtless expansion of centres. It should, rather, function on the pattern of IIM or IITs. Its administration is poor and has no guidelines. Its Accounts Department suffers from general weakness, yet passing it to C & AG would be disastrous. (S)
20. The institute has been organised without absolute authority of the Head of the Unit level upward. It was thought that new constitution would provide for a greater say for the different sections of the workers in the decision making process. To make the situation really democratic a lot more steps are still needed. The Divisions were formed by ad-hoc orders depending more upon local conveniences and interests rather than on some logical grounds. The membership of DCSW was re-defined to include senior technical assistant in the category of research workers when they hardly carry out any independent research. They were included simply to act as vote bank for the selection of Professor in-charge. The research proposals after approval of TAC & DCSW have to face number of hurdles at the implementation stage like late approval of the project and its budget, non availability of technical and non-technical assistance, tabulation etc. Further the person conducting the project has no financial authority. All the powers remain with the Head. Informality rules the institute and decision on various matters depends upon the instantaneous judgement of the power that be. There is no uniform allocation of teaching load and in certain cases junior technical Assistant, the lowest category of workers, take the classes. It would be obligatory on the part of teachers to take a minimum of one course. There is need of reform, e.g. the budget proposals should be projectwise and be made known early, there should be institutional mechanism for equitable distribution among permanent assisting staff and among the research workers, the membership of DCSW should be re-defined to include only the independent research workers, approval of any project of any scientist should be based on past performance, the concept of unit should be done away with, the professor-in-charge should be made administrative Head, with decentralization of authority at the level of Professor, Associate Professor and lecturer. (S)
21. The teaching load is negligible in scientific units other than Stat-math, Applied Statistics and Economics. Even among these units, the teaching load is unevenly distributed and allocated on informal basis. The non-teaching scientists in Academic Council decide all matters relating to courses and educational matters. At the time of promotion only the research work is evaluated. (S)
22. In ISI the research is based on individual leadership and activities of the unit have been developed around renowned individual scientists who had already proven their work through research. Such scientists cannot work if one junior person who had done practically nothing despite repeated persuasion becomes Head of the Unit suddenly by vote. (S)
23. The ISI has spread itself too thinly in its scattered regional locations in regional dispersion restructured by including them to specialize in particular disciplines in which they have a comparative advantage. Once organized this way, each centre should have virtually complete autonomy even though financial resources would come from a centralized budget. The University of California has several campuses all over the State of California, but they allow a great deal of autonomy to each campus, even though the ultimate budgetary source is the same. They also have funds for inter-

campus cooperative research or teaching programmes and interchanges. One way of attracting bright Indian academicians from abroad (which has been effective at the Tata Institute of Fundamental Research, Bombay) is to have a very generous leave policy, allowing them to go on extended leave (without pay) fairly frequently. At the University of California at each academic rank (Assistant or Associate or Full Professor) there are about six or seven salary steps. A teacher's research and teaching record is evaluated every three years (both by internal and external referees) and on that basis he is allowed to cross each salary step. Some such evaluation mechanism will help induce more productivity at ISI. (S)

24. The new democratic constitution adopted by ISI has led to a state where proposals are accepted or rejected not on their contents but on the strength of voice. There is no external examiner in ISI and this has affected the standard of education. The centres lack autonomy and depend on Calcutta for project approval (S)

25. The training of large number of Social Scientists, administrators and other professionals for reorienting their skill to problem of development has not been given serious attention. The Professor in-charge is unable to coordinate because of split locations. Such arrangements need re-evaluation. (S)

26. At one time the institute had scholars of world eminence, but such scholars are now very few. The bulk of scientific workers (except Stat-Math & Applied Stat) are fairly of low level and would not pass a Selection Committee in a third rate university. In the institute the research proposals are discussed in public meeting which inhibits any kind of criticism from colleagues and external experts. Own request transfers are being allowed at the cost of the Institute. Research scholarships are given for an un-limited period of time. Moreover, any number of changes of topic and guide are permitted. The TA & DA rules followed by the Institute are not very strict. The allocation of funds to the Institute separately for plan and non-plan is not understood, as the entire research work should come under non-plan. There is a very large fleet of cars and jeeps without any proper rules that may be followed effectively about the use of these vehicles. There are many telephones installed at office cost in the houses of various staff members, not as regular facility going along with certain posts. Residential quarters are allotted without any principle or rule. (S)

27. The vaunted new constitution of the ISI is likely to prove one of the biggest obstacle to any serious reorganisation. The documentation Research and Training Centre, Bangalore has had virtually no contact with the rest of the Institute. Its work and training has been entirely autonomous. No statistician at any of the centres of the ISI has had any professional interaction with the DRTC and the statistical content of their training programme was considered sub-standard by the ISI's Academic Council. The termination of its association with the ISI may be considered seriously. A special feature of the ISI more so than in other scientific institutions in India is the disproportionately large number of non-scientific employees. At one time, the ratio of non-academic to academic workers in the ISI was as high as 6 to 1. Last year fully 1/3 of all ISI employees were the so-called Class IV workers (the ratio may be higher in Calcutta). Even though the ISIWO leadership recognizes the basic fact that the well-being of all workers depends on continued growth of the ISI as a scientific institution, in the short run, the interests of the non-academic workers do not always coincide with the scientific interests of the Institute. (e.g., In 1977-78 the ISIWO leaders were vehemently opposed to the creation of the Bangalore Centre and in 1982, the new leadership of the ISIWO was equally vehemently in favour of its rapid development). Naturally, such a situation does not encourage innovative policy or the making of bold decisions. The best scholars (senior as well as junior faculty) tend to turn their backs in disgust at the "politics" in the Institute and many of them seek jobs abroad at least partly on that account. (S)

