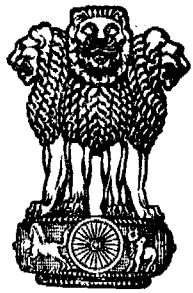
REPORT OF ASSESSMENT COMMITTEE ON VIJNAN MANDIRS

VOL
II

1960
MINISTRY OF SCIENTIFIC RESEARCH
AND CULTURAL AFFAIRS



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GOVERNMENT OF INDIA

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PART I

PART II

NOTE ON THE EFFORTS MADE BY SOME OTHER COUNTRIES TO POPULARISE SCIENCE

GENERAL SCIENCE

General

1. Science, with 'community service' as its key-note is so closely woven into the entire fabric of society that it is impossible to visualise a life without it. There is a wide-spread recognition of the principle that if ignorance of law is no excuse, ignorance of science can be no excuse either. The purpose of science education is to present the processes of enquiry, reasoning and experience, in an interesting and intelligible form to the layman who may not have any real knowledge of science. Specialisation has gone to such lengths that a specialist in one field is almot a layman in the other fields and the specialist, too, like the layman needs to have new ideas and discoveries explained to him in popular language. The role of the scientist does not always end with the finding and publication of his discoveries in some scientific or technical journal. He should also help to devise special techniques to give literary quality and colour to his findings. The techniques may vary according to the needs of the citizen and the responsibilities placed on him by the society of which he is a member.

United States of America

2. Science Clubs, Science Museums, Science Fairs, Science Talent Search, etc., are some of the techniques commonly used in different countries to encourage talents in the younger generation. According to a note received from the Ford Foundation in India, there is no central organisation in the U.S.A. for the popularisation of science, but both the Science Service Inc., Washington, (D.C.) and the National Science Foundation undertake projects to popularise scientific material through various mass communication devices. The Science Service was set up in 1921 as a non-profit organisation with the object of popularising science with trustees nominated by scientific and learned societies in the U.S.A., like the National Academy of Sciences, the American Society for Advancement of Science and the National Research Association. The Science Clubs of America (SCA) form an important part in the activity of the Science Service. The S.C.A. are dedicated to the development of science talent in the country. The Science Service is stated to be in contact with about 5,00,000 young men and women through affiliated clubs, like the Future Farmers of America (F.F.A.), the Audubon Junior Clubs and the 4-H Clubs. The motto of 4-H Clubs is:—

> "I pledge my Head to clearer thinking. My Heart to greater loyalty. My Hands to larger service and my Health to better living for my Club, my community and my country".

The name 4-H summarises the programme of work of the clubs, which are open to boys and girls between the ages of 8 and 21. The 4-H Clubs are instructed and enthused through leaders who are given the

instruction first. The Future Farmers are between 14 and 19 years of age, and get their instruction from the teacher, who is also the adviser to the F.F.A. group. The teacher organises a course of lectures or classes for farmers in the school and gives instruction in some selected subjects during the summer vacation. Apart from the audio-visual aids available in the school, the teacher enlists the assistance of the Extension Specialists from the Agricultural Colleges, whenever necessary, in organising the programme of the F.F.A. The programme of work is designed to enable the members to become fully responsible farmers by the time they leave the F.F.A.

3. The S.C.A. has grown into an international organisation and has shown how youngsters, given an opportunity, can rise to the challenge of the times and constantly expand the frontiers of science. As a result of the activities of the Science Clubs, the youth in America has proved a potent force for the adoption of improved agricultural practices and techniques by farmers.

4. The Science Service conducts an annual Science Talent Scheme (STS) for senior high school students or members of Science Clubs in collaboration with the Westinghouse Educational Foundation (W/STS). According to a pamphlet issued by the Science Service, "The Science Talent Search is the pioneering demonstration that successful scientists of the future can be spotted at the high school level". Several scholarships and awards offered by the Service afford opportunities each year to students with special aptitude for science. The winners generally distinguish themselves in later years as scientists. Apart from the WH Scholarships and Awards, many contestants win "honourable mention"—a distinction which helps them to secure scholarships in colleges, universities and technical institutions. It has been said that the STS is a challenge to make potential scientific talent available for practical tasks.

Science Fairs

5. Science Fairs are conducted by the Science Service to stimulate interest in science, pure and applied, with the cooperation and assistance of educationists, scientific and learned societies. Science Fairs are organised at various places. Students and members of Science Clubs whose exhibits are judged to be the best are picked out for participation in the National Science Fair. The illustrated folder on the Tenth National Fair held at Hartford in May 1959, contains the following inspiring message to potential scientists:—

> "The greatest reward you get from participation in Science Fairs is to elevate your self-esteem by completing a self-assigned task. In this way you start on the road which all research scientists, engineers and inventors must take to become successful. Also, through participation in the Science Fairs you bring honour to your school, city, State and yourself".

Things of Science

6. Every month about 20,000 young people and adults receive 'surprise' packages containing an article of scientific interest. Detailed descriptions, suggested experiments and a museum type of label accompany each article.

7. The National Science Foundation provides support to the Science Clubs of America administered by Science Clubs Inc. About 19,500 local Science Clubs composed mostly of students of junior and senior high schools are affiliated with the Science Clubs of America. The Foundation which has a big establishment for dissemination of scientific knowledge, also supports Conferences and Institutions in which Scientists and Science Writers are brought together for the purpose of discussing the problem of bringing science to the layman. Support of learned societies and organisations like the American Association for the Advancement of Science is also enlisted. While the need for dissemination of knowledge is accepted, the Foundation admits that the manner of doing so might have to be a matter of trial and experiment. To quote the Director of the Foundation:—

> "This is a relatively new area, and there is little experience to guide us in the choice of methods and techniques that will serve the purpose".[1]

United Kingdom

8. Several facilities are available in the U.K. for young people interested in science. Scientific societies in educational institutions are well-maintained and support a wide range of interests. The B.B.C. and the Television authorities have continuing programmes for the benefit of school children and general public. The British Association for Advancement of Science has, in recent years, done much to present science to the public by arranging special programmes on a wide range of topics. Eminent scientists from all over the world are invited to deliver what are called "Junior Presidential Addresses" for young students. Competitions are organised by the British Association in collaboration with industrial establishments like the I.C.I. to stimulate interest in scientific writings. Exhibitions organised by the Association include, among other things, models by students made out of simple components, chemical and biological exhibits and specimens collected by field workers.

9. The Royal Society in London is essentially an organisation for the dissemination of knowledge and the weekly lectures arranged by the Society cover the whole range of science. Juvenile lectures are also given by eminent authorities in science. These are collected printed and distributed to schools and colleges. The Science Museum, Kensington, operates an amateur radio station with a view to interest young people in radio as a profession. Illustrated lectures are organised by industrial establishments and other organisations on subjects like colour, sound, coal gas, electricity, steam engine, submarine life, preservation of wild life and giant reptiles. Universities, research institutions, scientific and learned societies and industrial establishments take an active part in the activities of Science Clubs of the U.K. Competent authorities are provided to these Clubs for organising lecture programmes. Films and film strips are lent for demonstration at Club meetings. Many firms provide facilities to parties of children and students to visit factories and laboratories.

10. The Young Farmers' Club (YFC) provides farmers with opportunities to develop interest in land and its use, and techniques needed for its exploitation. The members are expected to assume a

1. From "Science", May 6, 1960, Vol. 131, No. 3410, pages 1341—1354.

good deal of responsibility and the experience they gain in the management of the affairs of the Club stands them in good stead in the field. The motto of these Clubs is:—

"Good farmers, good countrymen and good citizens".

Each Club has an Advisory Committee of local people and experts in different matters that are likely to be of interest to these clubs.

Canada

11. In Canada, there is a wide variety of organisations which deal with scientific matters pertaining to everyday life, especially aspects connected with agriculture, public health, animal husbandry, housing, crafts, sanitation, etc. Some of these organisations are formal societies of a functional nature; others are youth groups; a few others are cooperative societies and some others are agencies of the Federal, Provincial and Municipal Governments, which publicise information about these matters.

12. The Science Club Movement in Canada sponsored by the Federal, Provincial and other agencies show a great similarity of organisation. All programmes are based on the principle that science education can be a recreation and a pleasure too. Emphasis is, therefore, laid on visual and practical instruction. Science Clubs in Canada like the Young Farmers' Club (YFC), the Junior Naturalists Club and 4-H Clubs are understood to have a membership of over a lakh. The objective of these Clubs is generally to arouse the interest of members in scientific matters. It is claimed that in areas where Y.F.C. operates, there are exceptional groups of hardworking, well-informed farmers, continually on the watch for improved methods of cultivating the soil and who by their success and example actively contribute to better prosperity. The Clubs are reported to have played a conspicuous part in popularising a particular variety of wheat after a widespread attack of rust had wrought havoc some years ago. Competitions are arranged to encourage young people to make useful objects which would otherwise have been thrown away as scrap.

13. The Junior Naturalists Club have for their motto: "Consider the lilies in the field"; these are usually founded on the initiative of teachers and are affiliated to a well-knit movement, known as the "C.J.N." Movement. Apart from lectures, conducted visits are arranged to places of scientific interest in the neighbourhood. There are also excursions to enable members to study nature at first hand, collect specimens of flora and fauna and rocks which they bring to the Clubs for more leisurely examination. Collections are also sent as exhibits in competitions or lent to exhibitions.

14. The 4-H Clubs of Canada lay emphasis on the qualities on which practical training of members is to be based, namely, *honneur* (honour), *honnetete* (honesty), *habilite* (skill) and *humanite* (human welfare). The clubs have done a great deal to popularise science among school children and adults and instil in them a love and respect for nature. Competitions are organised to encourage a healthy emulation among the members. Science Fairs afford opportunities for exchange of ideas and act as stimulants to progress.

Denmark

15. An organisation for popularisation of science was established in 1820 and several organisations have since been operating for carrying science to the people. In 1944 some Secondary School teachers started a society with a view to stimulating the interest of the younger generation in science. Lectures, study circles and visits to scientific and technical institutions are arranged to get the members interested in science and to demonstrate the importance of science in society. Lecturers from colleges and experts working in private establishments are invited to deliver lectures in simple and easy language. The study circles give members an opportunity to make their own observations and conduct experiments under the supervision and guidance of experts.

Japan

16. "The Citizen's Public Hall is one of the facilities which through various activities, educational, scientific and cultural, aim at meeting the needs felt by the inhabitants in their daily life.....". There are about 8,000 such Public Halls in Japan with about 27,400 affiliated branches in urban and rural areas. The Public Halls cover a wide range of activities of importance from the elevation of the cultural level to the elimination of backwardness in rural areas. Each Public Hall is managed by a team of full-time specialists with a Director at its head. According to the brochure on Social Education in Japan for the year 1958, published by the Ministry of Education in Japan, the activities of these Public Halls are as under:—

(i) "To sponsor the youth classes;
(ii) To open the periodical lecture courses;
(iii) To hold discussions, meetings, lecture meetings, seminars, exhibitions, etc.
(iv) To keep books, records, models and materials etc., and to render service for their utilisation.
(v) To hold the meetings for physical training and recreation;
(vi) To do liaison with various organisations and agencies;
(vii) To open the facilities to inhabitants for meetings and other public purposes."

17. It is claimed that with the advent of the Public Halls under the new order in Japan, education has significantly spread in recent years. It is understood that audio-visual aids are much more widely used in Japan than in India. Audio-visual education is given by means of radio, films, film strips, recorded tape, etc. These Public Halls are associated with men of light and learning in the neighbourhood.

18. Sperial radio programmes entitled 'Morning Message' are arranged by the Ministry of Education for the benefit of youth throughout Japan. The Ministry of Education also take the responsibility for the production and distribution of films and film strips to schools and public halls. There is also a selective committee consisting of school teachers and persons of learning and experience to advise the Ministry of Education on the suitability of films and film strips produced by different agencies for distribution to educational institutions and other agencies.

19. The curricula of studies in Japan are very comprehonsive and comprise, among other things, visits to centres of intellectual activity in the country. The educational activities are integrated into an organic pattern.

There are 290 museums in Japan of which Science Museums number 39.

China

20. In China, dissemination of scientific knowledge to the people is the concern and responsibility of the Government. The Ministries of Culture, Health, Forestry, Water Conservancy and other organisations of Government whose fields of work have direct relationship with rural areas, take advantage of the visits of scientific workers in various fields to disseminate scientific knowledge to the peasants.

21. There are over 2,400 cultural centres functioning under the Ministry of Culture engaged in dissemination of knowledge pertaining to science and culture. In 1950, the Scientific and Technical Workers throughout the country organised voluntarily the "All China Association for Dissemination of Scientific and Technical Knowledge with a view to raising the standing of scientific and technical knowledge among the masses by utilising their spare time". The main task of this Association is to propagate:—

(i) Industrial and agricultural production techniques and fundamental knowledge,
(ii) Medical and hygienic knowledge, and
(iii) The Scientific and Technical achievements.

22. This Association had, in 1957, 27 branch Associations and 100 sub-branches throughout the country. The Association carries out the work in the following ways:—

(i) Arranging scientific lectures;
(ii) Publishing reading materials, periodicals and tabloids on popular science and
(iii) Holding of scientific exhibitions.

SCIENCE MUSEUMS

23. In the words of Sir Jonathan Hutchinson, F.R.C.S., F.R.S., founder of the Educational Museum at Haslemere, in the U. K. "Museum Teaching may easily be made to interest all classes. It will enlarge our sympathies, diminish our superstitions and fit us for our duties towards each other".

24. In recent years, Science Museums have become a potent force for the diffusion of information about science and methods of science. They are regarded as a vitally needed asset of a modern community. Science Museums have sprung up all over the world as a result of both State and private efforts, but to France goes the honour of establishing the first Science Museum in 1794. In pursuance of a resolution adopted by the UNESCO at Montevideo in 1954, an International Campaign was launched in 1956 to stress the role of museums in science education. Inaugurating the Campaign in 1956, the Director-General of UNESCO referred to the great task that had fallen to Science Museums in the present-day world:—

"Surely, it would be to the credit of an age—in so many respects a gloomy one—that museums, the greatest of the

treasures of the past and present had been reorganised on new and inspiring lines to meet the growing desire of the Public".

25. Apart from National Museums of long standing with well-established traditions, small but attractive regional/provincial museums have been organised in small towns and villages within the limits permitted by local or financial resources. In rural America, there are small museums in places with a population of a few thousands. There are also small regional museums in France supported by private enterprise or contributions in the form of membership fees. It is said that Switzerland with its decentralised system of museums may be considered as a model country as regards regional museums and that there is a museum for about every 20,000 people. In the local museums, the exhibits are essentially of a local or regional character, e.g. the biological section shows the local fauna and flora and the effects of environment on them. Exhibits are arranged in such a manner as to "attract, hold, inform and persuade the visitor", and with due regard to the level of the audience to be catered for. Complete charts and formulæ and technical or scientific names of flowers and insects, do not figure in an exhibition planned for the average farmer. In a local exhibition organised in the U.S.A., an exhibit was labelled "The Fly's Airlines and its Terminals". One of the terminals was the food on the family table and the other the garbage in the backyard. Captions like this are bound to stimulate the curiosity of the visitor. Charts, maps and illustrated posters are some of the techniques adopted to draw the people, grip their imagination and make them think. The manner in which the small Science Museums are organised in different countries may be of value in the development of museums in Vijnan Mandirs.

26. The Smithsonian Institution in Washington (created by an Act of Congress in 1846) has developed a number of public museums including Science Museums. Among other things, the Institution issues regularly scientific and popular publications. It is said that the "Smithsonian Institution is certainly one of the largest museum complexes, if not the largest, on the face of the globe".

SCIENCE AND AGRICULTURE

Land-Grant Colleges, U.S.A.

27. With the establishment of the first Agricultural University in India at Phool Bagh (U.P.) on the model of the U. S. Land-Grant Colleges, it is natural that much attention has been focussed on the functioning of those Colleges. A striking feature about the Land-Grant Colleges is the complete integration in one institution of agricultural education, research in agriculture and allied sciences and the extension service. By catering for the different fields of activity, the Land-Grant Colleges have won for themselves a position of unique importance in the life of the U.S.A. Among other things, the Land-Grant Colleges are symbolic expression of the principle that the research worker should be made fully aware of the problems of the farmer and that likewise, the extension worker must be in possession of all research information so that he can select and pass on the information directly usable by the farmer.

Agricultural Extension Work

28. The Agricultural Extension Work in the U.S.A. has been recognised as the responsibility of the Land-Grant Colleges. Another

interesting feature in the Extension Organisation in the U.S.A. is that the Director of Extension Services in each State is usually the Dean of the College as well. The other functionaries in the extension hierarchy, viz., the Assistant Directors, the District Supervisors and the County Agents are members of the college faculty and are responsible to the college for their work. The last in the line is the County Agent whose position is analogous to our Block Development Officer.

Extension Specialist

29. Above the County Agent is the Extension Specialist who serves as the liaison between research and practice. The Extension Specialist is the extension arm of the specialist department like Entomology and Agronomy. His jurisdiction is not territorial, but functional depending on the field of his specialisation. The Extension Specialist is attached to the specialist department, but works under the joint control of his Department and the Extension Director. He is really the pipe-line which keeps the extension workers supplied with adequate material which can be extended to the farmer. The Extension Specialist is an important link in the U. S. Extension Service and his job *inter alia* is to strengthen County Programmes with suitable reading materials, film-strips, slides, teaching aids, etc., and also keep County and Extension workers up to date with regard to the findings of science and their application to field problems. The Extension Specialists are required to give the necessary guidance to County Agents during their tours and supply them with research material. They also undertake special demonstrations jointly with agronomy specialists.

29. The phenomenal success achieved in the U.S.A. in the field of agricultural extension is in no small measure due to the massive organisation built by Land-Grant Colleges for the unique purpose of education, research and extension. It is this organisation which stands behind every County Agent in his task. Yet it is significant that when the Land-Grant Colleges were first started critics were not wanting who characterised it as a "literary kite with an agricultural tail".

30. It has been stated that in the Community Development set-up we have no functionary parallel to the Extension Specialist to act as a close link between researches on the one hand and the peasants on the other. With the launching of the Community Development Programmes, there is considerable awakening in the country-side and there is greater and greater demand for fertilisers, seeds and technical knowledge which in due course will create conditions and resources to satisfy that demand. As pointed out by the Ford Foundation Team:—

> "The long-range expectation should be for increasing the number of specialists and the level of specialisation of block staff members so that the cultivators may have access to ever more highly developed technical educational aid".[1]

[1]. Report on India's Food Crisis and Steps to Meet it (April 1959) page 115.

Technique Popularisation Centres in China

31. For agricultural extension work, there is a specialised agency in China known as the Technique Popularisation Centre. This agency has succeeded to a large extent in revolutionising agricultural practices and in maximising production. When the Indian delegation visited China in 1956, there were about 10,000 such centres. An addition of 6,000 centres was envisaged by 1957. The number is reported to have increased since then and there is one centre for each Hsiang with a population of about 30,000. Each Centre deals with about 30 to 40 cooperative groups. The Centres vary considerably in size, some may have as many as 30 technical experts while others have 8 to 14 specialised in one branch or other of agriculture. The Centres educate farmers in improved techniques and pass on to them the results of research. Intensive guidance is given by attaching some members of the Centres to selected cooperative groups in the Hsiang; other members give general guidance to the remaining cooperatives. The Centres try to "ensure a more scientific use of the manurial resources of the village, popularise correct dose and more effective and sanitary methods of application, promote the use of chemical fertilisers....". They have nothing to do with provision of credit or supplies. As a result of the intensive measures adopted, it has been possible for China to get most from the land. In the words of the United Nations Evaluation Commission (1959).