28. There is a high degree of in-breeding of recruitment of faculty in the Stat-Math Division. Almost every Ph. D. produced from this Division gets appointed as lecturer with a large number of advance increments. Of the 16 additions to this faculty during the last 6 years, there are 11 ISI products, of whom 9 are Mathematicians and only two Statisticians. Such a high degree of in-breeding in a scientific institute is likely to lead to sterility. More than 80% students in graduate courses and 60% students in post graduates courses are from Calcutta which is highly undesirable for a National Institute. It is running certain courses (M. Tech. etc.) where it has no adequate qualified staff. The total internal examination with liberal dose of external moderation is affecting the standard of education. The direct admission of BA/BSc. who are exceptionally bright in mathematics is permitted which is highly undesirable. In Ph. D. course, even the lecturers supervise and some time number of scholars per supervisor is large. Only Associate Professor and above should be allowed to supervise and number of scholars should be restricted to 30. The open professional examinations have lost their attraction due to lack of necessary publicity and poor leadership. In new

democratic set up Professor-in-charge rotates every two years and Director every 5 years yet the Head of Unit remain as pole-star. They are the ones which indulge in empire building. The majority of scientists outside Statistics, Mathematics and Economics (SME) sectors do not participate in teaching yet enjoy UGC's scales. Also strict UGC norms are thrown to wind in non SME Sector. The ISI has also monstrous growth in administration and supporting staff, particularly at class III and IV level. It is not healthy to dump so many auxiliary staff especially when there is no expansion of legitimate scientific activities. The stipend to M. Stat students remained static some past so may years when the stipend to research scholars and diploma students were raised from Rs. 250 to Rs. 600/-. (S)

29. Though there is nothing lacking in leadership at the top, in some parts of ISI history has brought a certain loss of role which has resulted in loss of middle rank scholars and brain drain. (F)

30. The Institute is in sad state of affairs because it expanded to embrace a range of disciplines suitable to make it a university but without changing its main reason for existence to promote the study and dissemination of knowledge of Statistics. Its original aim to undertake "research in various fields of natural and social sciences was viewed only in the light of the mutual development of statistics and these sciences". (F)

31. Many inadequately qualified persons have got admitted to ISI and because of internal misunderstanding, many distinguished scientists have left the Institute. There is even deterioration in quality at senior level. In the meeting of the Council some decisions are taken arbitrarily without proper discussion. The council is unduly large with diverse and conflicting groups. The productivity of the Institute has gone down and it suffers from indiscipline. There is an unduly large number of daily wage employees. (O)

32. Certain aspects of present set up and activity of the Institute need proper attention so that it can work upto the national expectations. Its constitution should be amended to restrict the representation of ISI employees in policy making body so that objectives of the Institute are not lost in petty politics. (O)

33. There has been large migration of eminent statisticians. The reason for migration needs investigation and steps taken to check it. (O)

34. In ISI there is high ratio of other workers to scientific workers, who dominate the activities of the Institute. The Scientists are unhappy about the promotion and appointment policy. (O)

35. ISI has diversified in multi-disciplinary areas and its centres are spread in other cities, which lack co-ordination with each other. There is also need to complete and publish the results of the on going projects so that these do not remain only of historical importance. (O)

36. Audit should not only ensure that expenditures are made according to rules, but it should also be professional enough to evaluate impact of every expenditure decision made. For such audit C & AG is hardly the agency to handle such situation. There should be strict accountability between Director and faculty. The organisation structure should be modified so that researchers and users have easy access to support facilities. There should be more mixing of researchers but at the same time it should be ensured that these do not harm in professional or academic field. (O)

37. About 50% of the research workers of the ISI do not have research degrees. In several units, there is no Ph. D. Almost all scientific workers of ISI joined (except few exception) ISI through back-doors. Professor Mahalanobis trusted and respected scientists. Scientists of ISI have now been reduced to science boys and they are now required to sign the register along with helpers and gardeners. The big budget project means big research and this is no fault of scientist but bureaucracy. The evaluation of scientist is based on number of research papers and quality is not very important. (O)

38. The students are attracted to ISI not because of the excellent academic standard but because all students get stipend. Even IITs do not offer stipend to all students. (O)

39. Audit should not be given to C & AG which is clerical in nature. There should be complete decentralization in the Institute and centres located outside Calcutta should have as much autonomy as possible. (O)

40. The ISI is not multidisciplinary Institute. It is an Institute basically for the development of Theoretical and Applied Statistics. (O)