> "China's traditional lead over India in output (more than double—and at present nearly three times—the yield per acre in the case of paddy) is primarily due to the fact ..... that the Chinese have been forced to practise continuous intensive cultivation, using organic fertilisers from every conceivable source, animal and human excrete, which they handle without repugnance".[1]

32. A remarkable feature about these Centres is that they are not manned by general-purpose workers, but by specialists with knowledge of the crop history of the area where they are posted. The extension workers may not have a high level of university or research training but by and large their knowledge and experience is considered adequate for the tasks assigned to them in the Centres. To quote the Indian Delegation to China (1956) "the Centres alone maintain a technical staff in rural areas which appeared to us to be much more intensive than the staff provided in India ..... On the other hand, there is not yet sufficient appreciation of the fact that the National Extension Service pattern while being basically sound needs to be greatly strengthened if the results hoped for by way of increased agricultural production are to be realised"[2].

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1. Report of Community Development Evaluation Mission in India (1959) page 28, para 135.
2. Report of the Indian Delegation to China (1956) pages 188 and 189.

SUMMARY OF REPLIES RECEIVED FROM THE MINISTRIES OF CENTRAL GOVERNMENT, FORD FOUNDATION, ETC.*

Secretary, Ministry of Education (Shri K. G. Saiyidain)

1. We should try to bring about a change of outlook among our people 'from adherence to tradition' towards 'an appreciation of science and technology' as factors in building up the new social order and rational ways of thought and this process must not merely be confined to the cities but must spread into the rural areas also. The establishment of a few Vijnan Mandirs—of which there are only 38 at present—is not going to make much of an impact. The problem has to be tackled—and is in fact being tackled though rather slowly—on a much wider scale through the entire educational system, including the various agencies of social education.

2. So far as our educational institutions are concerned, the provision for science teaching at the elementary level is still very inadequate and, although we have included it as part of the syllabus, the facilities both by way of well-trained teachers and the minimum equipment are far from satisfactory. This is due, in a large measure, to the paucity of resources.....The inclusion of science in the syllabus of the teacher-training colleges may not be enough, because teaching of science, without the facilities that are necessary for the purpose, is apt to remain a mere theoretical exercise without making any impact on the mind or character. The spirit of science is the spirit of discovery and, therefore, practical work, including observation and experiments in the laboratory, even though on a modest scale, is an essential part of it.

3. The main problem is the carry-over of scientific ideas and outlook from the universities to the people. For this purpose, while organisations like the Vijnan Mandirs or Science Clubs, etc., are important, the universities, colleges and, perhaps, secondary schools should venture into the field and do a certain amount of extension work. Some of these institutions are actually doing so but there is need for strengthening these extension activities.

4. Coordination between the activities of the Rural Institutes and the Vijnan Mandirs is favoured, but as there are at present only about a dozen such Institutes, that is not going to solve the problem. It would only mean that so many of the existing Vijnan Mandirs, or those to be opened, can be located near or on the campus of these Institutes.

5. Addition of 'Cultural Wings' for these organisations is of doubtful utility. Such addition will dilute their present programme and will probably not make much of an impact, on the cultural front which can be looked after through existing agencies for social education, etc.

6. It is desirable to organise seminars, workshops and conferences of the staff appointed in Vijnan Mandirs frequently so that their technical efficiency as well as sensitiveness to the broader purpose may be constantly improved.

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*For questionnaire, place see Appendix II, pages 90—93.

7. It would be desirable to recruit such officers directly and not mainly take them on deputation from other sources, because that, very often, involves a number of administrative difficulties and complications and, at any rate, it takes a new man considerable time to attune himself to this new type of work. Of course, if there are good men in existing organisations, they can apply and be selected or occasionally even taken on deputation, but that need not be the main source of supply.

Ministry of Education

1. Vijnan Mandir Officers may be recruited direct and given suitable training. Persons on deputation may not identify themselves with the objectives of the Mandirs as their loyalties may be divided. It is also not correct to presume that officers of State Governments or educational institutions are by nature or by training suited to this special job.

2. The question of providing continued technical guidance to Vijnan Mandir staff cannot be easily answered, unless the major policy with regard to its location is settled. The best solution is to attach these Vijnan Mandirs to the Teachers' Training Institutions and rural educational institutions both at the secondary and the higher levels. If that is done, technical guidance will be assured.

3. Persons working in Vijnan Mandirs must necessarily be drawn from the rural areas and should possess sympathy for the rural way of life. They have to make themselves one with the villagers. Further, the persons working in Rural Institutes should be able to understand and assess the *felt needs* of the people and be able to meet these needs. Since the needs of the people and the approach to meet these needs may be different from place to place, it is necessary that the persons appointed should possess an adequate knowledge of local conditions and also sufficient general knowledge to deal with these problems. Such persons have to be specially trained for the job and at the moment, it is only the Rural Institutes which are training such persons *from* rural areas and *for* rural areas.

4. If Vijnan Mandirs are located in educational institutions, the Science Clubs and Vijnan Mandirs may function as adjuncts to one another.

5. If Vijnan Mandir Officers are made full-fledged members of the Block Committees, there would be effective coordination with Blocks and other agencies.

6. Vijnan Mandirs attached to the Rural Institutes should function under the supervision of the Director of the Rural Institute. The facilities commanded by the Institute in the shape of laboratories, biological and agricultural museums, dairies, poultries, etc., would then be at the disposal of these Mandirs.

Ministry of Health

1. The sites selected should be near a Primary Health Centre. It is essential in the interest of the proper functioning of the Mandir that adequate accommodation is provided either in a rented building or in a building constructed specifically for the purpose.

2. The pay scale of Laboratory Assistant which is Rs. 35—60 should be raised to Rs. 60—130 so that personnel of higher calibre are available.

3. The Vijnan Mandir Officer should be trained at the Indian Agricultural Research Institute and the Assistant Vijnan Mandir Officer at the All-India Institute of Hygiene and Public Health, in laboratory techniques.

4. The Vijnan Mandir inspecting officer should visit a Vijnan Mandir once in every six months and stay there for a period of about two to three days for rendering technical guidance, and assessing the work done, etc.

5. The Vijnan Mandir Officer should have the same power as that of Head of Office.

6. A standard list of articles, equipment and literature to be supplied to Vijnan Mandirs should be prepared. Literature should be such as to meet the dearth of scientific literature written in popular local languages.

7. Apart from a museum, a demonstration corner should be organised. The demonstration corner should include manure pit, sanitary latrine, smokeless *chula*, etc.

8. Facilities for examination of pathological and clinical specimens sent by medical practitioners and Medical Officers of Primary Health Centres, such as urine, blood and stools will not only help the doctors in making proper diagnosis, but also help in educational work.

9. The cultural activities are the functions of the Social Education Organisers of the Blocks. However, a Mandir may participate in cultural activities only to the extent necessary for popularisation of its programmes. For this purpose, the Vijnan Mandir Officers and the Assistant Vijnan Mandir Officers should be given training in extension techniques.

Ministry of Food and Agriculture

1. Vijnan Mandirs are to perform the same role which an Extension agent is to perform in the application of scientific principles to the needs of villagers. The main purpose is bound to get blurred if the emphasis is shifted from the potentialities of scientific approach and scientific training to cultural activities. Vijnan Mandirs should continue to function both as a science laboratory and a centre of agricultural extension, as it was intended to be.

2. Apart from dissemination of basic agricultural science to the villagers, other elementary things like education of villagers on sanitation, the effect of weather on crops and diseases, both human as well as of plants, education in elementary methods of water conservation and other allied matters which affect the daily life of the rural population, should be the concern of Vijnan Mandirs.

3. Vijnan Mandirs should be located in areas where the villagers are themselves keen on their establishment and are prepared to share a portion of the cost.

4. The man in charge of the Vijnan Mandir must be a person who has had training in extension methods, apart from academic training in subjects which are useful for the villager.

5. Vijnan Mandirs should have direct liaison with the Farm Advisory Service in the Extension Directorate of the Ministry of Food and Agriculture. In fact most of their work should be connected with the advisory activities of the Farm Advisory Unit.

Ford Foundation in India

1. It may be difficult for Vijnan Mandirs without supporting institutions or large staff of technical specialists to accelerate the flow of technical knowledge into rural areas. It is agreed that the flow at present is halting and is not as rapid as would be desired. However, improvement may not come about by establishing a parallel organisation, one that might not have the facilities of the organisations already at work.

2. The objective of changing attitudes may be a more practical, but a long range objective for Vijnan Mandirs. What is important is not just the use of a new technology by rural population after demonstration, but their actively seeking out new technologies. With such a change of attitude, development can come more rapidly. It is the difference between having technology thrust on people and having the people demand new technologies.

3. Vijnan Mandirs can, in a small way, hange the rural environment so as to encourage the development of 'achievement-motivated' individuals. It may not be possible to effect a significant change in the outlook of the mass of population. The Vijnan Mandirs may, however, be able to attract the relatively few individuals ready to broaden their horizons.

4. Vijnan Mandirs should be able to attract two types of people. There will be a few, largely adults, who can be convinced that the application of science can improve their living. They will then more readily adopt new technologies made available from other organisations. The second type will be attracted by curiosity and a desire to stretch their mind rather than by immediate material gain. Later such individuals may seek out and adopt new technologies without further encouragement. These individuals will be largely young people.

5. There is no assurance that the change which Vijnan Mandirs can bring about in attitudes justifies the expenditure. The question is whether the limited number of scientists in India can do more for development through Vijnan Mandirs than in alternate occupations? If properly organised, one scientific officer in a Vijnan Mandir is likely to have a greater catalytic effect than one in an urban organisation. If the officers are given special training, their influence would be greater.

6. The activities which might be undertaken by Vijnan Mandirs would be in the field of science education.....While the science officer may not have technical skill superior to the specialists in the district, he would be without a 'peer' in the field of science education. The activities now being undertaken by Vijnan Mandirs might be expanded to include the stimulation of the technicians and science teachers in the district *plus* possibly training of the latter.

7. The Block machinery is not designed for dissemination of scientific knowledge, but rather technological knowledge. The existing machinery for the latter may be strengthened, but, perhaps not by

Vijnan Mandirs. Their job might be to accelerate the introduction of technologies by awakening an interest in science. This the Block organisation may not be doing at present.

8. The division of work, which would be complementary, would be to make the Block organisation responsible for technology and Vijnan Mandirs for science education. The Vijnan Mandirs would stimulate questions; the Blocks would give the answers.

9. 'Dry knowledge' may not have an appeal to the average rural citizen. However, it is not necessary nor desirable to try to give *all* rural people a scientific outlook. Those few 'self-motivated individuals' will be attracted by 'dry knowledge'. Curiosity will be a sufficient inducement. In time, others may follow the example of the few. Service facilities may best be operated by other organisations so as not to detract from the main function of Vijnan Mandirs.

Indian Agricultural Research Institute

1. Each Vijnan Mandir should have facilities for rapid soil testing, plant tissue testing and salinity testing. For detailed analysis or for analytical work not covered by rapid tests, help should be taken from the Regional Soil Testing Laboratory or any other laboratory in the region. Only in the absence of such laboratories, the staff of Vijnan Mandir would be required to do the detailed analytical work and for this adequate facilities should exist at the Vijnan Mandir.

2. The rapid soil kit has got its own limitations, particularly so in the hands of those who do not have adequate experience in the interpretation of results. In fact, in the hands of people without adequate experience, it may do more harm than good.

3. Service aspect cannot, probably, be divorced altogether, but it should not be so emphasised as to militate against the functioning of Vijnan Mandirs as an agency for dissemination of scientific knowledge.

4. At present the training of Vijnan Mandir Officers has been arranged in two separate groups. This pattern would suit only when the Vijnan Mandir Officer and the Assistant Vijnan Mandir Officer stationed at each Vijnan Mandir are drawn one each from the two groups. The role of the physical science specialist and the biological science specialist should be supplementary if the over-all programme of a Vijnan Mandir is to be a success. This may at times lead to difficulty or even inefficiency in case one of the two specialists is not provided for some reason or for some time.

The alternative would be to give training to the selected candidates in the supporting and complementary disciplines to level off the group to almost a uniform standard as far as working knowledge at the Vijnan Mandir is concerned. This would pre-suppose that all students must have a basic training of Physics, Chemistry and Biology in their undergraduate classes. If this be so, the following pattern of training might be followed:—

(a) a three weeks' training in the applied aspects of the field of specialisation;

(b) a six weeks' training in the complementary discipline;

(c) three weeks' training in food analysis;

(d) one week's training in the use of audio-visual aids, and

(e) one week's training at some Vijnan Mandirs.

This pattern would train workers who would not necessarily require a counterpart and could carry out the work of Vijnan Mandirs single-handed, if circumstances so required.

5. The following additional items of equipment may be supplied to Vijnan Mandirs:—

(1) Compound microscope;
(2) Rapid Soil Testing Kit;
(3) Rapid Plant Tissue Testing Kit;
(4) Rapid Salinity Testing Kit;
(5) Milk and Ghee Testing Equipment;
(6) Bee-keeping Equipment;
(7) Cowdung Gas Plant;
(8) Pathological Test Kit;
(9) Tool Kit and
(10) Equipment for physical experiments, etc.

6. The Technical Officer at the headquarters who is entrusted with the responsibility for the supervision of work at Vijnan Mandirs would be probably the most appropriate person to establish liaison with other technical agencies. He may keep contact with various National Institutes and Laboratories to obtain useful information in the field of science for dissemination and pass it on regularly to the various Vijnan Mandirs. Vijnan Mandir Officers in turn can refer back their problems to this officer who can take these up with the appropriate technical agencies to find out solutions. The Technical Officer at the headquarters may work out the details of such arrangement in consultation with the Directorate of Advertising and Visual Publicity, Ministry of Information and Broadcasting and the Directorate of Extension, Ministry of Food and Agriculture and other similar agencies.

A SUMMARY OF THE REPLIES TO THE QUESTIONNAIRE RECEIVED FROM SOME STATE GOVERNMENTS

Government of Andhra Pradesh

1. To begin with Vijnan Mandirs may be tried as mobile units, one per District, on a Pilot scheme basis.

2. Each Vijnan Mandir may consist of a Bacteriologist, a Laboratory Assistant, a peon, a driver and a cleaner.

3. The Vijnan Mandir should be organised as a Mobile Unit in each field like Agriculture, Veterinary Science and Health, with adequate trained staff for carrying out propaganda in that particular field of science and technical staff to carry out some experiments in that field and also to demonstrate the dangers of primitive practices and habits.

4. The Vijnan Mandir staff should be periodically given orientation training in different research and other educational institutions to make them aware of the latest techniques and developments. Besides, the subject-matter specialists of the Agricultural Department of the State may give technical guidance to the Vijnan Mandir Officers.

5. The programme of activities is satisfactory, but dissemination of scientific knowledge has to be effected through audio-visual methods. Films are being supplied by different Ministries, but no projector is made available to Vijnan Mandirs. A projector with a trailer or van to carry the equipment is absolutely necessary to educate villagers in the application of science in their day to day life.

6. Physical targets may be fixed in respect of soil testing, water analysis and film shows to have a clear idea of the work-load to be discharged in a specific period, say in a month or a year.

7. There is need for a central agency for supply of equipments to Vijnan Mandirs. There may be a regional centre at each State Capital to cater to the needs of the Vijnan Mandirs within a State.

8. There are no facilities for pathological work, soil and water analysis in rural areas. For effective dissemination of scientific knowledge, emphasis on service aspect should continue.

9. At the village level Vijnan Mandirs may be closely associated with the Panchayat Samitis to render their programme realistic and in line with the felt needs of the people.

Government of Assam

1. The Government of India and the State Government may share the cost of construction of buildings for Vijnan Mandirs, inclusive of the cost of land, where it has to be acquired, and that of staff quarters on a 50:50 basis.

2. At present, the Vijnan Mandirs are entirely regulated by the Central Government. The role of the State Government has been confined to recommendations regarding the location of Vijnan Mandirs and the general undertaking to provide land and buildings at a site where electricity and water are either available, or have to be made available by the State Government.

3. The precise machinery and manner of association of the Vijnan Mandir Officers with the Block set-up has been largely left to the personal equation of the local officers and only certain general directions for cooperation have been given. This manner of working has left Vijnan Mandirs practically unsupervised and unguided by the officers of the State Government. The general background of opinion in which the Vijnan Mandirs are functioning is that the scheme is entirely the creation of the Central Government.

4. For improving the efficiency of Vijnan Mandirs, provision should be made for inspection by heads of departments or by zonal or regional heads of departments in the field of Community Development, Agriculture, Animal Husbandry, Public Health, Social Education, Information and Publicity, etc., and Commissioners of Divisions and Deputy Commissioners. In other words, an orientation of the Block staff with the Vijnan Mandir is a pre-requisite to make the rural people science-minded.

5. Instead of having a separate Committee for Vijnan Mandirs as at present, a sub-committee of the *Mahkuma Parishad* or the Sub-Divisional Development Board may be set up in which professors, teaching subjects like Mycology, Botany, Chemistry and Physics and other persons having the requisite interest, may be coopted.

6. A job chart or action programme showing the duties and responsibilities of the Vijnan Mandir Officers, including the manner of cooperation with the Block staff and the use of the Block machinery should be laid down.

7. The equipment and literature at Vijnan Mandirs should be supplemented by pamphlets in local languages and a mobile van.

8. Vijnan Mandirs may confine themselves to the science sector.

9. The recommendation of the Abu Conference would not be adequate to ensure coordination with the Block and other agencies. The placing of the Vijnan Mandir Officer in the Block Development Programme would pose some administrative problems.

Government of Bihar

1. Vijnan Mandir, as an isolated centre of scientific knowledge, may not make an impression on the rural population, but if it is located adjacent to, or as a wing of an educational institution, preferably a Teachers' Training School, better results can be derived.

2. Vijnan Mandirs may be placed squarely under the control of the Department of Community Development of the State, if they are not integrated with the Block administration. The general supervision may rest with the Social Education Directorate.

3. Every Block Development Committee is expected to have a Sub-Committee on Education. People's participation can be stimulated through this Sub-Committee and its larger counterpart at the Block level. No useful purpose will be served by setting up a separate local advisory committee.

4. The Vijnan Mandir Officer may be coopted as a member of the Block Development Committee. Some arrangements may also be evolved as in the case of the Block Medical Officer, to make Vijnan Mandir Officer a member of the Block team.

5. It is only at the risk of duplication of the Social Education programme that the cultural wing can work in a Vijnan Mandir.

Himachal Pradesh (Director of Education)

1. The Vijnan Mandir Officer should be in charge of the office, supervise the work of his subordinates as also that of the part-time Medical Officer and frame a coordinated programme of various duties and activities to be performed by each.

2. The following programme may be common to all the officers and can be distributed among them in accordance with the exigencies of the situation:—

1. Films. 2. Demonstrations. 3. Museum. 4. Radio Forums. 5. Distribution of literature.

3. No targets need be fixed because much will depend on the area and the facilities available to Vinjan Mandirs. The targets will naturally have to be worked out in due course of time, bearing in mind the progress of work and its utility to the people. Even then it would be worthwhile to work out in principle the number of Science Clubs that have to be started in a particular year, the number of meetings to be addressed, the number of visits to villages, etc.

4. The duration of training which would be common to all the officers irrespective of the field in which they have graduated, may be three months. The syllabus should include:—

(i) Problems of Indian villages.
(ii) History of C.D. Projects and philosophy of extension.
(iii) Use of audio-visual aids.
(iv) Methods of museum techniques, collection of specimens, etc.
(v) Training in photography.
(vi) Techniques of public relations.
(vii) Practical work in villages.
(viii) Explaining scientific and technical matters in the day to day language.
(ix) Technique of conducting clubs and forums.
(x) Technique of follow-up programme.
(xi) Course in general science in which it should be emphasised how science has changed life and how it can make our life happier and more prosperous.

Government of Madras

1. The Vijnan Mandir Officers may be deputed to undergo short refresher courses in the Madras Agricultural College and the Research Station at Coimbatore. They may be allowed to have closer contacts with specialists in the field of soil testing, etc., in the Agricultural College. Likewise, they may also be deputed for training for a suitable period at the King Institute, Guindy.