41. After departure of Prof. Mahalanobis and Prof. C. R. Rao, there has been constant deviation from the research policies and there was full erosion of discipline. The finest Institute of the nation is virtually under collapse. Whatever output is there is the result of devotion of a few scientists and technical workers who are maintaining the traditions of ISI. In the present set up the Professor-in-charge hardly speaks in the Council against Administration which is Headed by the Director who happens to be the boss. The General Body which according to the constitution of ISI is the supreme body is practically defunct. The Professors-in-charge have been virtually been made Heads of Scientific Divisions illegally and Heads have been deprived of all powers. The Head should be made accountable to Director and should be given adequate administrative and financial powers. Workers having competence computers have been promoted as Senior Technical Assistants and made Scientists members DCSW. There is malpractice in claim LTC and medical bills. The overtime bills of the accounts department are shocking. There are mass promotion of technical and administrative workers every three years and there is no norm for promotion. The aspirations of these workers have been raised to so high a level that they cannot be made to work. In such cases, in service training and education would have been more useful. Several pay scales which do not exist in Pay Revision Committee report have been introduced for white collar employees. Some scales of pay of scientists which were to be reviewed after adoption of UGC Scales during next year are yet to be reviewed. It was agreed that the Institute would regularized residual casual workers and would stop further recruitment of casual workers. After that decision, perhaps 100 more casual workers have been recruited and regularised and a batch is still to be regularised. The persons not working upto the satisfaction of the authorities are deprived of all assignments but accorded full salary. Such situations could have been avoided by proper administrative actions. The scientists in JCC should be elected ones and not the representatives of chairman or ISIWO which by its democratic nature contain a large number of class IV staff. (O)

DIVISION-WISE CENTRE-WISE SCIENTIFIC AND NON-SCIENTIFIC STAFF IN
INDIAN STATISTICAL INSTITUTE ON MAY, 1953

| Sl. No. | Division | Academic Scientific Staff | Technical Staff | Office Staff | Non-Clerical Staff | Maintenance Staff | Service Staff | Total (All categories) |
|---------|---|---------------------------|-----------------|--------------|--------------------|-------------------|---------------|------------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 1. | Theoretical Statistics and Mathematics Division | 43 | 3 | 4 | 6 | .. | .. | 56 |
| | (i) Calcutta | 29 | 3 | 4 | 6 | .. | .. | 42 |
| | (ii) Delhi | 10 | .. | .. | .. | .. | .. | 10 |
| | (iii) Bangalore | 2 | .. | .. | .. | .. | .. | 2 |
| | (iv) Hyderabad | 1 | .. | .. | .. | .. | .. | 1 |
| | (v) Madras | 1 | .. | .. | .. | .. | .. | 1 |
| 2. | Applied Statistics, Survey & Computing Division (Calcutta only) | 28 | 30 | 8 | 7 | .. | .. | 73 |
| 3. | Social Sciences Division | 53 | 75 | 25 | 19 | .. | .. | 172 |
| | (i) Calcutta | 37 | 60 | 25 | 19 | .. | .. | 141 |
| | (ii) Delhi | 15 | 8 | .. | .. | .. | .. | 23 |
| | (iii) Bangalore | 1 | 1 | .. | .. | .. | .. | 2 |
| | (iv) Girdhi | .. | 6 | .. | .. | .. | .. | 6 |
| 4. | Biological Sciences Division | 11 | 23 | 5 | 6 | 7 | .. | 52 |
| | (i) Calcutta | 11 | 23 | 5 | 6 | .. | .. | 45 |
| | (ii) Girdhi | .. | .. | .. | .. | 7 | .. | 7 |
| 5. | Physical & Earth Sciences Division (Calcutta only) | 38 | 26 | 9 | 12 | .. | .. | 85 |
| 6. | Teaching & Training Division (Calcutta only) | 1 | .. | 15 | 13 | .. | .. | 29 |
| 7. | Statistical Quality Control & Operation Research Division | 54 | 4 | 23 | 24 | 2 | .. | 107 |
| | (i) Calcutta | 11 | .. | 7 | 8 | .. | .. | 26 |
| | (ii) Delhi | 8 | .. | .. | .. | .. | .. | 8 |
| | (iii) Bangalore | 8 | 1 | 2 | 2 | .. | .. | 13 |
| | (iv) Hyderabad | 5 | .. | 2 | 2 | .. | .. | 9 |
| | (v) Madras | 8 | 1 | 3 | 3 | 2 | .. | 17 |
| | (vi) Coimbatore | 3 | 1 | 2 | 2 | .. | .. | 8 |
| | (vii) Trivandrum | 3 | .. | 2 | 1 | .. | .. | 6 |
| | (viii) Bombay | 5 | .. | 3 | 3 | .. | .. | 11 |
| | (ix) Baroda | 2 | 1 | 1 | 2 | .. | .. | 6 |
| | (x) Pune | 1 | .. | 1 | 1 | .. | .. | 3 |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|--|---|-----|-----|-----|-----|-----|-----|------|
| 8. Library, Documentation & Information Science Division . | | 1 | 92 | 9 | 20 | .. | .. | 122 |
| (i) Calcutta | | 1 | 84 | 9 | 20 | .. | .. | 114 |
| (ii) Delhi | | .. | 7 | .. | .. | .. | .. | 7 |
| (iii) Girdhi | | .. | 1 | .. | .. | .. | .. | 1 |
| 9. Documentation Research & Training Centre (Bangalore only) | | 5 | 2 | 3 | 6 | .. | .. | 16 |
| 10. Administration | | .. | .. | 161 | 124 | 365 | 169 | 819 |
| (i) Calcutta | | .. | .. | 131 | 107 | 306 | 148 | 692 |
| (ii) Delhi | | .. | .. | 19 | 11 | 31 | 14 | 75 |
| (iii) Bangalore | | .. | .. | 17 | 3 | 7 | 5 | 22 |
| (iv) Girdhi | | .. | .. | 4 | 3 | 21 | 2 | 30 |
| Total (All Division/ Centres) | | 234 | 255 | 262 | 237 | 374 | 169 | 1531 |

SOURCE : ISI letter No. CAF/16-10/236 A, dated 26-5-83.