2. Duties of the Vijnan Mandir Officers and their assistants have not so far been defined. The Assistant Vijnan Mandir Officer may be placed in charge of the proposed cultural wing under the supervision of the Vijnan Mandir Officer. The Scientific Wing may be entrusted to the Vijnan Mandir Officer who may utilise the services of the Assistant Vijnan Mandir Officer, whenever needed.

3. The Vijnan Mandir Officer may be vested with powers for exercising necessary disciplinary control like sanction or stoppage of increments, suspension and sanction of leave in respect of all members of staff other than the Assistant Vijnan Mandir Officer. As regards the Assistant Vijnan Mandir Officer, the Vijnan Mandir Officer may be vested with powers to initiate disciplinary action and to grant casual leave.

4. The present programme of activities in Vijnan Mandirs is reported to be satisfactory. It is rather too early now to assess how far the programme has succeeded in educating the villagers. It may take a long time, possibly four or five years at least, to make an impression upon villagers.

5. The present arrangements for supervising the work of Vijnan Mandirs do not appear to be adequate. Officers of the State Government like Collectors, Deputy Development Commissioners, Heads of Development Departments and their District Officers may be authorised to inspect Vijnan Mandirs and send their reports through the Collectors to the State Government.

6. The emphasis on 'Service' aspect will not militate against the Vijnan Mandirs functioning as an efficient agency for dissemination of scientific knowledge. There are no other similar agencies working at present with scientific equipments.

7. Facilities for conducting simple human pathological work like urine and blood analysis do not exist in rural areas and it is, therefore, desirable to provide such facilities in Vijnan Mandirs.

8. A fortnightly or monthly diary may be prescribed for the Vijnan Mandir Officer and the Assistant Vijnan Mandir Officer. These diaries may be routed through the concerned District Development Officers to the Collectors concerned for review and record.

Government of Mysore

1. In the absence of clerical staff, Vijnan Mandir Officers and Assistant Vijnan Mandir Officers who are technical men, have been required to spend their time in ministerial work.

2. The existing administrative pattern is not quite satisfactory. Vijnan Mandirs are directly under the supervision of the Government of India and even for small items sanctions have to be obtained from Delhi. This remote control is not conducive to quick progress of these Mandirs.

3. Vijnan Mandirs should obtain continuous technical guidance from the agricultural colleges and research institutions, laboratories, etc., of the State Government.

4. It is necessary to prescribe a job chart for the Vijnan Mandirs and define their relations with other officers in the Blocks.

5. It is better to give Vijnan Mandir Officers full disciplinary control over the other staff working in Vijnan Mandirs, except for the power of inflicting major punishments.

6. Service programmes are a distinct aspect of Vijnan Mandirs and should be continued. These programmes have, however, not been

developed well so far. Vijnan Mandirs can serve not only as centres for soil analysis and water analysis, but also as seed-testing laboratories.

Government of Punjab

1. Recruitment to the posts of Vijnan Mandir Officer/Assistant Vijnan Mandir Officer may be made from the open market. Persons on deputation may not take the requisite amount of interest in this rather new venture.

2. There should be arrangements for in-service training, organisation of seminars, refresher courses and talks for the personnel of Vijnan Mandirs.

3. The area of operation of each Vijnan Mandir may be a district to begin with. To facilitate contacts with interior areas transport facilities in the form of a mobile van should be provided.

4. The Vijnan Mandir Officer should have gazetted status and function as a drawing and disbursing officer. He should be declared as head of office.

5. There is need for zonal inspectors to give technical guidance and ensure effective coordination with different departments.

6. The addition of the proposed cultural wing is likely to divert the attention of the institution from its main objective, i.e., dissemination of scientific knowledge.

Government of Rajasthan

1. All the functions for which Vijnan Mandirs have been established can be performed by the existing agencies working in collaboration with each other. For each branch of scientific knowledge, separate laboratories at the Divisional level should be established which should work as auxiliaries of the State Research Centres and laboratories. The Central Government should assist the State Government in the establishment of these small research stations at the Divisional level.

Government of Kerala

1. The Officers in charge of the Vijnan Mandirs should be given orientation training in institutes such as the Indian Council of Agricultural Research, etc., and allowed to contact direct such institutions for advice and guidance.

2. It is not possible for one centre to cover a whole district, nor is it possible to open a centre for every taluk or two. Hence, the services of the information centres and extension officers of the C.D. Blocks have to be requisitioned for taking the benefits of the Mandirs to the people.

3. The work done by an officer, an assistant officer and laboratory attendant in three years cannot be said to be satisfactory. The factors responsible are the nature of locality chosen, the novelty of the idea and last but the most important factor is lack of planning and assessment and absence of targets.

4. The centre should help in solving the field problems that crop up almost every day. Giving people what they want with a scientific background will infuse in them a faith in scientific methods and make them science-minded generally.

5. The activities of Vijnan Mandirs should be planned in consultation with the State Development Commissioner and the Director of Public Instruction.

6. Since only one Vijnan Mandir is envisaged in a District, the Vijnan Mandir Officer should be a member of the District Development Committee and of the Block Advisory Committee of the area.

7. Vijnan Mandirs should as far as possible be located close to local high schools in Blocks to enable them to draw upon the resources of the schools in organising their experiments and lectures.

8. Addition of a cultural wing will result in wasteful duplication.

SUMMARY OF THE REPLIES RECEIVED FROM UNIVERSITY PROFESSORS AND DEANS OF THE FACULTY OF SCIENCE, PROMINENT EDUCATIONISTS AND OTHERS TO THE QUESTIONNAIRE ISSUED BY THE COMMITTEE

Prof. M. S. Krishnan, Head of the Department of Geophysics, University of Andhra

Vijnan Mandirs cannot be possibly manned by highly trained scientists. By their very nature they will be subject to poor supervision as most of them are located in rather out of the way places where very rarely a high school may be present and not an institution of the college standard. The officers attached to Vijnan Mandirs would be fossilised and frustrated in no time. As at present envisaged and run, the scheme will only lead to waste of money without any suitable return.

Instead of having a separate institution like the Vijnan Mandir, some selected high schools may be helped by the Government to develop the activities envisaged for Vijnan Mandirs. Two or three additional members of the staff can be given to selected schools, such as an extra science teacher, physical instructor and one who is interested in cultural activities like dramatic performances, etc. This will also help in reducing the cost of the scheme.

If Vijnan Mandirs are administered by the Government, the people appointed thereto can only be transferred from one centre to another where this kind of organisation is functioning. If they are part of the school organisation, there will be some incentive to learn and get some help from their colleagues in their activities.

Dr. N. R. Dhar, Director, Sheila Dhar Institute of Soil Science, University of Allahabad

The argument that the work envisaged for Vijnan Mandir, namely, dissemination of scientific knowledge is being done by other technical departments already functioning is not convincing. Experience has shown that the departments have not been able to do anything comprehensive in this direction. From this angle, Vijnan Mandirs fulfil a useful role in educating people on methods of science.

Soil and Food Analysis: Persons holding either a Bachelor's degree or a Master's degree in Agriculture are not competent to carry on soil analysis, but an M.Sc. in Agricultural Chemistry can do it after about six months' training. Training in methods of water analysis will also be covered during this period. An M.Sc. in Inorganic Chemistry will not require any specialised training for water analysis, but one year's training is suggested for soil analysis. Detection of food adulteration can also be carried out by them after this training. Microscopic examinations of food and culture tests for purposes like determination of nutritional value of food are complicated and may be kept outside the purview of Vijnan Mandirs.

About ten Vijnan Mandirs should be adequate to conduct water and soil analysis throughout Uttar Pradesh in about two years.

Equipment: For analytical work, equipment costing Rs. 10,000 (non-recurring) and Rs. 3,000 (recurring) will be required. To begin

with stoves can be utilised, but there is need for a gas plant at a cost of about Rs. 15,000. A generator might cost about Rs. 12,000, and the recurring cost thereon would be about Rs. 1,200 to Rs. 1,500 per annum.

For efficient functioning of Vinan Mandirs, systematic technical guidance and supervision are essential. Technical guidance may be provided either by research laboratories or by agricultural departments of the States. Universities having a Faculty of Agriculture may also be made responsible for providing technical guidance.

Prof. K. N. Kaul, Director, National Botanical Gardens, Lucknow

The Vijnan Mandir Officers should be asked to organise 'autonomous' Vijnan Mandirs to be run by villagers themselves in the surrounding villages. The 'official' Vijnan Mandir may be provided with necessary facilities to help and guide the 'non-official' Vijnan Mandirs. The efficiency of the organiser should be judged from the number of such Vijnan Mandirs he has been able to organise around him and the standard of workers he has raised in the locality of his activities. There should be one 'official' Vijnan Mandir in each district.

The minimum qualifications for the Vijnan Mandir Officer should be graduation in Science or in a technical subject. He should receive training at a place, where some practical work on the development of village life is in progress. He should be asked to take active part in that work. He should get a thorough course of training in the subjects which directly deal with his work in the villages, but this training should come during his field work and should not be given as class-room lectures. If this procedure is followed, about ten months to a year's course would be enough. The idea is that the officer should identify himself and work as a villager. Just before rains in June, he might work with villagers to start the *kharif* crop, he might also supervise the farm activities and tackle intelligently the day to day problems. At present our educated workers have absolutely no practical experience of village life.

A good library for each Vijnan Mandir is essential. Journals in Hindi and other regional languages published by the Centre and the States should be made available to Vijnan Mandirs. A few reference books may also be provided. Other cheap, light literature can be obtained by voluntary subscriptions. This will not cost much. A sum of Rs. 2,000 per annum for books and magazines would be enough for the library.

Dr. R. K. Tandon, Director, Agricultural College, Kanpur

Soil analysis is not a difficult job and with some training and equipment, the work can be undertaken by Vijnan Mandirs. Interpretation of the data so collected is, however, difficult and unless a person has sufficient experience and background of soil chemistry, he will not be able to interpret the data correctly and make recommendations. Vijnan Mandirs should not, therefore, be entrusted with research work on soils, but they may restrict their activities to scientific explanation of the various demonstrations and recommendations made by the Agricultural Departments in the area where a Vijnan Mandir is located. In view of the limited resources available

to the Vijnan Mandirs, it is desirable that they should restrict their activities to such items as are not likely to result in incorrect opinion being put across to the cultivators.

Dr. Ray, D.Sc., F.N.I., Registrar, Agra University

The Vijnan Mandir Officer and the Assistant Vijnan Mandir Officer may be trained for about nine months in the methods of practical demonstration of the various scientific devices and their application in the everyday village life. In the diffusion of scientific knowledge, practical demonstrations play an important part and without efficient practical demonstrations, no interest can be created in the minds of the rural population.

Dr. S. M. Mitra, Dean of the Faculty of Sciences, University of Rajasthan

Of the two officers in a Vijnan Mandir, the senior officer might be a qualified analytical Chemist (M.Sc.) with Physics in B.Sc. and the other one a Biologist, preferably a Botanist, with Chemistry in B.Sc. Both the officers should undergo special training for bout six months on methods of soil analysis, water analysis, and sanitation.

It is worthwhile to continue the service facilities available in Vijnan Mandirs which should get expert advice from the Universities, National Laboratories and other research institutions, whenever necessary.

Besides the equipment provided to Vijnan Mandirs, it is desirable to add some apparatus for soil, water and food analysis, involving a total outlay of about Rs. 2,000 per Vijnan Mandir.

It is essential that Vijnan Mandirs should work in close collaboration with the Science Colleges located in the neighbourhood. The actual nature of such collaboration might be settled in consultation with local authorities and representatives of the concerned colleges.

Smt. Savitri Nigam, M.P.

Vijnan Mandirs are the most effective instruments for the dissemination of scientific knowledge to the millions who are living in the villages. The constructive revolution in the economic, social, industrial and agricultural fields, which we are aiming at, could only be achieved if a net-work of such Vijnan Mandirs is established throughout the country.

Shri Ariyanayakam, Hindustani Talimi Sangh, Wardha

My visits to a few Vijnan Mandirs in various States have shown that the work depended largely on the persons in charge, and the Vijnan Mandirs were without proper guidance and training in the use of equipment provided. The existing multi-purpose high schools, to my mind, will be suitable centres for establishing Vijnan Mandirs This will bring Science teachers in touch with the work of Vijnan Mandirs and also supplement the science teaching carried on in these high schools. This will also be economical as regards scientific personnel, equipment and building.

Smt. Indumathi Chimanlal, Ahmedabad

There is a great need for coordination among the different institutions doing allied work. There are centres of agricultural higher education in the Rural Institutes run by the educational authorities. Coordination between Vijnan Mandirs and these institutions will not only be economical but will be beneficial to both.

Shri Ishwerbhai Patel, Charotar Education Society, Anand

It is too much to expect the Central Government to exercise day to day control and supervision over the working of Vijnan Mandirs. The best thing would be to entrust their administration to State Governments who may also be permitted to depute suitable persons from their own cadres.

To give the whole scheme a popular support and an all-round cooperation, an advisory committee with a non-official as chairman may be appointed. The Block Development Officer, the Secretary of the institution where the Vijnan Mandir is located, the Deputy Collector, the District Health Officer and the Vijnan Mandir Officer may be members of the Committee.

The Vijnan Mandirs should assist Science Clubs in drawing their programme of activities which may include the following:—

(i) Maintaining weather charts and noting day to day temperature, rain, etc.;

(ii) running a small library of scientific books or books on General Science;

(iii) arranging exhibitions on health, hygiene, sanitation and other scientific subjects;

(iv) screening of films or slides;

(v) arranging lectures;

(vi) working as a centre for accepting specimens of soil, water or pathological kind for analysis and sending them to the Vijnan Mandir Officer and transmitting the results when received to the persons concerned and

(vii) in short, acting as a centre for inculcating a scientific outlook on life.

Lt. Col. Dr. R. Nagendran, F.R.C.S., (England), Bangalore

1. Laboratory investigations are only an aid to diagnosis and too much importance need not be given to them without clinical examination by a doctor. The area covered by a Vijnan Mandir appears to be large, consisting of about 70 to 100 villages with an average population of 1,000. If the morbidity is reckoned as 5 per cent. about 50 persons in each village will have to be investigated and fresh cases will appear everyday.

2. It is not clear how the Vijnan Mandir Officer will collect specimens for examination. When the tests are done, steps should be taken for prompt treatment. Otherwise, the villagers will not have any confidence in the tests. Further these investigations have to be done very soon after the collection of specimens.

3. The following investigations may be made by Vijnan Mandirs:

(a) Blood

1. Blood count, total and differential.
2. Estimation of Haemoglobin.
3. Detection of blood parasites.

(b) Urine

1. Tests for albumin, sugar and bile.
2. Microscopic tests for sediments in urine.
3. Estimation of sugar and albumin.

(c) Stool—Examination for intestinal parasites.

(d) Sputum—A.F.B.

4. The equipments required for these tests are given below:—

1. Albuminometer ESBACHS—2.
2. Haemocytometer—3.
3. Pipettes for RBC and WBC Counts (More sets are required as the pipettes have to be thoroughly cleaned and dried after each use)—6 sets of each.
4. Haemoglobinometer—6.
5. Microscope compound—1.
6. Microscope lamp—1.
7. Saccharometer—3.
8. Microscope slides—1 gross.
9. Coverslips—3 dozs.
10. Centrifuge hand conical glasses for above—1 doz.
11. Chemicals.
12. Glassware.

Prof. K. A. Thaker, Dean, Faculty of Science, Marathwada

1. One of the two officers in a Vijnan Mandir should be a person holding a Master's degree in Agriculture, and the second a Master's degree in Chemistry. A person having a Master's degree in Chemistry will be in a position to apply his mind to Soil Chemistry, the manures to be used for various types of soils, pest control and even to village sanitation. There can be no person better qualified than a Chemist who would be useful in all these fields.

2. It is necessary to train these officers before they are asked to assume charge of the Mandir. The object of this training should be to:—

(a) give them a clear-cut idea of what exactly they are expected to do;

(b) give them some idea in respect of problems in Agriculture in India, the different methods that are being used and should be used to tackle these problems;

(c) impart some knowledge regarding the cheap and easy methods to improve village sanitation;

(d) make them alive to the problem of pests (common pests and their control);

(e) train them to exhibit on a very small scale the difference in yield, when improved seeds, suitable methods and new techniques are used; and

(f) train the Chemist officer in soil, water and food analysis. If it is not possible for them to interpret the results, they can take the help of experts in the field.

Shri R. C. Paul, University Professor and Head of the Chemistry Department, Hoshiarpur, Punjab University

The facilities for analysis of soil, water, food, etc., must be continued in Vijnan Mandirs. Withdrawal of these facilities will certainly impair the efficiency and popularity of the Vijnan Mandirs.

A refractometer may be supplied to Vijnan Mandirs. This would enable the people to understand simple methods for detecting adulteration of fats and oils, including ghee.

Vijnan Mandirs should work in close collaboration with the teaching and research centres available in the Universities.

Prof. P. N. Mehra, D.Sc., F.N.I., Dean, Faculty of Science and Head of the Botany Department, Punjab University

There should be three officers in each Vijnan Mandir—one Vijnan Mandir Officer and two Assistants. The senior officer should be an M.Sc. in Agricultural Chemistry and the other an M.Sc. in any of the two natural sciences, Botany or Zoology. All the three Vijnan Mandir Officers should receive training for a period of one year at least in their respective fields in an institution of standing. After suitable training it should be possible for the officers to undertake some soil, water and food analysis on a satisfactory basis.

The service facilities should be continued for the benefit of rural population. The Vijnan Mandirs should work in close coordination with teaching and research institutions, For this purpose a committee may be appointed consisting of Vijnan Mandir Officers and Professors of Science from the neighbouring colleges. For proper balancing of work the Committees might meet every quarter to devise ways and means for disseminating knowledge.

Dr. Bhaskaran Nair, Principal, University College and Chairman, Board of Studies, Zoology, Kerala

Vijnan Mandirs are doing very good work in dissemination of scientific knowledge and I would recommend that as many more of them as possible should be established.

Dr. C. S. Venkateswaran, Director of Public Instruction (Retd.) and Chairman, Post-graduate Board of Studies in Physics, Kerala

Six months' training in carrying out tests of soil and water analysis should be considered sufficient to enable Vijnan Mandir Officers to conduct ordinary laboratory tests and interpret them. More detailed investigations may well be left to specialised scientific agencies like the Public Health Laboratories.

Shri K. Y. Verghese, Chief Professor and Head of the Department of Zoology, Ernakulam

The Officers may be given a year's practical training in analytical work so that they may be able to help rural people. If further elucidation is required, the problems could be referred to other research centres.

Vijnan Mandirs should work in close collaboration with institutions engaged in the teaching of science. Supplies of suitable literature in regional language about the latest developments in science and periodical instructional tour to research centres could act as a bridge between rural population and research centres.

It is better to have service facilities in Vijnan Mandirs. Service aspect will not militate against the efficiency of Vijnan Mandir work; on the contrary, it may add to it.

Dr. N. S. Wariyar, Professor of Chemistry, University College, Trivandrum

Under the conditions prevailing in Kerala (with about 600 high schools), it is desirable to associate high schools with the Vijnan Mandir work. A Mobile Educative Unit could be organised by Vijnan Mandirs and these could work in cooperation with science teachers of high schools. If an ethos in favour of science is to be created, it is best done from the school onwards.

Shri A. Raman, Professor of Botany, Maharaja's College, Ernakulam

Refresher course may be held for Vijnan Mandir Officers once a year in the State where they are working. Discussions held in these classes may bring these officers to similar and allied problems in different areas. Apex Seminars for Vijnan Mandir Officers may be held on an all-India basis.

The success of Vijnan Mandirs can be assessed by the progress of work done by them in a particular area. For this purpose Vijnan Mandirs may be asked to submit annual reports. If a Vijnan Mandir has failed in its mission in three consecutive years, a proper enquiry may be instituted to analyse the causes of failure.

Lively models showing recent scientific progress may be exhibited in Vijnan Mandirs so that people can be kept well-informed of recent progress. Instructive posters should be printed, distributed and exhibited. They should be of attractive design.