CENTRE-WISE SCIENTIFIC AND NON-SCIENTIFIC STAFF OF INDIAN STATISTICAL INSTITUTE AS ON MAY, 1983

| Sl. No. | Division | Academic/Scientific Staff | Technical Staff | Office Staff | Non-Clerical Staff | Maintenance Staff | Service Staff | Total (All categories) |
|---------------------|------------|---------------------------|-----------------|--------------|--------------------|-------------------|---------------|------------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 1 | Calcutta | 156 | 226 | 213 | 198 | 306 | 148 | 1247 |
| 2 | Delhi | 33 | 15 | 19 | 11 | 31 | 14 | 123 |
| 3 | Bangalore | 16 | 4 | 12 | 11 | 7 | 5 | 55 |
| 4 | Hyderabad | 6 | .. | 2 | 2 | .. | .. | 10 |
| 5 | Madras | 9 | 1 | 3 | 3 | 2 | .. | 18 |
| 6 | Coimbatore | 3 | 1 | 2 | 2 | .. | .. | 8 |
| 7 | Trivandrum | 3 | .. | 2 | 1 | .. | .. | 6 |
| 8 | Bombay | 5 | .. | 3 | 3 | .. | .. | 11 |
| 9 | Baroda | 2 | 1 | 1 | 2 | .. | .. | 6 |
| 10 | Pune | 1 | .. | 1 | 1 | .. | .. | 3 |
| 11 | Giridih | .. | 7 | 4 | 3 | 28 | 2 | 44 |
| Total (All Centres) | | 234 | 255 | 262 | 237 | 374 | 169 | 1531 |

- N.B.
1. Academic or Scientific staff include lecturer their equivalent and above.
 2. Technical staff include technical Assistant and Research Assistant.
 3. Office staff includes Junior Assistant to executive staff.
 4. Non-clerical staff includes, Record attendant, helper.
 5. Maintenance staff include staff engaged in maintenance of campus.
 6. Service staff those engaged in service of transport, telephone, hostels etc.

Appendix— XVI

NUMBER OF COURSES PROVIDED AND STUDENTS ADMITTED IN THESE COURSES
DURING 1980-81 AND 1981-82

| Name of the Course | Duration | No. of students admitted | |
|--|-------------|--------------------------|---------|
| | | 1980-81 | 1981-82 |
| 1 | 2 | 3 | 4 |
| 1. Degree Courses | | | |
| 1.1. B. Stat. | 3 yrs | | |
| 1st Year | 1 yr | 18 | 28 |
| 2nd Year | 1 yr | 21 | 11 |
| 3rd Year | 1 yr | 26 | 21 |
| 1.2. M. Stat. | 2 yrs | | |
| Previous Year | 1 yr | 16 | 27 |
| Final Year | 1 yr | 30 | 30 |
| 1.3. M. Tech. | 2 yrs | | 11 |
| 2. Diploma Courses | | | |
| 2.1. Post Graduate Diploma in Statistical Quality Control and Operations Research | 1 yr | 25 | 14 |
| 2.2. Part-time Diploma Course in Statistical Quality Control and Operations Research | 2 yrs | 43 | 47 |
| 3. Certificate Courses | | | |
| 3.1. Evening Course in Statistical Methods & Applications | 1 yr | 72 | 51 |
| 3.2. Course in Operation Automatic Data Processing Equipments | 1 yr | 11 | 11 |
| 3.3. Evening Course in Statistical Quality Control | 6 months | 30 | 30 |
| 3.4. Intensive Course in Programming and Applications of Electronic Computer | 3 months | 31 | 37 |
| 4. International Statistical Education Centre Course | | | |
| 4.1. Regular Course | 10 months | 22 | 28 |
| 4.2. Special Course for Individual Students | 3-12 months | 2 | 6 |
| 5. Associateship in Documentation and Information | 2 yrs | 12 | 10 |
| 6. CSO Courses | | | |
| 6.1. Junior Certificate Course in Statistics : | | | |
| Regular Course | 5 months | 11 | 19 |
| Special Course | 3 months | NA | NA |

| | 1 | 2 | 3 | 4 |
|--|---|----------|-----|-----|
| 6.2. ISS Probationers Course | | 3 months | 19 | 37 |
| 7. <i>Professional Examination</i> | | | | |
| 7.1. Statistical Assistantship Certificate | | .. | 9 | 10 |
| 7.2. Junior Diploma | | .. | 35@ | 30@ |
| 7.3. Senior Diploma | | .. | 14@ | 8@ |
| 8. Research Courses | | 1-2 yrs | 93 | 70 |

@ Persons appeared in examination.

STATEMENT SHOWING THE REMARKS OF STATUTORY AUDITORS IN THE
LAST 5 YEARS AND ACTION TAKEN THEREON

| Sl. No. | Auditor's remarks | Year(s) of Audit in which the remarks appears | Action taken |
|---------|--|---|--|
| 1 | 2 | 3 | 4 |
| 1. | Though National Sample Survey Unit has been separated from the Institute with effect from 1 June 1972, the consequential changes with regard to assets and liabilities taken over by them have not taken place in the accounts as yet. As such balance sheet as at 31 March 1982 of the ISI and income and expenditure account for the year ended on that date do not give a live and fair view to the extent of this unadjusted position. | 1981-82 1980-81 1979-80 1978-79 1977-78 | A list of assets taken by NSSO has been procured. Further, the Institute has by now prepared a total list of ground stock of fixed assets, which together with the fixed assets list forwarded by NSSO will reveal the total picture. Adjustment will be made in the books of account of ISI after obtaining due approval of the Council of the Institute. |
| 2. | Receipts of deposits and/or confirmation letters could not be produced for verification except for Rs. 43,692.41 out of Rs. 85,151.57. | 1981-82 1980-81 1979-80 | Most of the balance amount pertains to deposits paid by Institute to Electricity undertakings in Calcutta and other centres, for power connection some twenty to thirty years ago and the receipts are not traceable. The Finance Committee of the Institute has suggested that the Institute should write to each of these organisations to confirm the deposit amounts lying with them and their replies may serve as records for verification for future. Action is taken as suggested by Finance Committee. |
| 3. | In the absence of confirmatory letters, the balances in the following accounts remained unverified (a) Loans & Advances, (b) Deposits & other Liabilities, (c) Claims recoverable, (d) Dues from Regional Provident Fund Commissioner. | 1981-82 1980-81 1979-80 1978-79 1977-78 | Records with complete details on the transactions under the two account heads mentioned are available and have been shown to the auditors. Considering the number of persons/parties involved in the transactions, it is very difficult to write to each of the persons/parties at the end of the financial year and obtain confirmation letters of the balances due to the Institute. The records available with the Institute will serve to recover all dues from the employees of the Institute and other outside parties in respect of the transactions in the past six years. In respect of earlier transactions, the amount involved is relatively small and action will be taken to write to the parties concerned for adjustment of the amounts due. |

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| 4. | No list in support of Relief (Flood, draught) Loan Account Rs. 2,50,216.51 was produced for verification. | 1981-82 | The list has been subsequently shown to the Auditors and the remark has been withdrawn by them through a letter addressed to the Institute in April 1983. |
| 5. | The Institute had no internal Audit system during the year under audit. The Internal control procedures should be made more effective through internal audit. | 1981-82 1980-81 1979-80 1978-79 1977-78 | An Internal Audit Cell has been newly formed and it has started functioning since December, 1982. The audit firms are being consulted to ascertain the functions of Internal Audit to enable the Institute exercise more effective internal control procedures. |
| 6. | The quantity of cement issued to contractors has not been linked-up with the quantity deducted from their bills in respect of Delhi Centre construction work. | 1979-80 | It was found that the system of accounting of issue of cement to contractors in Delhi Centre was different from the one adopted at the head quarters. The system in Delhi Centre has now been changed so as to provide an automatic linkage for reconciliation of the quantity of Cement issued to the contractors and the quantity deducted from their bills. The auditors are now satisfied with the system and such remarks do not appear in the subsequent years. The value of building completed during any year and put to use, is now being ascertained and segregated as suggested by the auditors. |
| 7. | Nissen Hut at Delhi (written down value as on 31-3-80 of Rs. 543.39) has ceased to exist and the amount should be written off. | 1979-80 | The amount of Rs. 543.39 appearing in the books of accounts as the written down of Nissen Hut in Delhi as on 31-3-80 has since been written off as suggested by the auditors, with the approval of the council of the Institute. |
| 8. | Assets Register for Land/Land development was not maintained in proper form indicating the break-up of the constituent expenses in connection with the same. | 1978-79 1977-78 | Land and Land development register is now maintained in the proforma suggested by the Auditors. All details including those pertaining to prior years have been incorporated in Land and Land development register. The auditors are now satisfied with the proforma maintained. |
| 9. | No Physical verification of fixed assets and library books has been carried out during the year under audit. | 1978-79 1977-78 | The Institute has taken complete inventory of the fixed assets in Jan. '83. The report will be shown to the auditors who will audit the accounts of 1982-83. Physical verification of library books is being taken up. |

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| 10. | The expenditure on electronic computer does not include the installation and other relative expenses to be borne by the Institute. The amount of such expenses should have been ascertained and accounted for. | 1978-79 | Cost of machines includes installation charges. The expenses on food and lodging for 11 Russian Engineers who installed the machine, have been charged to revenue account. |
| 11. | A sum of Rs. 1,37,560.81 was expended for purchase of Books and Journals by Bangalore Centre. Proper documentary evidences as to the value of the books and receipt of the same were not made available for audit. | 1978-79 | It has been ascertained that all books and journals purchased, have been entered in the accession register which could not be sent to Calcutta for risk of loss of link of receipts and issues of books and journals during the transit period. Confirmation letter of entry in accession register was shown to Auditors. |
| 12. | No provision has been made for proper adjustment of admitted and unadmitted claims by the Government of India amounting to a total sum of Rs. 77.53 lakhs. | 1978-79 1977-78 | The recommendations of the Arrears Claim Committee have been accepted by the Government. The Institute was asked to give effect to the recommendations of the Arrears Claims Committee in its books of accounts. The matter was under consideration of the Council of the Institute for some time before a final decision could be arrived. The council approved the proposal for implementation of the recommendations of the Arrears Claims Committee as accepted by the Govt. of India and the effect was given in books of accounts in the year 1980-81. All matters relating to these claims have now been settled in the light of the decision of the Government. |
| 13. | Proper steps should be taken to adjust/recover the long old outstanding of Rs. 29.97 lakhs at an early date. | 1978-79 1977-78 | The major portion of the outstanding dues was recoverable from Government of India on account of the following : (i) From Ministry of Health and Family Welfare for Family Planning Survey and Population Research Centre Project - Rs. 12.15 lakhs. (ii) From Ministry of Education for ISEC Colombo Plan Fellowship - Rs. 9.43 lakhs. (iii) From Deptt. of Statistics towards reimbursement of expenses incurred by the Institute for supply of electricity and telephone services to NSSO - Rs. 6.53 lakhs. |