The present pattern for inspection of the work of Vijnan Mandirs is inadequate and unsatisfactory. There should be a Central Supervisory Body in every State which could probe into the working of these Mandirs as frequently as possible. The supervisory authority should get monthly reports of the activities and the annual result should tally with the monthly results.

A clerk in the grade of in Upper Division Clerk may be attached to Vijnan Mandirs. It should be his duty to prepare the report from the data furnished by the Vijnan Mandir Officers.

Provision of facilities for pathological work will not result in any duplication. On the contrary, extension of such facilities is necessary for the popularity of Vijnan Mandirs. The appeal which the 'applied' aspect has to the people in rural areas may be exploited to explain the 'pure' aspect and the scientific developments.

Shri Gopala Menon, Professor of Physics, Maharaja's College, Ernakulam

Vijnan Mandirs may work in close collaboration with science colleges. The officers may be given the honorary status of lecturers of colleges. They may also be given all privileges and facilities to carry out such investigations as cannot be done in Vijnan Mandirs.

Principal, Medical College, Amritsar

The officers appointed to work in Vijnan Mandirs should be M.Scs. in Chemistry or Agriculture, as the main objective of the work of these institutions is to improve agriculture and to attend to plant protection work, sanitation problems, etc.

Principal, College of Science, Banaras Hindu University

The Vijnan Mandir Officer may be appointed from among persons with the following qualifications:—

M.Sc. in Agricultural Chemistry or Chemistry.

M.Sc. in Agricultural Chemistry or Soil or Water Chemistry.

M.Sc. in Veterinary Science; if not available, B.Sc.

M.Sc. in Agricultural Entomology; or Associates of the I.A.R.I. may be appointed.

M.Sc. in Helminthology.

M.Sc. in Botany with Mycology as a special subject or Associates of the I.A.R.I. with Mycology or Plant Protection work as special subjects.

M.Sc. in Agricultural Engineering.

M.Sc. in Geography with training in land utilisation.

M.Sc. in Geography with Geology in B.Sc.

The Assistant Vijnan Mandir Officer may be a B.Sc.

Rev. Herbert A. De Souza, S. J., Principal, St. Xavier's College, Ahmedabad

The Vijnan Mandir Officer and the Assistant Vijnan Mandir Officer need not be specialists. What is really required is that the person in charge of a Vijnan Mandir should be of wide outlook and initiative with capacity to disseminate scientific knowledge either by practical or personal contacts and thus help in creating a scientific attitude in the minds of the people. It is not necessary to restrict appointments to M.Scs. in Agriculture.

The administrative and the technical sides of Vijnan Mandir should be reduced to a minimum; alternatively, the administrative and technical side should be separated.

Dr. S. S. Joshi, Professor of Physics and Member, Advisory Committee for Vijnan Mandir, Shapur (Saurashtra)

There is no definite programme of work for Vijnan Mandirs. A committee of experts may be appointed to draw up such programmes, keeping in view the objectives of Vijnan Mandirs.

There cannot be any physical tests to assess the output of Vijnan Mandirs. Their success has to be judged from the attitude of the beneficiaries.

The Vijnan Mandir may be provided with a petrol-driven power unit for running the projector, and funds for its transport from place to place.

Prof. Surendra Mohan Dattatreya, P.E.S. (Retd.), Nilokheri

Wherever feasible, Vijnan Mandirs may provide facilities for instruction in First-Aid and in the precautionary measures to be adopted against epidemics and other diseases. Vijnan Mandirs may also spread knowledge about right standards and ways of living, and enable the people to develop the necessary scientific bias in favour of improved methods and practices and also to cooperate with the authorities in carrying out scientific programmes.

Dr. Ramakrishna, Indian Aid Mission, Kathmandu

Vijnan Mandirs need not work as independent agencies in Blocks. Instead they should be part of the Blocks, though financial help may be provided by the Government of India. The Block staff are in constant contact with the people in rural areas and with their assistance it should be possible for Vijnan Mandirs to mobilise the greatest amount of popular participation in their activities. Once Vijnan Mandirs become part of the Blocks, all facilities that are available in the Blocks will also be available for the Vijnan Mandir work.

Physical targets for the working of Vijnan Mandirs are not necessary because in an effort to achieve the physical targets, the main purpose of education may be lost sight of.

Analytical work carried out in Vijnan Mandirs will have to be according to the requirements of the people in the Blocks in connection with the various types of programmes that have been included in the Block scheme. Once this is done, there will not be any overlapping of the functions.

Shri K. Arunachalam, Secretary, Gandhi Smarak Nidhi and Chairman, Gandhiniketan Ashram, Gandhi Museum, Madurai

To avoid confusion, the objectives of Vijnan Mandirs should be clearly defined. Specific job charts may be prepared which should lead to the realisation of the objectives. There need not be any, and there cannot be any duplication of work, if the role of the Vijnan Mandirs is properly understood.

The Mandirs are not systematically equipped nor have the officers freedom to develop their own plans. The instructions that they get now and then do not seem to accord with the original purposes of the scheme. The officers may be asked to give their own plans and targets for the coming year. The plan an finally accepted by competent authorities should be the scale with which to evaluate the work of Vijnan Mandirs.

The present arrangement for supervising the work of Vijnan Mandir is not satisfactory. Arrangements may be made with the Ministry of Community Development and their cooperation enlisted. No single specialised agency need be entrusted with the responsibility for guiding and directing the work of Vijnan Mandirs.

It is a mistake to have withdrawn the facilities for pathological examination. Scientific attitude cannot be developed merely by talks and show of pictures and charts. People who attribute human and supernatural causes for diseases should themselves see some of the micro-organisms to believe that diseases could be controlled by taking these foreign organisms in the body. These facilities should, therefore, be provided in Vijnan Mandirs.

MORE IMPORTANT POINTS FROM DISCUSSIONS HELD WITH THE MINISTRIES OF THE CENTRAL GOVERNMENT, THE FORD FOUNDATION IN INDIA, THE UNIVERSITY GRANTS COMMISSION, ETC.

SECTION I—MINISTRIES OF CENTRAL GOVERNMENT

Ministry of Food and Agriculture—(11.4.1960)

1. In evaluating the work done by Vijnan Mandirs, it is necessary to consider how far they have succeeded in helping the people to use scientific knowledge in solving their day to day problems.

2. The utility of any institution depends not so much on the equipment, etc., it possesses, but on its ability to press them into service of the people.

3. For effective dissemination of knowledge, coordination with various agencies working in the area is essential. Many schemes which appear quite sound on paper fail to produce the desired results owing, among other things, to lack of coordination at different levels.

4. Facilities will have to be provided in Vijnan Mandirs for dissemination of knowledge in a manner which will carry conviction to the people. For this purpose an element of service is essential.

5. There is growing recognition of the need for establishment of more and more institutions for the benefit of rural population. From this angle, the establishment of Vijnan Mandirs in rural areas is a step in the right direction. Unless the bulk of wealth-producing population living in villages are supported by adequate scientific knowledge and helped to produce more out of the land, no real progress is possible.

6. Instead of embarking on a programme of expansion, the Vijnan Mandirs already in existence may be developed on a pilot project basis and their working evaluated after a period of time. If the people are really interested, they will come forward and contribute towards the recurring expenditure of Vijnan Mandirs.

7. The utility of Vijnan Mandirs may be assessed at the Block level even if they cannot cover the whole district.

8. Vijnan Mandirs may assist in collection of soil samples for detailed analysis in soil testing laboratories. They may also conduct routine investigations though they may not be able to interpret the results.

9. Vijnan Mandirs have no access to libraries, nor have they any facilities to keep their knowledge up to date.

10. As Vijnan Mandirs are not equipped for research, they cannot obviously produce new information; they can only pass on the information already contained in the various departmental manuals.

11. To produce results, the Vijnan Mandir Officer will have to be backed by facilities to project the knowledge in a convincing manner through demonstrations, field trials, etc. Even the Block set-up suffers from the drawback in that it has no facilities for demonstration.

12. Vijnan Mandirs cannot cover more than a very limited area and the agency of progressive farmers will have to be mobilised to reach the people. With some assistance by Village Level Workers, progressive farmers may arrange discussions, talks etc., for the benefit of other farmers.

13. If Vijnan Mandirs are placed at the district level their impact on the rural population will be very meagre.

14. The programmes of Vijnan Mandirs may be coordinated with those of other agencies and reinforced by local effort.

15. While some coordination with the Block is essential, to make Vijnan Mandir Officer a member of the Block team may create practical difficulties. The Block Development Officer may not always be a graduate in agriculture and the difference in the educational qualifications of the Block Development Officer and the Vijnan Mandir Officer may prove a hindrance in the execution of development programmes. Vijnan Mandir Officers who are highly qualified men may not also like to accept control from the Block Development Officers.

16. As Vijnan Mandir Officers are multi-purpose agents, some training in the philosophy of extension methods at an appropriate training centre will be useful.

17. As improvement of scales of pay alone may not prevent the flight of personnel, Vijnan Mandir Officers may be appointed by deputation from other departments.

Ministry of Education—(14th April, 1960)

1. Vijnan Mandirs are mostly working in isolation. Something appears to separate them from the community. The objective of taking science to the people may be achieved through social education organisations which have been established with the same ideology.

2. If demonstrations can be arranged to the satisfaction of the peasant, he may accept scientific methods and practices willingly.

3. To make people science conscious, general science has been introduced in the curricula of studies at different levels in educational institutions and as education expands, science will be taken to the extension field.

4. To ensure that the education imparted is not lost by the drift of students to urban areas in search of jobs, the practice of conducting demonstrations at the farms attached to schools has been given up; demonstrations are now arranged on the farms of peasants themselves.

5. Some secondary schools have started extension wings for the benefit of high school teachers. If Vijnan Mandirs are attached to those schools, they may be regarded as extension wings of the schools.

6. The idea of extension work is good in so far as it helps to build up the much-needed liaison between educational institutions and the community. Such liaison will result in a give-and-take relationship between schools and community and is preferable to an outside agency like the Vijnan Mandirs undertaking extension work

7. The main objective of the science club movement which originated in America is to encourage science talent. The All-India Council of Secondary Education has started about 340 clubs (20 per cent of which are in rural areas) to encourage science talent.

8. In certain States science education in schools is mostly theoretical and boys have no facilities for conducting any experiments. If students have an opportunity to handle equipments, curiosity which is so essential for scientific progress will be aroused in their minds.

9. Science Clubs have been functioning in India for about three years and the idea has caught on and a science news letter has also been started for the benefit of the clubs.

10. It is doubtful whether village teachers can be trained by Vijnan Mandirs and utilised as intermediaries for dissemination of knowledge. Without a good background of science, it may be dangerous for teachers to talk about science or try to extend scientific knowledge to villagers.

11. In this age of science, no real progress will be possible unless the outlook of the people is reoriented from adherence to tradition to one of science and technology. Our approach to this problem may be different from that followed in other countries. The village teacher has a great role to play in rural development and if the training given in the Teachers' Training College is made more effective, the products of these colleges may become efficient agents for taking science and technology to rural areas.

12. A survey has been made of the requirements of secondary schools and there is a plan to introduce science in all high and higher secondary schools before the end of the Third Five-Year Plan.

13. Science has been made a compulsory subject in high schools and introduction of science at the elementary stage has also been recommended.

14. Soil analysis is a matter for technicians and school teachers may not be able to handle it, except for those working in technical institutions like agricultural schools or colleges.

15. Mere analysis of soil, not followed by remedies to correct the deficiencies will be of no help to the population.

16. At present there is a certain imbalance between science and art courses in educational institutions and it is proposed to rectify it by the end of the Fourth Plan. At present science students form only about 30 per cent of the total student population. The plan is to raise this figure to 40 per cent during the Third Plan and to reach parity (50:50) during the Fourth Plan.

17. In most high schools, the teaching of science is generally in the hands of persons holding a bachelor's degree in science. The addition of the eleventh class to high schools and their conversion into higher secondary schools has increased the demand for persons holding the master's degree in science.

18. If qualified personnel are available in Vijnan Mandirs, short courses may be arranged by them for the benefit of school teachers.

19. Vijnan Mandirs have no contact with the local machinery or institutions operating in the area. If Vijnan Mandirs are integrated with Rural Institutes of standing which by dint of good work have built up a clientele, they may utilise not only the resourcess but also the climate developed by such institutes for disseminating knowledge.

20. It is necessary to ensure that Vijnan Mandirs are 'rooted' in a bigger organisation, preferably an educational institution.

21. Though at the highest level science and culture may go together, the same cannot be said at the lower level. Cultural programmes may, therefore, be kept separate and not added to Vijnan Mandirs.

22. Vijnan Mandirs may arrange Science Fairs, exhibitions, etc., and participate in celebrations on important days like the proposed Jagdish Chandra Bose Day.

23. The distinction between demonstrations and service is very subtle and it is difficult to say where demonstrations end and service begins. All available facilities should be utilised for the benefit of rural population.

24. Care should be exercised in developing the service aspect so that the work relating to dissemination of knowledge is not swamped by service.

Ministry of Community Development and Cooperation—(18th April, 1960)

1. There is no machinery at the field level to keep the knowledge of the extension staff up to date. Efforts will have to be made to feed the officers at the field level with new researches and keep them abreast of developments.

2. Knowledge will have to be taken to the people in an intelligible form; they will also have to be helped to develop a rational outlook by overcoming their adherence to the traditional way of life. Extension agencies are required to extend knowledge as a part of the development programmes. Apart from the knowledge acquired by them prior to their appointment, extension officers will have to be fed with knowledge on matters like the use of mud plaster, cowdung gas plant, etc. This type of work may be taken care of by Vijnan Mandirs.

3. The Social Education Organisers are mostly graduates in arts and have no knowledge of science; nor have they any scientific background to enable them to handle science extension work efficiently.

4. With the emoluments now offered, it may be difficult to secure the services of Social Education Organisers who may have a good knowledge of both the social and the physical sciences.

5. Vijnan Mandirs have an important role to play in disseminating knowledge and can deliver the goods, if properly worked.

6. Extension officers are over-burdened with administrative and other non-technical duties. However, in view of the measures taken for the organisation of Panchayats, Cooperatives, etc., work of a non-technical nature is gradually being taken off their hands and it should

be possible for them to devote more time for educational work. As matters stand at present, extension specialists appear to feel that educational work is not really their job.

7. Extension education forms an integral part of all development programmes and if extension officers are unable to do it, it only means that they are not discharging their responsibility. It is not feasible to give a more comprehensive role to the Social Education Organisers so as to include science extension work.

8. The progress made in the sphere of extension education is not susceptible of easy verification, as it has mostly to do with the mental outlook of the people. The staff at lower levels like Village Level Workers are more inclined to take up some activities of a tangible nature. Even at the district level it is usual to make an assessment more in terms of work which can be measured, such as supply of seeds, fertilisers, etc., than in terms of intangible aspects. It may be some time before people come to realise that what is intangible is also good and that physical targets, though essential, cannot be relied upon beyond a certain degree.

9. The actual work-load which a field worker may reasonably be expected to carry will have to be investigated. The village Level Worker is an area level worker and his jurisdiction covers about ten villages with a population of about 6,000. Some doubts have been felt about his ability to reach all the people within his charge. What quantum of personnel may be provided, at what level they may operate and what service may be included in their activities have still to be considered. The trial and error method adopted so far has yielded some solutions and it may be possible to systematise the whole procedure as more experience is gained in the operation of different schemes.

10. So much remains to be done in the field of rural development that duplication may not really be a problem.

11. Vijnan Mandir Officers may draw up coordinated programmes in consultation with the Block Extension Officers. Village Level Workers may also seek the guidance of Vijnan Mandir Officers in planning their programmes. Several other steps may thus be taken to coordinate the activities without placing Vijnan Mandirs formally under the Block administration.

12. Some instructions have been issued to effect coordination between Blocks and Vijnan Mandirs. It may be that some difficulties are felt at the field level in implementing them. At some places, however, coordination has been effected with the Block machinery, but this depends mostly on the personal relations of the officers.

13. Vijnan Mandir Officers who are mostly bred in urban surroundings may find it difficult to acquire the skill or aptitude necessary for working with the people. Without some emotional association with the people, educational contacts may not be possible. By a process of trial and error, Vijnan Mandirs may devise suitable channels of communication for reaching the people. This may be done either through the Panchayats, or the village leaders. For this purpose some orientation training will be necessary.

14. In States like Uttar Pradesh, organisations such as Production Committees, Social Service Committees, etc., have been set up, and Vijnan Mandirs may be given representation on these Committees. Vijnan Mandirs should develop contacts with the Village Level Workers who are in touch with the life of the people. This will enable Vijnan Mandirs to plan their programmes taking into account the felt needs and difficulties of the people in the rural areas.

15. It should be possible for Block Development Officers and Vijnan Mandir Officers to plan out tours on a coordinated basis.

16. A well-equipped primary health centre is the ideal place for pathological work. Although some centres have no microscopes at present, they may be equipped properly.

17. Vijnan Mandir Officers may be given training for about six weeks at an Orientation Training Centre along with extension officers and others. The group knowledge which they will acquire may give them a better insight into development programmes. In addition, Vijnan Mandir Officers may be given some idea about the social habits of the people and how processes of change are to be effected. Such training is necessary as the basic objective of Vijnan Mandirs is to change the mental attitude of the people. Vijnan Mandir Officers may attend a portion of the course at one of the Social Education Organisers' Training Centres. The courses conducted at present at such institutions may not, however, be suitable for the training of Vijnan Mandir Officers and special courses may have to be organised.

18. Some Vijnan Mandirs have become popular as a result of the service rendered by them. Analysis of water samples in the Vijnan Mandirs has helped to make people 'water-conscious'.

19. Existing agencies are adequate to take care of cultural activities and a new agency for this purpose may lead to duplication.

20. Vijnan Mandir Officers may be placed under the administrative control of Block Development Officers. The relations between Block Development Officers and Vijnan Mandir Officers may be similar to those that subsist between Block Development Officers and doctors of primary health centres.

Ministry of Scientific Research and Cultural Affairs—(20.4.1960)

1. Though the Vijnan Mandir Scheme was started about five years ago, there were only a few Vijnan Mandirs till recently and they were not also doing much work, apart from arranging some talks, lectures, etc. During the last one and a half years, however, the number of Vijnan Mandirs have increased and some advance has been made. The activities of Vijnan Mandirs have created some interest in the areas where they are located and there is need for expanding the number.

2. The response from the States is not adequate except in the matter of accommodation. The time has come for the scheme to be worked as a joint enterprise by the Centre and the States.

3. The minimum accommodation required for a Vijnan Mandir has been laid down. Certain conditions which the sites should satisfy before a Vijnan Mandir is opened have also been specified, e.g., proximity to educational institutions, availability of electricity, nearness to places where people congregate periodically, etc. These conditions have been stipulated only in the last two years or so, but Vijnan

Mandirs were opened earlier on the basis of assurances given by the States that adequate accommodation and other facilities would be provided by them.

4. Even though there was some lacuna in the fulfilment of promises by certain States, Vijnan Mandirs were set up in the expectation that to do so might help in spreading out Vijnan Mandirs in the country. This practice has, however, been given up and it is proposed to review the whole position and consider how States are to be associated in the administration of Vijnan Mandirs.

5. A proposal to make District Officers the controlling authority for Vijnan Mandirs for purposes of travelling allowance, contingent expenditure, etc., is under consideration and when this proposal is implemented, delays and unnecessary references to the Centre may be obviated.

6. States have generally taken the line that they have nothing to do with the administration of Vijnan Mandirs after some accommodation has been provided by them.

7. The material issued by the Council of Scientific and Industrial Research and other National Laboratories is too technical to be of interest to villagers. Monographs are being brought out by the various research centres in simple popular language and these could be supplied to Vijnan Mandirs.

8. The importance of surveys and the action to be taken thereon needs to be clearly brought out in the objectives of the scheme.

9. There are plans to decentralise the administration and also to get the Vijnan Mandir Officers trained in the States where they may be posted.

10. The basic idea of Vijnan Mandir is to spread rudimentary scientific knowledge with a view to arousing curiosity in the minds of the people. Vijnan Mandirs may arrange simple demonstrations, experiments, etc., to strike the imagination of the villagers, but it is doubtful whether this work can be done by every person holding a Master's degree in Science. What is needed is a really capable man with versatile knowledge of different branches of science.

11. Vijnan Mandirs are located close to educational institutions and the Vijnan Mandir Officers have also been instructed to develop close contacts with educational institutions and deliver lectures and talks.

12. Though the pattern of work done is not the same all over the country, the activities of Vijnan Mandirs are more akin to those of the Blocks than to those of educational institutions.

13. As an experimental measure, Vijnan Mandirs may be attached to selected Blocks.

14. Vijnan Mandir scheme will have to be continued even after the Third Five-Year Plan.

15. There is need to approach the whole problem of strengthening educational institutions on an integrated basis, but this is a long-term process.

16. There is no lack of culture in the country and institutions like the Sangeet Natak, the Lalit Kala and other Akademis are already devoting sufficient attention to cultural programmes.

17. Persons of a high calibre will be required if Vijnan Mandirs are to function as the extension wings of National Laboratories. An extension service has been started in the Council of Scientific and Industrial Research and problems dealt with by that service are of such a nature that they cannot be tackled by Vijnan Mandirs.

18. A high-level committee is functioning under the Chairmanship of the Director-General, Council of Scientific and Industrial Research, to take care of field problems and get them processed at the different laboratories on the basis of priorities. There is also a Special Officer in the Council of Scientific and Industrial Research to study various problems and place them before this Committee for consideration. If the laboratories are to take care of every problem that might be referred by different institutions all over the country, they will have to be considerably expanded. The results may not also be commensurate with the labour and outlay involved.

19. The Cowdung Gas Plant has already passed the experimental stage and it may be difficult for Vijnan Mandirs to demonstrate its working without adequate staff.

20. A percentage of vacancies of Vijnan Mandir Officers is being reserved for Assistant Vijnan Mandir Officers. The Vijnan Mandir Officers are, however, at a 'dead end' and there is no prospects for them for promotion. Improvement in scales of pay alone may not prevent the flight of personnel.

21. Training of Vijnan Mandir Officers at the Institute at Mussoorie may be too high and it is proposed to get Vijnan Mandir Officers trained in their respective States.

22. Vijnan Mandir Officers are being called up for an annual conference at Delhi. Discussions and seminars are held, but there are no formal lectures or training.

23. As far as possible, the activities of laboratories at Vijnan Mandirs may be restricted to demonstrations. If, however, people ask for some service, it may be provided to the extent possible.

24. About clerical assistance to Vijnan Mandir Officers, it is proposed not to increase the number of officers in Vijnan Mandirs. Steps have, however, been taken to keep the paper work of Vijnan Mandirs to the minimum.

25. It may be desirable to give Vijnan Mandir Officers better status if that will help their functioning on a more efficient basis.

26. A scheme is already in operation in the Ministry for production of popular scientific literature. There was a meeting of leading Scientists, Vice-Chancellors, etc., some two years back and an appeal was made for production of popular literature, but it had not evoked sufficient response.

27. There is need for a bibliography of scientific books in regional languages. The bibliography may be in two parts; the first may pertain to technical and other advanced literature; the other may pertain to popular literature. Sahitya Parishads and other agencies in the States may be contacted in preparing such a bibliography.

Ministry of Health—(21-4-1960)

1. There is a heavy shortage of medical graduates and as the tuition fees paid by them in the college is nothing as compared to the expenditure incurred on their training at the medical institutions some measures may be taken to press them for service in rural areas by introducing an element of compulsion, if necessary, after their graduation.

2. More medical graduates may be available for work in rural areas if suitable accommodation is forthcoming. A pattern has been evolved for construction of quarters and suitable grants are also being made by the Ministry of Health for the purpose.

3. There is a surplus of doctors in Bengal and the surplus may be drawn to fill vacancies elsewhere.

4. If existing rules which provide that all Government buildings should be constructed through the Public Works Department are relaxed, more positive measures can be taken to secure people's participation in providing accommodation for the primary health centres as well as for the staff in rural areas.

5. An agreement has been entered into with the UNICEF for provision of microscopes to a specified number of units. Quarterly reports are being examined to find out whether the Primary Health Centres are making any use of the equipment. Deficiencies are being brought to the notice of the appropriate authorities in States for necessary action. Notwithstanding the action taken so far, there can be no running away from the fact that a medical officer in charge of a primary health centre has so many duties to attend to like the out-patient department, weekly visits to sub-centres and school health scheme that he has little time for pathological work.

6. A primary health centre has more staff than a dispensary; some action has also been taken during the last two or three years to define the functions of the primary health centres on a rational basis. If in spite of this, the work on the health education side falls below expectations, it is because there is a great demand for medical treatment and it may be some time before people come to realise that the curative aspect is not the only benefit available from a doctor.

7. Exact figures of primary health centres functioning without microscopes are not available; it might be in the region of 30 per cent.

8. The recommendation of the Bhore Committee is that a doctor can attend to about 20,000 persons. The Block with a population of about 60,000 is therefore too large a jurisdiction for a single doctor to cover on a satisfactory basis. Some attempts are being made by State Governments to provide a better medical cover by reducing the jurisdiction, but paucity of doctors is the bottle-neck.

9. Pathological work has to be done under the supervision of a doctor. It has no value except as an aid to diagnosis and as a measure to indicate response to treatment.

10. Routine tests are being conducted in some primary health centres and facilities are also available free of cost to patients. The lady health visitors are also put through some training to carry out certain simple urine and blood tests.

11. Statistics of work done by doctors at the primary health centres are not readily available. There is no specific mention that primary health centres should attend to pathological work in addition to their other duties but the whole plan for the establishment of the centres is discussed at considerable length in the Bhore Committee's report.

12. Primary health centres have been established with the object of catering to both the curative and the preventive aspects and pathological work is necessary for both. No hard and fast rule can, however, be laid down that every case requires pathological examination.

13. No assessment has been made to see how the primary health centres are working.

14. There is need for some assessment to obtain a clear picture about the scope and functions of the primary health centres. Such an assessment will be of help in examining whether with the facilities now available in terms of staff, equipment, etc., they can take up pathological work. If the assessment shows that they have no time to attend to pathological work, there will obviously be no use in incurring any expenditure on the supply of microscopes and other equipments required for that work.

15. The criticism that the general understanding of public health activities does not include nutrition in their scope is not correct. A Nutrition Advisory Committee is functioning under the Indian Council of Medical Research. Nutritional surveys are conducted from time to time at different levels and a book has also been published on balanced diet by the Indian Council of Medical Research. More emphasis is also being given to nutrition education and a Committee has been set up to draw up a syllabus on the subject of nutrition in schools at different levels. The School Nutrition Committee has been recently set up by the Ministry of Health *inter alia* to study this problem in greater detail. In Orissa and Andhra Pradesh expanded nutrition programmes are being operated in collaboration with the Blocks.

17. Pathological work may be done under the direct supervision of a medical officer and followed by prompt medical treatment. Unless treatment is ensured for the defects noticed, there may be a sense of frustration in the minds of the population.

18. The doctor in the primary health centre is already overworked and he may not be able to attend to pathological work at Vijnan Mandirs.

19. Pathological work is generally done by trained laboratory technicians under the supervision of doctors. Those who have read up to Intermediate in Science are generally given one year's training for this work. Vijnan Mandir Officers can do routine analysis after training for about nine months, though it may not be possible for them to interpret the results. In any case, it may not be worthwhile to waste double graduates on a work which is generally done by laboratory technicians.

20. Mere publicity by Vijnan Mandirs in favour of family planning may not be of value without any follow-up action or supply of contraceptives. Any propaganda will have to take into account the

socio-economic conditions in rural areas. Moreover, without some privacy it will obviously be difficult to practise family planning methods. Vijnan Mandirs cannot do effective work in this matter except, perhaps, to display a few charts, placards etc.

SECTION II—FORD FOUNDATION IN INDIA, UNIVERSITY GRANTS COMMISSION, PLANNING COMMISSION ETC.

Ford Foundation in India—(30th March, 1960)

Education at the primary stage in India has no element of science and the weightage given to science in the secondary schools is not much.

Apart from science colleges, there are laboratories and research centres to attend to specific problems. There is, therefore, something to build upon in urban areas, but extension of scientific knowledge to rural areas has not been adequately taken care of with the result that the peasant is steeped in ill-founded beliefs, prejudices and superstitions.

2. The basic idea of the Vijnan Mandir Scheme, viz., stepping up the process of change and reorienting the outlook of the peasant from an adherence to past traditions to acceptance of science and technology as a basis for life is an important one. The problems facing India are not unique; the U.S.A. faced them some years ago and many other countries are grappling with similar problems at present. The peasant all over the world is conservative with his roots in past traditions and to reorient his mental attitude and influence him to adopt improved practices and methods may not be easy.

3. It is necessary to arrange demonstrations with sufficient continuity to the satisfaction of the farmer before he can be persuaded to accept the processes evolved by research.

4. The low crop yield in India is mostly due to lack of facilities to advise the villager about the structure of soil, the type and dosage of fertilisers to be used, etc. Facilities are also lacking to educate the villager on correct water application methods for different crops. It is surprising that even agricultural graduates lack adequate knowledge of these subjects which are vital to the economy of the peasant.

5. There is nothing more basic than to help the villagers to move rapidly with the times by convincing them that a life of joy and happiness is possible only on the basis of science and technology.

6. Vijnan Mandirs may be looked upon as 'little islands of science' which, if properly worked, can help in developing a scientific temper among the people. The seeds of science planted by them will sprout rapidly and help dissemination of knowledge.

7. If Vijnan Mandirs are to be effective, they will have to inject knowledge at the points where it will catch the imagination of the villager or do something to promote his economic prosperity like increasing the productivity of the soil.

8. Apart from advice on increased production, sanitation and nutrition, which are intimately conected with the way of living, offer wide scope for fruitful work.

9. The programme of work envisaged for Vijnan Mandirs may be done by agriculture, public health and extension agencies in the Blocks and, if necessary, they may be strengthened.

10. The problem of science extension can be adequately solved if Agricultural Colleges have an additional functionary like an Assistant Principal who will be constantly on the look-out for field problems, get them analysed and send out the results to the villager in an appropriate form. In any case, there is no getting away from the fact that dissemination of scientific knowledge is the basic duty of Community Development Programmes.

11. A distinction will have to be made between science and technology. While technology may require a team of experts to enable correct advice being given to the farmer on various problems affecting his life, general aspects of science can be tackled in a fairly satisfactory manner by the two officers in Vijnan Mandirs.

12. The process of changing the mental outlook of the villager in this country differs only in degree from that in America.

University Grants Commission—(31st March, 1960)

1. The Vijnan Mandir Scheme, as at present developed, cannot be described as a pilot project as it is 'mostly in the air' without a link with State agencies.

2. Schematically, the approach to the problem of social education through Vijnan Mandirs is wrong.

3. *Ex hypothesi,* no agency other than teachers can handle the work of science extension. Some work in this direction is already being done by universities. In any case, there is need to associate States actively with the administration of Vijnan Mandirs, otherwise, Vijnan Mandirs are bound to be overlooked and languish for want of adequat local support. It is, therefore, essential to define the objectives of the scheme on a rational basis to ensure that dissemination of knowledge to village elders and farmers and teaching of science to students are not mixed up.

4. Analysis of soil is really a job to be handled by agricultural stations and other expert agencies and facilities available there may be utilised instead of duplicating the effort in Vijnan Mandirs. Soil analysis has to be conducted on a systematic basis, if it is to make an impact on food production and this may require a large number of soil chemists. In view of the paucity of trained personnel, it is not easy to find adequate number of soil chemists for this work.

5. Whatever service is given in Vijnan Mandirs will have to be 'good service'. Moreover, for taking problems to other outside agencies for investigation and for taking back to the peasant their advice in a form which will be intelligible to him, intermediate links will have to be provided. No such links are at present discernible in the Vijnan Mandir set-up and in their absence a position is being assumed for Vijnan Mandirs which cannot be sustained.

6. There will have to be Vijnan Mandirs for small groups of villages, say about 10 per Block. This is a 'dream picture', not justified either by the existing number of Vijnan Mandirs or by those contemplated in the next few years. It cannot be maintained that even though their number is limited, Vijnan Mandirs can cast their

light on all the Blocks in the district. The whole conception of Vijnan Mandirs is unbalanced

7. Community Halls are being set up in Block areas and there is no reason why these halls should not be given a liberal dose of 'Vijnan'. A separate agency for science extension is difficult to justify.

8. The criticism that a separate agency for dissemination of scientific knowledge is superfluous is just. The existing agencies should be made to cater for science extension work if they are not doing so at present.

9. Vijnan Mandirs may have to be planned on the basis that about 75 per cent. of the population are to be catered for within the next 25 years or so. The coverage should also be such that the activities of Vijnan Mandirs are not spread too thinly over a wide area.

10. The manner in which the educational activities have been integrated into an organic pattern in Japan is of value in framing our development plans.

11. In a scheme like Vijnan Mandirs, the language used by the officer-in-charge has a vital part to play in reaching the people and it is obvious that they should have a sound knowledge of the local language. For this purpose close association with State Governments is inevitable.

12. A large number of Vijnan Mandirs, each with a team of experts will have to be thought of if the work of science extension is to be handled on a satisfactory basis, but availability of resources will have to be kept in view. A better course to disseminate knowledge will be to invite teachers to give lectures on various topics of interest to the farmer.

13. The basic objective of Vijnan Mandirs, viz., to interest the local people in a very limited area is a 'great idea', but the problem, will require a completely different treatment when something has to be done on a countrywide scale. Vijnan Mandirs with their limited resources of man-power and equipment cannot reach more than a very small portion of the people even if the men in charge are 'ideal' teachers.

14. The programme of work of Vijnan Mandirs is ambitious and a realistic approach will be to integrate the programmes with the work normally done in educational institutions. Functionally and logically, Vijnan Mandirs will have to become a part of the educational set-up in the States.

15. The scheme of Vijnan Mandirs can be justified only as a part of the social education programme and it is illogical for Vijnan Mandirs to take on the responsibility for intensifying the teaching of science in educational institutions. It is obvious that the Vijnan Mandir scheme will have to be regarded only as a part of the social education programme.

16. The institutions already in existence can be helped to develop extension wings and to use the physical appurtenances of the Blocks and the technical know-how of the colleges to disseminate scientific knowledge.

17. Though there is a big gap in the field of science education, it is paradoxical that more science was being taught in our schools some 40 years ago than at present. For financial and other reasons, science education in the colleges has not received the requisite amount of emphasis. Establishment of science colleges is definitely more expensive, while arts colleges can be multiplied without much difficulty.

18. Vijnan Mandir scheme is a half-hearted attempt to correct the present deficiency in science education in this country. By their very nature, Vijnan Mandirs cannot touch even a fringe of the problem.

19. Vijnan Mandirs are only dealing with a receding problem. The present generation of adults who have escaped school education for whom Vijnan Mandirs are primarily designed will have mostly disappeared in the next 10 to 15 years.

20. Liberal grants are being made available by the University Grants Commission for extension work in Universities, etc., but all universities have not shown the same alacrity in extension methods. Science colleges, especially agricultural colleges, are at present being persuaded to adopt extension methods as there is a growing recognition of the fact that "he is a bad graduate who cannot do extension work". In view of the increasing attention that is being paid to extension methods, what is envisaged as the role of Vijnan Mandirs can be achieved by other agencies within a measurable distance of time.

21. The criticism that the curricula of studies in Agricultural colleges do not have adequate practical bias can be met if agricultural graduates are given more training in extension methods. Apart from agricultural colleges, the general work of science extension can also be taken up in science colleges which can be given adequate support for this purpose.

22. It is doubtful whether provision of suitable links with other expert agencies like the National, the Regional or the State Laboratories and other research institutes and colleges will in any way facilitate the work of Vijnan Mandirs. The objectives of these institutions and Vijnan Mandirs are essentially different.

23. Research cannot go straight from the laboratories to the farmers but will have to be processed by expert agencies equipped for the job. Moreover, it is incorrect to expect Vijnan Mandirs to disseminate scientific knowledge in different branches of science.

24. Vijnan Mandirs can function as 'coordinators', but it is doubtful whether it is desirable or practicable for Vijnan Mandirs to take up this liaison work. Science teachers are better fitted for this work.

Indian Agricultural Research Institute—(12-4-1960)

1. The Indian Agricultural Research Institute do not know much about the scheme except that they give some training to the Vijnan Mandir Officers according to the pattern laid by the Ministry of Scientific Research and Cultural Affairs. It appears that no steps have been taken to find out whether the personnel deputed for training are adequately equipped and whether they will benefit from the training proposed for them.

2. While analysis of soil is relatively easy, interpretation of data is a matter for experts. It will be necessary for persons working in laboratories to work in close association with agricultural chemists and the State Agriculture Department. The equipments supplied to Vijnan Mandirs are useful but without adequate experience of crop history of the area, it may not be possible for the Vijnan Mandir Officers to interpret the results correctly.

3. Soil analysis may be done in close collaboration with Block agencies to ensure that the farmer is not confused by conflicting advices.

4. An M.Sc. in Agriculture may handle soil analysis, but some experience followed by reorientation training may be necessary to ensure that the trainees get a practical idea of local problems. Such trainees could be attached to the State Agricultural Chemists for a short period. The period of training will depend on the capability and basic qualifications of the persons concerned. An M.Sc. in Inorganic Chemistry with a background of agronomy may require about one year's training, while an M.Sc. in Agriculture with Chemistry as the subsidiary subject will require training for about six months. Training for about six months spread over the two disciplines of Agronomy and Chemistry in the light of the background of the student may be necessary to enable the students to pick up experience in specific techniques which they are likely to use while working in Vijnan Mandirs. However, training alone may not ensure professional efficiency and the persons will have to work in close collaboration with co-professionals.

5. The criticism that even graduates in agriculture cannot do soil analysis and that some training is necessary for them is partly correct, especially in view of the fact that the curricula of studies differ from college to college. At some places chemistry is taught to students of agriculture in the first year and by the time they come to the third year they are apt to forget the subject. Nevertheless they are aware of the basic principles but will require some practical training to set their hand on practical work.

6. Agriculture is a vast subject and the whole programme of study has to be gone through within a limited period. It may not, therefore, be possible to give the same degree of emphasis to all the subjects in the courses of study.

7. An M.Sc. in Agriculture can give advice on the suitability of water for irrigation and not for consumption.

8. The Vijnan Mandir Scheme is a good one and can be made to produce results by proper rationalisation of the objectives and by coordination of its work with the State Agricultural and other agencies. Lectures, demonstrations, etc., may be arranged by Vijnan Mandirs in collaboration with other agencies to obviate the possibility of any wrong or conflicting advice being given to the villager.

9. Vijnan Mandirs can educate the villager on the need for soil analysis, but to suggest a crop pattern it will be necessary for them to work in close association with other agencies.

10. Excluding rocky and built up areas and waste portions which are manifestly unfit for cultivation, soil analysis in a village can be completed in about three days, on the basis of about one sample for

about five acres. If some margin is allowed for transport of samples, etc., it may take about six days to complete soil analysis work in a village. To cover a Block consisting of about 90 villages on this basis may take about 90 weeks, However, to be effective, soil analysis will have to be repeated once in every three years to five years.

11. For soil correlation work, four soil survey laboratories are functioning in the country as part of the All-India Soil Survey Scheme.

12. There are plans for expanding the number of soil testing laboratories during the Third Five-Year Plan, but the difficulty in securing equipment which have to be imported from abroad is the main bottle-neck. It is also open to State Governments to establish more laboratories in the States, if they so desire. As at present contemplated, each State will have about three to four laboratories before the end of the Third Five-Year Plan.

13. The agency of agricultural colleges is also being utilised for soil testing purposes. Equipment and finance are serious limiting factors and a laboratory with a capacity to handle 1000 soil samples per month is estimated to cost about Rs. 54,000 excluding the cost of gas plant.