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| | | | <p>As per the arrangements with the ministries concerned, the expenditure incurred by the Institute is reimbursable by them. The process of reimbursement of expenses is tedious and time consuming and it takes nearly a couple of years for full recovery of the expenditure.</p> <p>As on date, all dues from Ministry of Health and Family Welfare have been collected. Any steps by the Government for early settlement of the dues will be welcome.</p> |
| 14. | The balance shown under 'Effect of Physical verification of Building Material account of Rs. 18,780.76 pertaining to earlier years is lying unadjusted. It needs an early action. | 1978-79 1977-78 | Action has been taken for adjustment with the approval of the Council of the Institute. As a result, this remark has been dropped in the subsequent years. |
| 15. | Included in the account of festival advance to workers, is some amount outstanding since 1960-61. Amount of such old advances should have been ascertained and necessary provision should have been made to the extent these are irrecoverable. | 1978-79 1977-78 | The balance of festival advance outstanding since 1960-61 is Rs. 15.32 only and this has been adjusted subsequently. |
| 16. | A sum of Rs. 32,213.35 was paid to a supplier of cement by Delhi branch in the year 1975-76 for purchase of cement. The supplier neither supplied cement till date nor refunded the money. Necessary provision should have been made in the accounts. | 1978-79 1977-78 | A civil suit has been filed to recover the amount. |
| 17. | Included under suspense account are old balances aggregating to Rs. 1,43,172/- (net) which are still lying unadjusted in the name of some deceased persons, some visiting Professors, regular employees of the Institute and others. Steps should be taken for adjusting the old outstandings. | 1978-79 1977-78 | Some adjustments and recoveries have been effected during the year. Steps are being taken to recover all dues and adjust non-recoverable dues. |
| 18. | The Sundry Debtors account includes old outstanding balances carried forward from as early as 1963-64. The major part of the balance is recoverable from Gun & Shell Factory (Rs. 49,721.87). No effort appears to have been made during the year under review for the recovery of the dues. | 1978-79 1977-78 | The matter is being followed up. Efforts are made for recovery of the outstanding balance. |

| 1 | 2 | 3 | 4 |
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19. Interest receivable on additional D.A. deposits and payable to workers has not been worked out nor accounted for. Certain difference in the amount payable to workers and receivable from P.F. Commissioner requires reconciliation. 1978-79 Interest is dealt on cash basis and it is calculated and accounted when it becomes due. This difference has since been reconciled.

20. In the absence of reconciliation statement and/or confirmatory letters the following balances could not be verified. 1978-79 State Bank of India certificate showing balance as on 31-3-79 for Hyderabad Branch has been submitted to Auditors. Reconciliation statement has since been made. The pass book of RBI PL A/c was shown to auditors. RBI does not issue bank confirmation certificate.

Hyderabad Unit (No reconciliation)
Rs. 38,382
Reserve Bank of India
Rs. 67,009
Nath Bank Ltd. (In liquidation)
Rs. 3,813

Certificate of Nath Bank Ltd. (in liquidation) could not be procured.

21. In spite of observations in previous Audit reports for incorporating the accounts of the Hospitality Committee in the accounts, the credit balance has not been adjusted suitably. Similar action is due in respect of other funds of the Institute. 1978-79 1977-78 The matter was kept pending till action was taken on the recommendation of Arrars Claim Committee for merger of funds which had outlived their utility. Action has since been taken and given effect to in the books of accounts in the year 1980-81.

22. The system of budgetary control leaves ample scope for improvement. The excess of expenditure over income has been piling up for years together due to non-observances of budget provision claims for which are pending for acceptance by Govt. for a considerable time. 1978-79 The figures pertaining to the year 1978-79 and later do not indicate any slackness in the budget control measures in the Institute as is evident from the following figures for 1978-79.

| Sl. Budget head No. | Budget for 1978-79 (Rs. in lakhs) | Actual Expenditure for 78-79 (Rs. in lakhs) |
|---------------------|-----------------------------------|---|
|---------------------|-----------------------------------|---|

| | | |
|---|--------|--------|
| 1 Non-Plan Revenue | 229.05 | 229.10 |
| 2 Plan Revenue | 34.24 | 26.41 |
| 3 Plan capital | 88.34 | |
| plus carried forward amount from previous year. | 41.35 | 109.89 |