14. A soil map in the scale of 1" to 79 miles has already been prepared and in the recent World Agriculture Fair, a map of India in the scale of 1" to 32 miles was exhibited. Soil maps for villages in the scale of 16" or 8" to 1 mile are being prepared. Soil survey work is generally confined to areas where funds have been earmarked for land improvement work like areas commanded by river valley projects. A common procedure has also been laid down for soil survey purposes and some publications have also been brought out for the guidance of soil survey parties.

15. The survey map is a guide and it may be interpreted by different agencies for different purposes.

16. Two schemes, viz., "Simple Fertilizer Trials on Cultivators' Fields" and the "Model Agronomic Experiments Scheme" are being run currently. The trials are conducted through the agency of Village Level Workers. Since 1956 the two schemes have independent staff and the Indian Council of Agricultural Research have already published he results of these experiments on wheat and paddy. On the basis of the data collected, recommendations relevant to different regions may be formulated. Some of the States, e.g., Madhya Pradesh, have already taken steps in this direction.

17. The Indian Agricultural Research Institute is not quite aware whether the basic objective of Vijnan Mandirs is dissemination of knowledge or service to the people.

18. Close collaboration with extension agencies is essential and demonstrations, lectures, etc., will have to be arranged in consultation with State Agricultural Departments.

19. The pattern of training laid down by the Ministry is being followed and the Indian Agricultural Research Institute were not consulted before the programme of training was finalised.

20. An integrated scheme of training for about six months will be adequate.

21. If Vijnan Mandirs work in close coordination with extension agencies, the objectives underlying the scheme can be realised.

22. The Indian Agricultural Research Institute are considering the question of starting extension wings and Vijnan Mandirs may function in close coordination with such wings.

23. Vijnan Mandirs may be integrated with rural institutes. The success of the scheme cannot be ensured unless the scheme is sponsored by State Governments and worked in close collaboration with State agencies.

24. The need for disseminating scientific knowledge cannot be disputed, but the point for consideration is whether this is not the objective of the agencies already existing in the country and if not, whether it can be best achieved by making Vijnan Mandirs an integral part of the Blocks, Rural Institutes, and secondary schools or by keeping it as a separate organisation. In the latter case, it will have to develop its own extension wings or depend for its effectiveness on the cooperation given by Block agencies.

Council of Scientific and Industrial Research—(19th April, 1960)

1. An extension service has recently been started in the Council with the specific purpose of taking results of research to the field in rural and semi-urban areas. This may also help in reorienting research to suit the practical needs of the people.

2. In view of the low level of literacy, written material can only have a limited use in rural areas and emphasis is, therefore, being laid on demonstration of improved practices like the use of mud plaster, improved techniques of grain storage, etc., to catch the imagination of the people.

3. Researches conducted in the different laboratories pertain mostly to problems confronting the country in the industrial and rural sectors and literature produced by them are being supplied to all institutions.

4. The scope of extension service organised by the Council is limited. The objective is to take the results of research to the field and to bring field problems to the notice of laboratories.

5. The Central Food Technological Research Institute, Mysore, have over 4,000 subscribers to their Kannada Bulletin "Ahara Vijnanam" and publications in Hindi have also been taken in hand. They are now bringing out a Hindi periodical "'Khadya Vijnan". Other laboratories are also making similar attempts.

6. Paucity of adequately trained personnel for science extension work is a serious bottle-neck. Science extension is a highly specialised job and requires a lot of experience in the specialised field of science as well as in the field of rural development to interpret the results of research, taking into account the social and economic background of the people against which the knowledge is to be disseminated. A beginning has been made by the Council and the extension service will, if necessary, be reoriented from time to time in the light of experience gained.

7. There is need for adequately trained personnel who may be relied upon to put across ideas in a manner that will be understood

by the rural people. The level of the audience to be catered for will have to be kept in view and any interpretation beyond the comprehension of the people is bound to fail and may also have a demoralising effect on the people as well as the worker.

8. Extension of results of research conducted under the auspices of the Council will be made through the existing Block machinery and there is no intention to set up a parallel organisation. An Extension Advisory Committee with representatives drawn from the different Ministries is also at work to chalk out a programme of action.

9. Researches conducted at different National/Regional/State Laboratories have begun to yield results and efforts are being made to use them. Extension service was not started by the Council earlier because researches had to be allowed to reach maturity before results could be taken to the people.

10. The multi-purpose food evolved by the Central Food Technological Research Institute has proved popular and more and more people have taken to it. The work on popularisation of *tapioca macaroni* in Kerala is already well-known.

11. Instructions have already been issued to some of the laboratories producing such literature as may be useful to Vijnan Mandirs to effect supplies free of cost.

12. Literature is supplied as and when required by the Vijnan Mandir; supply of all the specialised literature may not be of help. To expect the Vijnan Mandir staff to have a specialised knowledge of different branches of science is very optimistic. The general practice is that when a laboratory feels a need to extend its work, demonstrations are arranged in consultation with Blocks. The Village Level Workers of the Blocks also attend the demonstrations.

13. Subjects like medical science and agriculture are outside the purview of National Laboratories. Agencies functioning under the Council of Scientific and Industrial Research can give guidance only on the different processes and techniques evolved by them. If they are to 'indulge' in the work of popularisation of general science, the more important work allotted to them may suffer.

14. Something is needed to give research workers practical knowledge of local conditions. The resarch worker will have to work in close collaboration with his colleague on the extension side who is in contact with the people. Extension wings are at present functioning in the Leather Research Institute, Madras and the Food Technological Research Institute, Mysore and the question of establishing similar services in other laboratories is under consideration.

15. Vijnan Mandirs may be utilised for dissemination of knowledge but something more will have to be done to associate them closely with research extension.

16. As a part of its activities, the Science Extension Service started by the Council is conducting pilot projects at selected centres and Vijnan Mandirs may be associated with these projects, if they are located in the selected pilot area. The pilot projects are to be worked with the help of the personnel of the laboratories concerned

and the rural development agency in the selected area. The Extension Service of the Council will be operated through the Development machinery and cooperation of Development Commissioners and all voluntary agencies has been sought.

17. In the National and the Regional Laboratories, no promotions are made departmentally and all vacancies are advertised. It will be open to Vijnan Mandir Officers to send their applications in response to the advertisements. Vijnan Mandir Officers may be suitable for appointment in extension wings but the rules as they stand at present offer no scope for their appointment.

Planning Commission—(16th April, 1960)

1. The Vijnan Mandir Scheme is a good one. There is an obvious need to make people aware of scientific knowledge which is very rapidly changing life around them and enable them to play an intelligent part in the process of change in which they are involved.

2. Apart from educational institutions, there are social education agencies, extension departments, etc., which to some extent fulfil the role visualised for Vijnan Mandirs. To this extent, it may be said that there is duplication of effort. It is better to have a single agency and strengthen it sufficiently to enable it to operate effectively instead of having a number of agencies functioning ineffectively.

3. Considering the shortage of trained man-power and resources, a practical solution to the problem of science extension will be to concentrate on educational institutions. Even some of the secondary schools near Delhi are not adequately equipped for the teaching of science and senior basic schools which are intended to cater ultimately for all children of the age group 6—14 are hardly in a position to give any instruction about simple scientific phenomena, much less about the development of a rational outlook on life. From this angle, whatever resources are available should be first concentrated on schools and the teaching therein so that they may take a major share of responsibility for teaching the adults.

4. While the need for dissemination of scientific knowledge among the rural population cannot be disputed, Vijnan Mandirs working in isolation will not be able to reach the people.

5. If people are taught the techniques of surveying local resources and exploiting them to the best advantage, the wealth that can be created by millions engaged in productive work will be tremendous. It should be possible to find some simple methods for the utilisation of different products which are at present going waste. Vijnan Mandirs can have a small staff to study local resources and problems and refer them, where necessary, to outside agencies for investigation and solution.

6. If Vijnan Mandirs are established as an integral part of educational institutions, they can take right ideas to the people. If Vijnan Mandirs are made the responsibility of the Education Department, the additional staff needed for supervision, will be reduced to the minimum and the difficulties involved in coordination will be avoided. Administrative difficulties will also be obviated as the hierarchy of

officials of the entire education department and the resources commanded by them will be at the disposal of Vijnan Mandirs for the benefit of the rural population.

7. When the Vijnan Mandir Scheme was placed before the Planning Commission, the then Member-in-charge, late Dr. J. C. Ghosh, had set up a sub-committee to scrutinise the scheme. The Vijnan Mandir Scheme was approved by the Commission in the hope that it would work well, but it appears that those hopes have not been fulfilled. This may, perhaps, be due to the fact that the sub-committee's recommendations have not been implemented *in toto* when the scheme was put into operation. Collaboration with Community Development Programmes in Blocks is also presenting difficulty.

8. More than students, adults who are mostly engaged on production will have to be catered for and it is essential that they should be taught of the possibilities of science and in the application of improved methods to maximise production and in the eradication of plant diseases.

9. Some Vijnan Mandirs have succeeded in creating enthusiasm in the minds of the people and they have also succeeded in tackling certain plant diseases prevalent in the area. The Block Officers have also spoken well of the work done in some Vijnan Mandirs. Apart from giving advice in increasing production from the land, Vijnan Mandirs can educate villagers on how to lead a healthy life and advise them on balanced diet, taking into account the available food stuffs and resources of the people. They can also do useful work in helping them to detect milk and ghee adulteration.

10. It is heartening to find that adequate capacity is available in the country, especially at places like Roorkee and Ambala, for the production of scientific equipments required for the teaching institutions. Shortage of equipments may not therefore impede the progress of science education.

11. The utility of Vijnan Mandirs can be considerably increased by linking them with a suitable extension agency. Vijnan Mandirs may carry out a survey of the existing local resources and their exploitation to the best advantage. In this work they can take the help and guidance of the various expert agencies in the country. If they find solutions to even a few problems, they can make a sizeable impression on the people.

12. If Vijnan Mandirs are to be effective, they should have a well-defined purpose in terms of the daily needs of the people and mere dissemination of knowledge in the abstract will not carry conviction. The Vijnan Mandir Scheme does not rule out the study of local problems and offering solutions for them. Unless such a study is undertaken, it will be difficult to justify Vijnan Mandirs.

13. The functions of Vijnan Mandirs and the manner of discharging them may be spelt out as more experience is gained.

14. An agency is required at the field level to study local problems intensively, but there is no need to have a separate scheme like Vijnan Mandirs for this purpose. If Vijnan Mandirs are worked as a part of educational institutions, they can discharge their functions effectively.

15. It is doubtful whether the overworked staff of schools will be able to take up science extension work on a satisfactory basis.

16. Vijnan Mandirs can study village problems and refer bigger problems to Central Laboratories for guidance and solution.

17. With the equipment supplied, Vijnan Mandirs can analyse soil, water, etc. The equipment is not difficult to handle.

18. A separate scheme for soil survey is already under operation and it is enough if Vijnan Mandirs attend to day to day problems for which immediate solutions have to be found. There is nothing peculiar in this; even in the industrial sector, problems are often thrown up for which urgent solutions are necessary; bigger problems will, of course, have to be tackled in a different way.

19. The laboratories which operate at the district headquarters may not be of much help to villagers.

20. The Vijnan Mandir Scheme is an attempt to take science to the people and the few Vijnan Mandirs functioning at present have not been able to touch more than a fringe of the problem. Nevertheless, a beginning has been made and if the existing number justifies their existence, the question of allocating more funds for their expansion will be examined by the Planning Commission.

21. When compulsory education becomes an accomplished fact, Vijnan Mandirs may become redundant and not till then.

22. The Vijnan Mandir as a separate institution has no future, Ultimately education will have to be broadbased and concentrated on the life of the people, including a study of problems at the local levels. At present, however, schools are inadequately equipped and in the context of existing resources it will be better to concentrate the available resources at points where they can be more effective.

23. Vijnan Mandirs may be integrated with the Basic Training Schools.

24. Integration of Vijnan Mandirs with selected Blocks is preferable, especially where training institutions are located at the Block level.

25. If the basic objectives of the Vijnan Mandir Scheme are adhered to, there will be no objection to Vijnan Mandirs being administered in different ways. So far as can be seen, there can be no permanent future for Vijnan Mandirs and the only agency that can do the type of work now envisaged for Vijnan Mandirs is the educational institution.

26. The service element will have to be continued to make knowledge effective, but service should be restricted to a few specific problems peculiar to the locality and pathological work might be completely excluded.

27. Vijnan Mandirs can easily undertake such items of work as analysis of soil, food adulteration and simple pathological work like urine analysis and blood count.

28. The whole question of equipment for Vijnan Mandirs and training of the staff had been examined by a sub-committee of the Planning Commission some years ago and their recommendation was

that there should be two M. Scs. drawn from different groups of science who may be trained for about three months, preferably at the Indian Agricultural Research Institute and at the Nutrition Research Laboratory.

29. The officers in charge of Vijnan Mandirs should be put through an orientation training for about three months to give them an idea of the rural conditions where they will have to work.

30. Soil erosion is a common phenomenon along sharp curves of streams but the people can be educated on measures to prevent it by just planting trees with long and firm roots on the corners. A small committee of experts from different Ministries dealing with rural development should make a survey of simple problems and examine how they can be tackled.

31. Vijnan Mandirs will also do well to collect 'Village wisdom' born of practical experience.

32. A separate institution, preferably one of those controlled by the Ministry of Community Development and Cooperation may be suitable for giving training for Vijnan Mandir Officers.

33. There is so much to be done in the field of rural development that despite the efforts made so far, there is practically a vacuum. The activities of Vijnan Mandirs may not lead to any conflict for the present; perhaps there may be a clash when different agencies operating at the field level are fully developed. The question of overlapping or duplication of effort may then be studied. Some duplication cannot, perhaps, be avoided so long as the Ministries are allowed to operate at the field level.

34. As far as possible the field of operations of Vijnan Mandirs should be limited to problems which are special to the areas where they are located and the solving of which will be of definite help to the local community. For this purpose they can act in close collaboration with the various well-equipped laboratories in the country.

NOTE OF MORE IMPORTANT VIEWS AND OPINIONS EXPRESSED BY THE VISVA BHARATI, THE INDIAN INSTITUTE OF SCIENCE AND INSTITUTIONS FOR RURAL EDUCATION

Dr. S. R. Das, Upacharya, Visva Bharati (Santiniketan)

1. Vijnan Mandirs, in collaboration with the Blocks, can render yeomen service in the matter of spreading rudimentary and useful scientific knowledge amongst the rural population and in stimulating their curiosity.

2. In the stress of modern life with its economic pressure, it is not a feasible proposition to rely on purely voluntary services for the amelioration of the conditions of village people. The Government has also its duties and must perforce employ salaried officers with a view to discharge its obligations. It is, therefore, necessary that these officers should be trained to have a certain amount of enthusiasm. Missionary zeal is not necessarily an exclusive attribute of so-called volunteers. There is, therefore, no harm in emphasising the service aspect in the programme of work of Vijnan Mandirs. The workers, even though serving for salary should be imbued with a spirit of service. They should be encouraged to feel that they are not only eking out their livelihood but that they are also doing a far better and grander thing, namely, that they are helping in building up the nation.

3. The facilities for pathological examination are certainly helpful to the rural population in general and to the rural medical practitioners in particular. These facilities, which are stated to have been withdrawn, may, with considerable advantage, be restored. The only thing about which the Government should be careful is that the personnel employed for such purpose should have at least the minimum requisite qualifications for performing the duties. There may be a set of Inspectors periodically to supervise the work of these employees.

4. The science teachers in neighbouring local schools may be called upon to assist the Vijnan Mandir Officers. They may periodically take the students round to see the Vijnan Mandir Museums.

Indian Institute of Science, Bangalore

1. The State Government should provide suitable accommodation for Vijnan Mandirs to house the museum, laboratory, store, and office. Sufficient open space should also be available for holding lectures, film shows, demonstrations, etc. A minimum of about 1,500 sq. ft. of built-in area would be suitable.

2. Both Vijnan Mandir Officer and Assistant Vijnan Mandir Officer should be given training in administrative and technical side for a period of at least six months before they are posted to Vijnan Mandirs. The qualifications to these posts should be complementary, i.e., if an officer is a graduate in Physical Sciences the other should be a graduate in Natural Science or Agriculture. The laboratory attendant must be a Matriculate with some knowledge of typing.

3. Normal powers of a Head of Institution should be given to Vijnan Mandir Officers to maintain discipline and efficiency. The Vijnan Mandir Officer should be a gazetted officer to give him some status for carrying out his work efficiently.

4. The present equipment in the laboratory is inadequate, it analytical work is to be carried out in a satisfactory manner. However, it is possible to carry out a few preliminary tests with the available facilities. Standard technical books have to be provided for getting details of different tests.

5. Analysis of soil and interpretation of data will be useful if the work is done in cooperation with local agricultural authorities. However, Vijnan Mandir Officers should be trained both in analysing and assessing the properties of soil with suitable tests. Facilities for pathological work might be made available under the supervision of appropriate medical authorities. Normally such facilities are not available in rural areas. Equipment available in Vijnan Mandirs would facilitate the work of medical men in rural areas.

6. The Vijnan Mandirs should be equipped promptly to avoid the risk of demoralisation of the staff. The present system of supplying equipment from the Centre causes avoidable delay and unnecessary expenditure. It is desirable that details of specifications of equipment and cost should be made available to Vijnan Mandir Officers who might use their discretion in evaluating their utility before orders are placed for supplies. Vijnan Mandir Officers should be empowered to make purchases from local firms after inviting quotations.

Adhyaksha, Palli Samgathana Vibhaga, Sriniketan

1. Vijnan Mandirs should never attempt to do specialised service. Their scope of work should be limited to the purpose of making people science-minded.

2. Where possible, Vijnan Mandirs should be attached to non-official organisations located near a Science College or a Multi-purpose Higher Secondary School so that the assistance of scientific personnel and the laboratory may be obtained. If no such non-official agency is available or if such agency is unwilling to take the responsibility, Vijnan Mandirs may be attached to Blocks. Whatever the administrative set-up may be, there should be a small committee consisting of official and non-official personnel to advise and guide Vijnan Mandir Officers in the execution of their programme.

Rural Institute, Amravati (Maharashtra)

1. The efficiency of Vijnan Mandir Officers will depend on their ability to coordinate their activities with those of other agencies and the educational institutions working in the area. Vijnan Mandirs must be provided with up to date information regarding scientific developments from time to time.

2. Vijnan Mandir should send a monthly report of their work. Relevant portions from these reports may be circulated to other Vijnan Mandirs for information. This would enable them to get themselves posted with the developments in other Vijnan Mandirs and also help them in planning their activities, keeping in view the local conditions.

3. Vijnan Mandir Officers may meet in a seminar or conference once a year to discuss their problems and chalk out a programme of work. They may also visit other Vijnan Mandirs to enable them to

get acquainted with what is going on in other sister institutions. It is also necessary for Vijnan Mandirs to keep in touch with the different Heads of Departments like those of Medical, Health, Education and Agriculture and try to get all relevant publications.

4. Vijnan Mandirs should organise demonstrations affecting the daily life of the people. This will not only educate the villagers but also create in them an urge to solve their problems in a scientific way.

5. It is not necessary to fix any definite physical targets to assess the working of the Vijnan Mandir, because its success will depend upon how the villagers take to the working of the Vijnan Mandir and how far they cooperate with the Vijnan Mandir Officer.

6. Every Vijnan Mandir should have a good library containing books and other literature of scientific interest. Vijnan Mandirs should also be supplied with posters, pamphlets, etc., from the different technical departments. In addition, some literature in easy and understandable style in regional languages will also be of value.

7. It is desirable to arrange with the concerned State Governments for technical supervision and guidance of Vijnan Mandirs by Officers like Directors of Public Instruction, Directors of Public Health, etc., and there is no need to establish a separate agency in the Central Government for this purpose.

8. In Vijnan Mandir Museums information regarding the felt needs of the people like samples of soils, stones, minerals, fruits, stuffed specimens of birds, etc., may be kept. A few lines by way of explanation may be written below indicating their utility or harmfulness. Posters showing different diseases, insects and pests relating to different crops may also be exhibited in the museum.

9. Facilities for analysis of soil, water and human pathological work should be continued. Vijnan Mandirs should educate the people on the need for getting soil, water, etc., analysed instead of doing any stereotyped 'service' work. Facilities for routine pathological examination should also be provided in Vijnan Mandirs. This will not result in duplication of the work done by other agencies.

Vidya Bhavan Rural Institute, Udaipur (Rajasthan)

1. Schools in rural areas suffer badly from lack of facilities for the teaching of science. Vijnan Mandirs can provide a common laboratory and museum for a number of schools. A coordinated programme of work may be drawn up in consultation with the Headmasters of schools concerned. Intelligent planning with other institutions including Community Development Blocks is essential.

2. It is desirable to fix some targets to ensure that Vijnan Mandirs make strenuous efforts to achieve results. They should maintain correct records of their activities to enable an assessment being made of their work.

3. The present arrangement for the administration of Vijnan Mandirs is not satisfactory and their administration, should be transferred to State Governments.

4. Some facilities for 'service' should be provided by Vijnan Mandirs, particularly for soil and water analysis though it will be necessary to see that the work of dissemination of knowledge does not suffer on account of undue emphasis on 'service aspect'.

5. A separate Advisory Committee for Vijnan Mandirs is not necessary. A sub-committee of the Block Advisory Committee or of the Panchayat Samiti in States where democratic decentralisation has been introduced might be set up.

6. Vijnan Mandir staff should form part of regular cadres in the States. For example, specialists in physical sciences may be drawn from the teaching staff in intermediate colleges and higher secondary schools and specialists in Agriculture may be drawn from the ranks of senior teachers in Agriculture in higher secondary schools or intermediate colleges in Agriculture. After some years of work in Vijnan Mandirs, they could be transferred back to their departments and others invited to work in their place. Being part of large cadres, these men will work without a feeling of frustration or instability as they will be eligible for promotion in their department.

Planning Research and Action Institute, Lucknow

1. There can be no two opinions with regard to the need and importance of Vijnan Mandirs in the country, but if Vijnan Mandirs already functioning have not been able to accomplish much, it is due to the dearth of trained personnel, paucity of financial resources, etc. The number of Vijnan Mandirs in the States should be suitably increased. For a State like Uttar Pradesh, there should be at least one Vijnan Mandir in each Division of the State. The 'Divisional' Vijnan Mandir should be linked up with the National and the State Research Organisations as also with Research Wings of Universities. Vijnan Mandirs should work in close collaboration with Blocks of the Division to facilitate processing and transmission of scientific information for extension work in Blocks. Vijnan Mandirs should also undertake some trials in cases where results of research are not either foolproof or sound for extension work in the Blocks.

2. Vijnan Mandirs should also produce useful literature in simple language for the use of cultivators of the region. The Blocks could refer to Vijnan Mandirs problems for which they are unable to offer a ready solution. Vijnan Mandirs could work these problems and strive to find solutions at their level, if possible. Otherwise, they could refer them to outside agencies for expert advice and guidance.

3. It is necessary to provide for adequate guidance, supervision and control over the working of Vijnan Mandirs. A proper agency in the State may be assigned this work.

Sarvodaya Ashram, Shapur, Saurashtra

1. The present system of running Vijnan Mandirs from the Centre is impracticable, and cannot facilitate their working on an efficient basis. The administration of Vijnan Mandirs may be entrusted to Rural Educational Institutions such as Intensive Area Schemes, Sarvodaya Ashram, etc., which are working in this field and where necessary technical personnel and other facilities are available. This arrangement would ensure the services of tried social workers without whom the success of an experiment like the Vijnan Mandir cannot be assured.

2. The programme should include the following:—

(i) To conduct Rural Science Clubs for promotion of scientific knowledge.

(ii) To tackle the problem of Rural Housing on scientific lines; and introduction of model plans for rural housing and cattle sheds.

(iii) Popularisation of artificial fertilisers which should include demonstrations and technical advice to farmers.

(iv) Popularisation of plant protection work which should include demonstration and technical advice to farmers.

(v) Health and sanitation—to educate people in the programme of eradication of various diseases.

(vi) To organise 'Health Weeks'.

3. It is difficult to fix physical targets to assess the work of Vijnan Mandirs but some targets could be fixed on the following basis:—

(i) Number of Demonstrations arranged.

(ii) Number of Scientific Exhibitions arranged.

(iii) Number of Demonstrations arranged.

(iv) Number of Soil and Water samples analysed.

4. Equipment and books supplied to Vijnan Mandirs are inadequate. The following additions are suggested:—

(i) A generator for exhibiting film-strips, etc., in villages where there is no electricity.

(ii) Epidiascope.

(iii) Twelve folding tables for displaying museum specimens and arranging experiments during fairs and festivals.

(iv) Six binocular and dissecting microscopes.

(v) Twelve magnifying lenses.

(vi) The museum should be organised on a much better scale in order to give villagers clear ideas about the development of science and its use to mankind.

(vii) Models of human anatomy as also house-fly, mosquito, etc., should be displayed.

(viii) Models of telephones, steam engines, telegraph, etc., should be displayed.

5. A local Advisory Committee is necessary for successful functioning of Vijnan Mandirs. It might include persons qualified and interested in promoting a work of this type.

Allahabad Agricultural Institute, Allahabad

1. Specimens of flora and fauna, soils and minerals, etc., should be displayed in the museum and used with advantage in teaching the village people about their environment. The idea of a museum is good but it is necessary to have it as close to the village school or community centre as possible. A circulating or mobile museum is desirable, though it may be expensive.

2. A definite contribution could be made by the Soil Testing Service. The cost of equipment for soil testing would be about Rs. 18,000, and the training necessary for conducting the tests will be as follows:—

(i) B.Sc. (Ag.) would require six months' training.

(ii) M.Sc. (Ag.) with Soil Chemistry would require two months' training.

Apart from collection and analysis of samples, there is need to interpret the results in an understandable and practicable form for the benefit of the villagers. The interpretation should be done by soil specialists and presentation of the results by Gram Sevaks.

3. Graduates in Science can conduct tests for analysis of water for irrigation purposes after about three to six months' training.

Gandhigram, Madurai

1. The idea of establishing Vijnan Mandirs in rural areas is laudable. Their success will depend more on the relations of those in charge of Vijnan Mandirs with the villagers than on the equipment and the academic achievement of the officers. Vijnan Mandirs should work in close collaboration with the Block Development staff and conduct demonstrations.

2. Vijnan Mandirs may be attached to Science Departments of Multi-purpose High Schools, Rural Institutes, Social Education Organisers Training Centres, etc. These institutions may be persuaded to undertake this work on a grant-in-aid basis. The science teachers of these institutions may be given some refresher training to enable them to organise and conduct Vijnan Mandirs. If such a scheme is accepted, the day will not be far off when the objectives of Vijnan Mandirs will be practicable and also be within the reach of villagers.

Institute of Agriculture, Anand

Wherever possible, the administration of Vijnan Mandirs may be handed over to centres like Agricultural College or School, Gram Sevak Training Centre, etc. To impart effective knowledge to rural people in all aspects, the following staff is recommended for each Vijnan Mandir:—

(i) Vijnan Mandir Officer for coordinating the work;

(ii) Assistant Vijnan Mandir Officer for Animal Husbandry;

(iii) Assistant Vijnan Mandir Officer for Agriculture;

(iv) Assistant Crop Protection Officer for crop protection work;

(v) Sanitary Inspector trained in Public Health;

(vi) Agricultural Inspector trained in Manjri type Agricultural School with five years' field experience.

Analytical work pertaining to agricultural aspects should be undertaken by Vijnan Mandirs. Work pertaining to human pathology should not be undertaken, unless well-trained personnel in this field are appointed.

MORE IMPORTANT POINTS MADE DURING DISCUSSIONS WITH STATE GOVERNMENTS, RURAL INSTITUTES, ETC.

Government of Bombay (Bombay) (3rd October, 1959)

SECTION I—STATE GOVERNMENTS

1. If the facilities available in Vijnan Mandirs are to be fully utilised by people in rural areas, they should be centrally located.

2. The equipment at Vijnan Mandirs may be utilised to give the local teachers an insight into the potentialities of science in rural life. The teachers may be utilised as extension agents for dissemination of scientific knowledge in rural areas.

3. Soil analysis is of considerable value in educating villagers on soil structure and on how the deficiencies can be made up. Through water analysis the villagers can be given proper guidance and advice on the suitability of water for drinking and irrigation purposes and on the type of crops that can be raised profitably with the available supply.

4. Vijnan Mandirs may make a survey of surrounding villages to study living conditions and problems and report the results of their survey to appropriate agencies in the State.

5. In a machine age like ours it is usual to compute the efficiency of mechanical contrivances with reference to actual energy harnessed for practical purposes. Likewise, a sense of efficiency will have to be developed among people in the light of efforts made and results achieved. It is also essential to inculcate in them the need for collective effort in solving rural problems.

6. The rural community, especially the village youth, will have to be educated for collective action and social responsibility. It is essential to train their judgement and guide them to richer personal life in the service of the community.

7. A list of duties and functions may be drawn up for the guidance of Vijnan Mandirs.

8. Rural Science Clubs may serve as centres of contact for the Vijnan Mandir with the rural population.

9. A small 'hobby centre' may be started in science clubs with a tool kit. Elementary workshop instructions may be given at the Vijnan Mandir to enable members to make simple gadgets.

10. The present arrangement for the supervision of Vijnan Mandirs from Delhi is not satisfactory; supervision by State Governments will be more effective.

11. Vijnan Mandir Officer need not be a member of the Block Advisory Committee, but a separate advisory committee may be set up. As non-official cooperation is essential, the Chairman of the Committee may be a Member of Parliament or of the Legislative Assembly.

12. Remote control by the Centre cannot be effective. To ensure better administration the executive functions of Vijnan Mandirs may be entrusted to private institutions and voluntary agencies working in rural areas, subject to over-all control of and accountability to the Central Government.

13. There is no need to introduce cultural programmes like *Bhajans*, music, etc., for the purpose of attracting people to Vijnan Mandirs. Even if cultural programmes are not provided, people will

rush to Vijnan Mandirs for advice and guidance as soon as their curiousity and interest are aroused.

Government of Assam (Gauhati)—(25th October, 1959)

1. Vijnan Mandirs may be set up in rural areas where a favourable atmosphere for rural development work is available.

2. According to the revised Vijnan Mandir Scheme, the cost of accommodation for the Mandir amounts to Rs. 18,000. In addition, provision would have to be made for residential accommodation for the Vijnan Mandir staff. Some land may also be required around the Vijnan Mandirs for arranging demonstrations and field experiments. The cost of building, residential accommodation, etc., may be shared between the Centre and the States on a 50: 50 basis.

3. At present there is no arrangement for imparting systematic technical training to Vijnan Mandir Officers and there is need to remedy this deficiency and systematize the whole programme of training. Vijnan Mandirs may have to attend to problems of a varied type, pertaining to rural health, agriculture, sanitation, rural industries, etc. A minimum of one year's training is necessary. The training should be of a type which would infuse a sense of reality and make Vijnan Mandir Officers effective agents for dissemination of knowledge in rural areas. Training both in theory and practice may be given at a central institute and refresher courses may be arranged at a later stage. The curricula of training may be drawn up in consultation with technical experts.

4. As Vijnan Mandirs will have to work in Community Development Blocks, it is desirable to make them part of the Blocks.

5. The administration of Vijnan Mandirs may be transferred to Rural Institutes which have developed well-established traditions. In places where such Institutes are not available, they may be handed over to the State Education Department, subject to the Vijnan Mandir Officer forming part of the Block team.

6. M.Sc. may be the minimum qualification for the post of Vijnan Mandir Officers and the scale of pay may be fixed at Rs. 300—600. As B.D.Os. are started in the scale of Rs. 175—500 in Assam, the grant of a better scale to Vijnan Mandir Officers may create difficulty, especially in making them a part of the Block team.

7. Vijnan Mandir staff who are at present temporary should have a permanent footing if they are to take interest in their work.

8. While preliminary analytical work can be done at Vijnan Mandirs, a good laboratory costing about Rs. 10,000 will be needed for more detailed work. Vijnan Mandir Officers would also have to be given suitable training to enable them to handle the equipments with confidence.

9. Pathological work is generally done by bio-chemists in hospitals and likewise Vijnan Mandir Officers can do it after suitable training on the understanding that they cannot give the last word in all cases.

10. About six months' training would be adequate for pathological work. Simple tests may be done in the Vijnan Mandirs which can refer complicated cases to hospitals, etc., for advice.

11. Subject to suitability, women may be appointed as Vijnan Mandir Officers.

12. Each National Laboratory has a publicity officer whose job is to put the researches in a manner intelligible to the common man. The literature issued by the publicity officers will be of help to Vijnan Mandir Officers in planning their programme of work.

13. The findings of technical departments on the researches conducted at the laboratories may be communicated to Vijnan Mandirs in popular form.

14. Leaflets, brochures, etc., produced by departments may be sent to the Vijnan Mandirs along with the material supplied by the Publicity Officers attached to the National Laboratories. Vijnan Mandir Officers may also be supplied with information on the results of investigations conducted by departments on various rural problems. All material so received might be utilised by Vijnan Mandirs as source material for arranging discussions at science clubs and arranging demonstrations.

15. A separate advisory committee for Vijnan Mandirs is unnecessary. A sub-committee of the Zila Parishad may look after the administration of Vijnan Mandirs.

16. If targets are fixed, there is the risk of their being fulfilled without any effective work having been done. The duties of Vijnan Mandirs appear to be sufficiently clear, but a plan of action may be drawn up for their guidance. The sub-committee of Zila Parishad may be in a position to judge whether Vijnan Mandirs are functioning in a satisfactory manner.

17. There is no point in dissipating the available resources over cultural programmes especially when the Sangeet Natak, the Lalit Kala and other Akademies are there to cater to these programmes. If necessary, they may intensify their work.

18. The Programme Evaluation Organisation of the Planning Commission evaluates the work done in Blocks. Likewise, an agency may be set up to evaluate the working of Vijnan Mandirs.

Government of West Bengal—(28-10-59)

1. There is urgent need to develop a scientific attitude among the population and make them aware of the cosmic world in which they live.

2. A distinction will have to be drawn between the teaching of science in educational institutions and the development of a scientific temper among the people by imparting knowledge as to what science means and what its thought processes are.

3. The educational institutions may not be able to cater for more than 43 per cent. of population in the State even by the end of the Third Plan. Educational institutions have their own curricula of studies and even if they are to be reoriented, it may take several years before science, as taught in the secondary schools, percolates to the rural population.

4. Research laboratories have their own problems and it is doubtful if they can find time for the important work visualised for Vijnan Mandirs, viz., dissemination of knowledge.

5. In view of the educational reforms that are being ushered in our educational institutions, the next generation of children reared on new ideas may probably have no need for a separate agency like the Vijnan Mandir.

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6. As the Vijnan Mandir scheme is a good one and can be made effective if properly worked, the State Government will be prepared to provide more accommodation, if necessary, to facilitate the smooth functioning of Vijnan Mandirs. They may even be prepared to consider favourably the question of contributing towards the running expenses of Vijnan Mandirs if such contribution is considered necessary to give the State Governments a voice in the administration of Vijnan Mandirs.

7. Vijnan Mandirs may serve as field extension organisations of the Regional and the National laboratories and also as agencies for the solution of field problems referred to them by villagers. A role of this type will not lead to any duplication of effort.

8. Very often the experiments conducted in laboratories give different results when tried in the field and an agency like the Vijnan Mandir can advise on the application of the results of research, especially in matters like agriculture and sanitation.

9. Vijnan Mandirs can disseminate knowledge on matters like rural housing, maintenance of village roads and development of flood-resisting varieties of paddy.

10. Tube-wells in rural areas frequently go out of order and Vijnan Mandirs can educate the villagers about their proper maintenance and the steps to be taken to have them repaired without avoidable loss of time.

11. Vijnan Mandirs should possess a good collection of books written in popular style in the regional language. Some books on popular science are available in Bengali and Vijnan Mandirs may advise about the types of books required with reference to local conditions.

12. Vijnan Mandirs have an essential part to play in educating the less fortunate countrymen in rural areas who have been denied the benefits of education. Vijnan Mandirs may, in the long run, help in creating a 'wholeman'—a point on which Gurudev laid emphasis. The purpose of science education is to satisfy the higher needs of knowledge for its own sake and not to guarantee material progress or economic gains everywhere.

13. Vijnan Mandirs may be located in rural areas where minimum basic amenities are available. The Vijnan Mandirs in West Bengal are mostly located close to institutions where some rural background is available. At Jhilimili, for example, groups of persons interested in a work of this nature are available.

14. According to the all-India pattern, no pathological work is feasible at the primary health centre as there is only one medical officer at the centre to cater to a population of about 65,000. The sub-centres have no medical officers. It cannot be said that the entire block area has satisfactory medical cover. So long as this is the position on the curative side, it is obvious that the medical officer can do nothing on the preventive side. The medical officer in charge of the primary health centre may not be in a position to give any assistance to Vijnan Mandirs in pathological work.

15. Considerable lee-way has to be made on the national health front and 'nibbling' at the problems, as is being done at present, will do no good. Vijnan Mandirs can do useful work in creating

'health-consciousness' among people; they can refer problems which cannot be solved at their level to experts for advice.

16. The kits supplied by the T.C.M. (for soil survey) are not adequate for accurate work, but they can be used for conducting simple tests e.g., for available nitrogen, potash, soil alkalinity, etc.

17. Recruitment to the post of Vijnan Mandir Officers need not be restricted to persons holding a Master's degree alone and Honours graduates may also be considered for appointment. A person with ambition and with aptitude for rural work may be preferred.

18. After selection, the candidates may be attached to the agriculture, the health and other technical departments in the State for specialised training. This will enable them to establish contacts with departments engaged in rural development work and take their guidance and help in planning programmes of action.

19. Recruitment from the open market is preferable; departmental candidates can take their chance along with others.

20. The present pay for the senior officer in charge of the Vijnan Mandir, is rather low and requires revision.

21. Vijnan Mandir Officer may be placed under the administrative control of the Education Department in the same way as Social Education Organisers of the Blocks are attached to that Department.

22. The Vijnan Mandir cannot produce results unless it is visualised as a centre with a mobile team. The Block Development Officer who has a tight programme of his own may not be able to lend his transport for the Vijnan Mandir work.

23. As there is very little science in the country, it is premature to think of any dichotomy at this stage or any possible conflict between science and culture. Vijnan Mandirs may, therefore, concentrate on dissemination of scientific knowledge and the question of making their activities comprehensive by the addition of cultural programmes may be considered after the scheme has struck root.

Himachal Pradesh Administration (Simla)—(21-11-1959)

1. The Vijnan Mandir Scheme is a laudable one and if worked properly, can stimulate and satisfy the curiosity of the rural population.

2. There is need to equip Vijnan Mandirs with a better collection of exhibits to explain to villagers the basic principles underlying various scientific aspects.

3. Vijnan Mandirs may be placed under the administrative control of the States, subject to over-all guidance of the Central Government. The non-recurring expenditure may be met by the Centre, but the recurring costs may be shared between the Centre and the States in a suitable proportion.

4. Vijnan Mandirs may be placed under the control of the District Development Officer or the Deputy Commissioner and coordination with the Blocks could be effected by making the Vijnan Mandir Officer a member of the Block Advisory Committee.

5. As a science museum displaying exhibits of a varied type in an attractive manner, Vijnan Mandirs can cater to the needs of a District in the educational sphere, but from the utilitarian angle, their activities will naturally be restricted.

6. An advisory committee may be formed to look after the affairs of the Vijnan Mandirs. Such a committee may include prominent non-officials of the area, members of Zila Parishad, Gaon Parishad, etc.