| 1 | 2 | 3 | 4 |
|-----|---|---------|--|
| 23. | Title deeds in respect of certain lands possessed by the Institute were not available for verification. | 1978-79 | Most of the lands belonging to the Institute were acquired by the State Government under the land Acquisition Act and possession was handed over to the Institute. The State Government normally do not issue title deeds for transfer of acquired land, but issue possession certificates. These possession certificates together with gazette notifications have been shown to the auditors in subsequent years to their satisfaction. |
| 24. | The cost of the Library building also includes a payment of advance of Rs. 37,000 to Prof. A.K. Banerjee as architect's fee and Rs. 2,040 as law charges in the earlier years. The decision of the Council is still awaited. | 1977-78 | The advance paid to Prof. Banerjee was adjusted against the fee due to him with the approval of the Council in the subsequent years. No action is pending in this respect. |
| 25. | The written down value of sheds and structures on 208 B.T. Road and 153 G.L.T. Road does not give a true and fair view as at 31st March 1978 as the value of the sheds and structures demolished are not ascertained by the management. | 1977-78 | The value of shed and structures demolished has since been ascertained and adjusted in the books of account to the satisfaction of the Auditors. |
| 26. | Some of the ear-marked funds of the Institute have remained idle since 1966-67. There has been no transaction in these fund accounts. | 1977-78 | The Arrears Claim Committee set up by Govt. of India had recommended that these funds except Development Fund I and SOC Development Fund should be merged with the General Fund of the Institute. The recommendations of the Arrears Claim Committee had been accepted by the Govt. of India and accordingly these funds have been merged with the General Funds with the approval of the Council of the Institute in the year 1980-81. |
| 27. | There are considerable amounts of old un-linked debit/credit balances in the accounts carried forward from earlier years which should have been identified and adjusted with those appearing in the Debit/Credit of some other accounts e.g., (i) Aggregate amount of Rs. 1,23,763.70 credited to suspense account. 60,353.43 (ii) Details of a debit of Rs. 60,353.43 not available. (iii) Unreconciled stock of different kinds of materials of Rs. 5,564.68 (net credit). | 1978-79 | |

28. The following uninvested funds are lying in the bank account:

| Fund | Amount as on 31st March 79 |
|---|----------------------------------|
| | Rs. |
| (i) Electronic Data Processing & Computation unit | 3,173.96 |
| (ii) Honeywell H-400 Computation unit | 14,942.12 |
| (iii) SQC Development Fund | 3,96,954.81 |
| (iv) Gratuity Fund | 2,30,000.00 |
| (v) 1974 International Symposium Prize in Statistics Fund | 228.00 |
| | <u>Rs. 6,45,299.58</u> |

29. Interest on investments in respect of Development Fund II not collected for a long period.
30. In spite of observations made in the previous audit reports for incorporating the accounts of the Hospitality Committee in the accounts, neither the defects have been rectified nor the credit balances have been adjusted suitably.
31. The system of budgetary control leaves ample scope for improvement.

STATEMENT OF COMMENTS IN C & A G's AUDIT REPORT DURING THE
LAST FIVE YEARS & ACTION TAKEN

| S. No. | Comments in C&AG's Audit Report | Years of Audit to which the comment pertains | Replies/Action taken |
|--------|---|--|--|
| 1 | 2 | 3 | 4 |
| 1. | A sum of Rs. 77.53 lakhs had been claimed from Govt. by the Institute towards reimbursement of excess expenditure upto 31 March 1974. The Govt. appointed a committee known as the Arrears claim Committee, which recommended a payment of Rs. 39.54 lakhs and suggested that the balance should be adjusted by merging with the general fund the various earmarked funds of the Institute except the Development Fund I and the SQC development fund. Thus the institute instead of exercising financial economy got the excess expenditure regularised by the Government. | 1980-81 1979-80 1978-79 | <p>The comment refers to a historical issue pertaining to the period to 1973-74 when NSS (National Sample survey) was part of the Institute. It is surprising that such an old issue finds its place in the audit report for 1980-81.</p> <p>The need for arrears claim arose on account of non-settlement of dues by the Govt. for the work entrusted to the Institute in connection with the National Sample Survey. The Institute had to spend the money in advance for completion of the work entrusted to it by the Govt. and claim the expenditure in due course. Since the Govt. had delayed settlement of these claims, a dispute arose which was referred to high power committee known as ISI Arrears Claim Committee under the Chairmanship of the then Cabinet Secretary Shri B. Sivaraman. The Total amount is an accumulation over a period of years. Anyway the matter has been settled in accordance with the recommendations of the Arrears Claim Committee and there is, therefore, no outstanding issue on this account at present.</p> |
| 2. | An excess expenditure of Rs. 27.33 lakhs had been incurred by the Institute on Miscellaneous projects as on 31 March 1981. | 1980-81 1979-80 1978-79 | <p>It is not correct to use the term 'excess expenditure' in respect of certain dues recoverable from Govt. of India for various projects entrusted to the Institute. According to the understanding with the Govt. the expenditure incurred by the Institute will be reimbursed on completion of the audit for the years and production of utilisation certificates. The major portion of the outstanding dues was on account of the following.</p> <p>(i) From Ministry of Health & Family Welfare for family</p> |

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planning survey and population research centre project Rs. 12.13 lakhs.

(ii) From Ministry of education for ISEC colombo plan fellowship - Rs. 9.43 lakhs

(iii) From Dept. of Statistics towards reimbursement of expenses incurred by the Institute for supply of electricity & telephone services to NSSO—Rs. 6.53 lakhs.

The process of reimbursement is tedious and time consuming and takes nearly a couple of years for full recovery of the expenditure.

As on date, all dues from Ministry of Health and Family Welfare have been collected. Any step by the Govt. for early settlement of dues will be welcome.

3. The land purchased (Rs. 1.64 lakhs) at Vadodra, Bangalore & Hyderabad had not been put to use reportedly due to paucity of funds for construction of its buildings and the Institute continues to hire premises to accommodate its offices at an annual rent of Rs. 3.49 lakhs approximately.

1980-81
1979-80
1978-79

Construction of buildings at an estimated cost of Rs. 1000 lakhs has been undertaken by the Institute at Bangalore centre. It is expected that the buildings will be completed by middle of 1984. Steps have been taken to construct office buildings in Hyderabad and Madras.

4. The Institute had been maintaining a register of fixed assets, since 1976-77 only and no physical verification had been conducted so far. The Institute had books and journals valued Rs. 78.23 lakhs, but no physical verification was conducted.

1980-81
1979-80
1978-79

The observation that the Institute had been maintaining a register of fixed assets since 1976-77 only is not correct. If the Institute had not maintained registers of fixed assets, it would not have been possible for the auditors to give detailed information in the balance sheet on all fixed assets acquired prior to 1976-77. The fact of the case is that the auditors desired that the form in which the register was being maintained must be changed and this was done in accordance with their suggestion in the year 1976-77.

The Institute's fixed assets comprise of buildings structures, computers, reprography machinery, other machinery, scientific equipment and furniture. All the fixed assets except furniture part are easily

| 1 | 2 | 3 | 4 |
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| 5. A team of internal Audit of the organisation was discontinued from Aug. 1977. The Institute stated that the council had resolved to recommence regular internal audit. | 1978-79 | verifiable. The physical verification of fixed assets in some centres has also been carried out. Mainly at the headquarters, physical verification of furniture, fixture and books remains to be carried out. This is being arranged. | An internal audit cell has been formed in Nov. 1982 and it is functioning since then. |
| 6. The Arrears Claim Committee had recommended that many of the special funds of the Institute had outlived the purpose for which they were created and should be merged with the General Fund of the Institute excepting. Development Fund I and the SQC Fund. The recommendations of the Committee had been accepted by Govt. of India, but were not implemented so far. | 1978-79 | The recommendations of the Arrears Claim Committee have now been implemented and the effect was given in the accounts of the Institute in 1980-81. | |
| 7. The National Sample Survey (NSS) Unit of the Institute was taken over by the Govt. of India from 1.6.72. But the assets and liabilities pertaining to the said unit were not transferred till 31-3-79. Besides since the taking over of the unit by the Govt. of India the Institute spent an amount of Rs. 6.43 lakhs upto 31-3-79 by way of electricity, telephones, rates & taxes for the unit (being situated in the Institute campus) spending realisation. | 1978-79 | A list of assets taken over by NSSO at the time of separation was not available with the Institute. A certified copy of assets taken by NSSO has just been procured from NSSO authorities. Action is being taken to give effect to the assets and liabilities of NSSO in the books of accounts of the Institute during the current year. | The NSSO has been approached to clear off the dues amounting to Rs. 6.43 lakhs. It is hoped that the Dept. of Statistics which is seized of the matter will arrange to reimburse the amount of the Institute soon. |
| 8. The advances to suppliers and contractors formed the major portion of the total loans and advances account of the Institute. | 1978-79 | Payments to suppliers are made on the basis of the proforma invoice and they are treated as advance till the final bills are submitted by the suppliers and adjusted in the books of accounts. The system of purchase of controlled items like cement and steel through Govt. agencies involves payment of the full amount in advance and waiting for supply of the material and submission of bills for months later. | |

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|---|---------|--|
| 9. The value of unserviceable furniture equipment etc. had never been assessed and adjusted in accounts. | 1978-79 | Some of the major unserviceable items had since been disposed of through auction by DGS&D of the Govt. and effect has been given in the books of account. However, still a large number of accumulated unserviceable items remains to be disposed and action is being taken. |
| 10. It was noticed that while actual cash receipts from SQC operations were taken account, the accounts of the SQC division did not reflect the position regarding outstanding dues. As per returns submitted by the outstation SQC units an amount of Rs. 5.60 lakhs remained unrealised till 31.3.79. | 1978-79 | The SQC receipts are treated on cash basis and taken into account as income for the year in which the money is received. In all transactions with the client organisation, certain outstanding dues are bound to be there on the date of end of the financial years, which will, of course, be collected subsequently. |
| 11. A sum of Rs. 11,680.76 determined as loss on physical verification of building materials, accumulated over years upto 1974-75 was lying unadjusted in the accounts of the Institute along with the loss of Rs. 985.47 in the year 1975-76. | 1978-79 | These amounts have since been adjusted in the books of accounts on obtaining the approval of the council. No action is pending in this respect. |
| 12. Certain discrepancies between the figures shown in the Members Ledger (Contributory Provident Fund and those exhibited in accounts, remain unreconciled as on 31-3-79. | 1978-79 | These discrepancies has since been reconciled as far as possible. |
| 13. National Sample Survey Organisation was separated from the Institute on and from 1.6.72. At the end of 1978-79 an amount of Rs. 17.30 lakhs on account of difference in rate of interest (between Govt. rate and ISI rate) was payable to the NSSO. Some individual C.P.F. accounts to be transferred to NSSO were still lying unsettled. | 1978-79 | All P.F. dues payable to NSSO have since been settled. No action is now pending in this regard. |

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