7. Each Vijnan Mandir may be strengthened with the appointment of one more scientific officer. With this addition, there will be three officers (including a woman officer) in all and to ensure adequate coverage, one may be drawn from the physical sciences, the second from the biological sciences and the third from the applied sciences like agriculture.

8. The programme of work of Vijnan Mandirs should be essentially educative and not utilitarian. However, in the initial stages, Vijnan Mandirs may offer some programmes of a palpable and concrete nature to create confidence in the minds of the people.

9. Vijnan Mandirs can offer help and guidance to villagers on various matters affecting their daily life and problems of more complicated nature which cannot be solved at their level, may be referred by them to competent authorities for advice.

10. Very little action has been taken to reorientate the curricula of studies in educational institutions to suit the dynamic needs of the country. Academic traditions are such that educationists live in what may be described as 'a hot house of their own'.

11. Arrangements are available for analysis of urine, sputum, blood, etc., in hospitals at Tehsil headquarters and in Health Centres. Mobile teams are also functioning for the eradication of venereal diseases. Provision of facilities for pathological work in Vijnan Mandirs may result in some duplication.

12. Revision of the scale of pay of Vijnan Mandir staff, grant of suitable allowances, etc., may have repercussions and the question will have to be gone into carefully having regard to the scale of pay and allowances attached to posts of comparable status and duties in States.

Government of Madhya Pradesh, (Bhopal)—(28-11-1959)

1. The scheme appears to be good in theory, but difficult to implement in practice. Information Centres at Block headquarters are already charged with the task of dissemination of scientific knowledge in rural areas and making people science-minded, but very little use has been made of these centres by the rural population so far.

2. Vijnan Mandirs are not equipped to take knowledge to villagers, except through Block Extension Officers.

3. Laboratories are functioning in the State for soil analysis and most of the functions assigned to Vijnan Mandirs are already being performed by Block Extension Officers and other agencies.

4. The machinery of extension service in Blocks was conceived with the idea of establishing a two-way traffic with rural population on the one side and with technical agencies and institutes, etc., on the other. That machinery can be strengthened, if necessary, to enable it to discharge adequately the functions for which

it was set up. The creation of a separate agency would be ineffective, apart from being expensive.

5. *Ad hoc* agencies like Vijnan Mandirs working in isolation and manned by persons unconnected with technical departments of States like Agriculture, Health, etc., cannot produce results.

Government of Kerala (Trivandrum)—(8-1-1960)

1. While the principle of Vijnan Mandirs is laudable, it is doubtful whether they will succeed in the task of creating science-consciousness in rural areas.

2. Agricultural Extension Agencies and Block Information Centres may be strengthened to handle the educational work instead of setting up a separate agency like the Vijnan Mandir.

3. A few stary Vijnan Mandirs working in isolation can have no effect on the rural population.

4. The agency of teachers may be mobilised for educational work. Vijnan Mandirs may also work in complete collaboration with community development programmes.

Government of Madras (Madras)—(12-1-1960)

1. Administration of Vijnan Mandirs from a distant place like Delhi is neither satisfactory nor adequate. There is need to decentralise their administration if they are to function efficiently.

2. Vijnan Mandirs work in isolation. Their contact with the State Government began and ended with the suggestion for a site and provision of accommodation. The Collector, Madurai, has some knowledge of the working of the Vijnan Mandir at T. Kallupatti and an advisory committee has been set up, but similar advisory committees have not been set up for the other three Vijnan Mandirs, with the result that the district authorities do not know how they are functioning.

3. There is need to provide facilities for diffusion of knowledge on what may be described as 'History of Science' which will enable even a non-technical mind to appreciate the achievements of science and how the forces of nature have been harnessed in the service of man. What is essential is to develop a rational outlook which will not be in sharp conflict with traditional views.

4. If the policy is to set up one Vijnan Mandir per district by the end of the Third Plan, it is necessary that the organisational set-up of Vijnan Mandirs should be so devised as to enable it to cater for a district. The man-power, equipment and other resources of the institution should be such as to enable it to cover the whole district adequately.

5. If, having regard to the availability of personnel and the allocation of funds, it is decided to proceed with the plan of one Vijnan Mandir per district, such institutions may work through Secondary School Boards in the State.

6. The Vijnan Mandir may be viewed as a Central Institute of Education at the district level and properly equipped with popular

scientific literature, a museum and audio-visual aids. During the holidays the services of school teachers may be utilised for extension work in villages for which suitable additional remuneration can be paid. The part-time services of secondary school staff directed and aided by a properly equipped central institution like the Vijnan Mandir will be an adequate solution for making rural population science-conscious.

7. Universities and laboratories are not generally organised to give the advice the peasant needs.

8. Dissemination of scientific knowledge may be channelled through the Block machinery. The setting-up of a separate agency will only result in avoidable duplication of effort. It is doubtful, however, whether extension agencies are adequately equipped or have sufficient time for educational work.

9. It appears that the objective of Vijnan Mandirs is to supplement the work of service agencies like the agricultural department; and that the means can, for the present, admit of only one Vijnan Mandir per district. Viewed in this context, an intermediary will have to be provided between the district and villagers to carry on the educational work of Vijnan Mandirs. No better intermediary can be envisaged for this purpose than secondary schools. Neither the Block Development Officer nor other officers working under him are in a position to attend to the educational work.

10. What is required of Vijnan Mandirs is neither practical agriculture nor curative medicine. The emphasis of Vijnan Mandirs is on education and to facilitate educational contacts the available educational media will have to be mobilised.

11. Notwithstanding the provision of more and more amenities in rural areas, it cannot be said that all rural problems have been adequately, solved. Available personnel and equipment should therefore, be utilised to the satisfaction of existing demands and the question of making people science-minded may wait until these demands have been satisfied.

12. There is an urgent need for providing suitable reading material in regional languages written in simple and attractive style. Production of such literature will be a better way of dissemination of knowledge than lectures and demonstrations by a number of scientific personnel who are badly required for urgent and practical tasks elsewhere.

13. It is neither correct nor proper to entrust analytical work to an educational institution like the Vijnan Mandir.

14. Village Level Workers are being trained to educate villagers on problems affecting their daily lives. Rural water supply programmes which have been given top priority are being operated with a view to eradicating water-borne diseases.

15. Sinking of wells is based on or directed to cover existing gaps in rural areas, which are either without protected water, or where the available supplies are insufficient. Necessary data is available to localise needs and by the end of the Third Five-Year Plan, about 80 per cent. of villages will have facilities for protected

water supply. Adequate personnel are available in the State for this purpose and finance may not be a problem.

16. Protection of private wells is the responsibility of Panchayats and governmental efforts are confined to wells sunk under the Rural Water Supply, or other schemes sponsored by Government. In areas covered by Panchayat Unions, the Director of Public Health may define the criteria to be followed in regard to the potability of water and steps to be taken to prevent the use of such water as might be found unwholesome.

17. A combined laboratory for water, soil and food analysis is not practicable. Soil analysis requires elaborate equipment. Chemical examination of water, though relatively simple, will not yield conclusive result without bacteriological tests.

18. If investigations are restricted to sanitary purposes alone, the cost of equipment will be about Rs. 30,000/-. Analysis of water for industrial purposes requires elaborate equipment costing about a lakh of rupees.

An M.Sc. in Chemistry or Biology can do analytical work after he is trained for about one year. With the equipment suggested, the laboratory can handle about 1,000 samples per annum.

19. Pathological work may more appropriately be done at the primary health centres. The work can be entrusted to laboratory technicians even though interpretation will be a matter for doctors.

20. The idea of an educational institution like the Vijnan Mandir located at the district headquarters and aiming at self-sufficiency, as contemplated, is impracticable. To produce results, such an institution will have to function through an intermediary which has to be energised and animated by education. Barring social education organisers, there is no agency at the Block level to educate the public. If the objective is to have a central institution to provide scientific literature for social education organisers, who in turn would pass it on to villagers, it is obvious that what is required is an agency at a much lower level than is associated with the teaching of science. The objective of popularising science cannot be done by persons in charge of institutions for analysis of water, soil, etc.

21. For analysis of soil, equipment costing about Rs. 35,000/- will be required, apart from the non-recurring cost on building. Each laboratory will have to be in charge of a Chemist and an Agronomist. A graduate in agriculture with a background of chemistry will require laboratory experience for about five years to enable him to perform tests in a satisfactory manner. He will also have to be conversant with agronomic practices to enable him to interpret the results correctly.

22. A broad programme of education should not be tagged on to service of an exacting technical nature like water or soil analysis.

23. The general educational machinery at different levels may be utilised by Vijnan Mandirs for educational work through popular methods like visual aids.

24. There is need to produce more literature in popular style to help the people develop a rational outlook. More funds may be made available by the Centre for the production of scientific literature in regional languages.

25. It is not correct for social education organisers whose position is similar to programme assistants to dabble in science education. As the forerunner of extension service, the main role of the social education organiser is to help in creating the necessary atmosphere for practical programmes launched by different agencies and it is inappropriate to combine social education with teaching of science.

Government of Rajasthan (Jaipur)—(19-12-1959)

1. Vijnan Mandirs have little or no contact with the Departments of States and it is not surprising that the latter are not sufficiently enthused over their work.

2. The scope of work of Vijnan Mandirs may be confined to the limited purpose of educating villagers in correct scientific methods. Even this limited objective cannot be achieved unless separate laboratories are set up for each sector of activity.

3. Demonstrations will be of help to stimulate the curiosity of villagers, but it is doubtful whether Vijnan Mandirs can arrange such demonstrations successfully.

4. Vijnan Mandirs may have to be set up for separate sectors and placed under the Departments concerned for administrative control and technical guidance.

5. It is true that progress made by extension agencies in spreading knowledge is not appreciable. Nevertheless, they can be revitalised and made to do the work for which they have been established.

6. A multi-purpose agency like the Vijnan Mandir cannot produce results and separate scientific cells may be necessary to attend to distinct problems like rural health, sanitation, agriculture and village roads.

7. Exhibits, talks, etc., may not help those who have had no education, and field demonstrations alone can carry conviction.

8. Vijnan Mandirs may not be effective unless they are manned by at least four or five experts drawn from different branches of science and to promote local affinity they may be attached to the technical departments concerned.

9. The duties of Vijnan Mandir Officers and the Block Development Officers have not been properly demarcated.

10. The qualifications of the officers-in-charge of Vijnan Mandirs may be the same as those for the District Officers.

11. The addition of a cultural wing will be detrimental to the efficient functioning of Vijnan Mandirs.

Government of Andhra Pradesh (Hyderabad)—(6-1-1960)

1. The Vijnan Mandirs functioning in the State have not so far succeeded in making any impact on the rural population. This is

mostly due to the fact that they are functioning as part of the Central administration, unconnected with local institutions operating in the area.

2. With the addition of a cultural wing, the primary objective of dissemination of scientific knowledge will be overshadowed and even lost sight of.

3. Gifted men are required to handle the difficult task of taking science to the peasant in an assimilable form.

4. The objective of making people science-conscious can be achieved by properly equipping the Information Centres of Blocks with suitable reading material written in simple style, and visual aids.

The programme of work of Vijnan Mandirs will have to be carefully planned and organised keeping in view the local needs and problems. The education programmes will have to be arranged with sufficient continuity if they are to make any impress on the minds of the rural population.

5. Blocks have not been supplied with kits for rapid soil survey, but plans have been formulated for the setting up of mobile teams for conducting soil analysis throughout the State.

6. Soil survey maps are being drawn up for projects like the Nagarjunasagar Dam where a pattern has to be set up for the first time. Similar action has yet to be initiated for settled tracts.

7. A series of lectures on simple scientific topics can be arranged at a central place and they should be properly timed so as to coincide with fairs, festivals, etc., when people congregate in large numbers.

8. The social education organisers are generally not equipped or trained for science extension work and in any case, it is desirable not to divorce the service aspect from dissemination of knowledge.

9. Educational work to be effective, should have a practical slant and the existing agencies are adequately equipped to handle the dual role of service and dissemination of knowledge. A multipurpose agency like the Vijnan Mandir is unlikely to disseminate correct scientific ideas in different branches of science.

10. Analysis of soil not followed by facilities for correcting deficiencies will be ineffective. Propaganda in matters like agriculture, health, etc., cannot succeed unless adequate service facilities are made available for follow-up action.

11. The work load on primary health centres is so heavy that they are working more as hospitals than as health centres for preventive work.

12. The objective of dissemination of scientific knowledge is important and adequate contacts will have to be established with village leaders for this work.

13. Dearth of qualified technical personnel is such that some delay is inevitable before adequate solutions can be found for all the rural problems. The question of strengthening Departments to enable them to handle educational work in addition to service is

not of such pressing urgency as that of equipping schools on an appropriate basis.

14. It is essential to make Vijnan Mandirs mobile if they are to reach rural areas. A mobile-cum-demonstration unit equipped with charts, models and other visual aids may be supplied.

Government of Mysore (Bangalore)—(15-1-1960)

1. The Vijnan Mandir scheme may be entrusted to the State Government, though it is not unlikely that they may utilise the existing resources and manpower for the satisfaction of practical needs which are more urgent.

2. The objective of making people science-conscious cannot be achieved unless a large number of Vijnan Mandirs are set up in the State.

3. An all-out effort is being made in the State to provide better facilities for the teaching of science. More and more trained teachers and equipments are being made available to schools which can be utilised for making people science-conscious. Schools can develop science museums to carry conviction to the people. This will be a better way of disseminating scientific knowledge than a Vijnan Mandir working in isolation.

4. Basic education which has been accepted as the future pattern of education has succeeded in correlating science and education to the daily needs of the peasant.

5. Vijnan Mandir Officers cannot but be viewed as Extension Officers for science work, and a field worker who can give no advice or impart knowledge to the villager is of no use. With their limited resources of man-power and equipment, Vijnan Mandirs are unable to handle anything on a comprehensive basis and to that extent expenditure on Vijnan Mandirs is wasteful.

6. A small committee consisting of science teachers of schools, progressive farmers and members of Block Advisory Committee will be of help in organising and planning educational programmes of schools for the benefit of rural community.

7. Vijnan Mandirs may be linked with educational centres where some facilities are already available for the teaching of science.

8. Vijnan Mandirs may be integrated with Blocks and supplied with some equipment for analytical work. Facilities for such work are not at present available in Blocks, but they have kits to test the alkalinity or acidity of the soil.

9. New curricula of studies with scientific bias are being introduced in educational institutions and the next generation reared on new ideas may not need an institution like the Vijnan Mandir. Meanwhile, Vijnan Mandirs may continue on a temporary basis.

10. The problem of soil analysis is not of such pressing urgency at present and the question of providing greater facilities for analytical work can be considered after the basic needs of an underdeveloped economy like ours have been satisfied.

11. Clinical work can be taken care of by District hospitals which in fact are already attending to cases referred by primary health centres.

Government of Bihar (Patna)—(17-3-1960)

1. If the objective of Vijnan Mandirs is to disseminate knowledge with a view to improving the agricultural and other aspects of rural life, it will have to be achieved through Community Development Projects. The activities of Vijnan Mandirs may, therefore, be dovetailed with those of the Blocks.

2. Abstract knowledge will have no appeal unless it is related to the daily life of the villager.

3. Some of the equipment in the Vijnan Mandir at Ormanjhi are beyond the comprehension of the ordinary villager.

4. Water analysis is not being done in the Blocks and Vijnan Mandirs can handle this work.

5. The museums in Vijnan Mandirs may be properly organised and developed, with more emphasis on agriculture and public health.

6. The exhibits may be arranged in an attractive manner and explained in such a way as to encourage and stimulate the curiosity of the visitors. The level of the audience to be catered for may be kept in view. Talks, charts, etc., about such matters as radio-isotopes may not enthuse the peasant.

7. Vijnan Mandirs may be developed as a laboratory to assist Extension Officers in solving their problems.

8. Facilities for analytical work are available in the District laboratories but there is no agency to go round the State and collect samples for analysis. It is for the people themselves to send the samples and get them tested at the nearest laboratory. However, tube-wells sunk with Government assistance are not allowed to be used till the water is certified to be safe for drinking.

9. So long as soil testing laboratories are not opened in the State on a district-wise basis, soil analysis in Vijnan Mandirs will not lead to duplication.

10. The three Vijnan Mandirs in Bihar, being in an embryonic stage, have not affected the general pattern of rural development in Blocks. The scheme may be extended as far as funds permit.

11. The objectives of Vijnan Mandirs may be defined on a more rational basis. They may be viewed as ancillary or supplemental to extension agencies. Even if Vijnan Mandirs cannot answer all problems, they can function as forums in the 'first line' for study of such problems as occur in the environment.

12. For proper discharge of their role Vijnan Mandirs may be linked not only with the Blocks, but also with the National/Regional/State Laboratories.

13. Extension Officers are expected to disseminate knowledge as part of their functions, but owing to their pre-occupations with administrative and other duties, they have not been able to devote adequate attention to this important work.

14. While strengthening of schools would help students, Vijnan Mandirs are meant to cater to a different clientele, viz., agriculturists.

15. If the object of the scheme is to touch the day to day activities of the people, the number of Vijnan Mandirs will have to be increased considerably on the basis of one per Block.

16. The scope of work of Vijnan Mandirs may be restricted to some specific activities, preferably to those with an agricultural bias.

17. Personnel for Vijnan Mandirs may be obtained on deputation from the State Government. At present there are no avenues of promotion for the Vijnan Mandir staff and persons on deputation can look forward to promotion in the parent departments.

18. There is hardly any need to add a cultural forum to Vijnan Mandirs. Cultural activities are taken care of by social education organisers in Blocks and all that is required is to effect coordination with the block programmes.

19. As forerunners of extension programmes, social education organisers are organising seminars, meets, etc., and Vijnan Mandir Officers may participate in them along with other subject matter specialists.

Government of Orissa (Bhuvaneshwar)—(19-3-1960)

1. The scheme is administered centrally from Delhi and State Governments come into the picture only for the purpose of providing accommodation for Vijnan Mandirs.

2. Soil analysis is no doubt important, but it is difficult for small institutions like Vijnan Mandirs to cover the whole district.

3. There is a dearth of popular scientific literature in the Oriya language and such books, pamphlets, etc., as are available at Vijnan Mandir, Hinjlicut, are in English and too stiff to be of interest to the ordinary villager.

4. Japanese toys and working models of educative value illustrating the functioning of steam engine, car, aeroplane, etc., may be added to the Vijnan Mandir museum.

5. A projector is essential to carry conviction to the people through lantern slides, film-strips and filmshows and to remove them from superstition and prejudice.

6. The officers in Vijnan Mandirs have to look to Delhi for everything and this is not conducive to the successful functioning of Vijnan Mandirs.

7. Blocks are designed to cater to the needs of the local people and integration of Vijnan Mandirs with Blocks will be an ideal arrangement.

8. Vijnan Mandirs are at present functioning in a vacuum and close association with Blocks and State Departments will facilitate their working on a proper basis.

9. B.D.Os. in Orissa are gazetted officers and Vijnan Mandir Officers may work under them even as the Medical Officers in the Blocks who are better paid, are working under them.

10. Vijnan Mandirs may assume an advisory role on various problems of interest to the farmer and create an atmosphere favourable to the application of scientific methods. They may also give more emphasis on extension rather than on analytical work.

11. Vijnan Mandirs may act in liaison with other agencies even if they cannot cover the whole range of activities now envisaged in the scheme.

12. Analysis of water for drinking purposes may be done by both the Public Health Department and the Vijnan Mandir.

13. Vijnan Mandirs may be integrated with Blocks, subject to finances being provided by the Centre.

14. There is no need to add a cultural wing to Vijnan Mandirs. Cultural activities are already being taken care of by the Blocks and any work in this direction by Vijnan Mandirs may lead to unnecessary duplication of effort.

15. It is better to obtain experienced men to work in Vijnan Mandirs, preferably by taking them on deputation from State Departments for specified periods.

SECTION II—RURAL INSTITUTES, ETC.

Visva Bharati (Calcutta)—(27.10.1959)

1. Rationalism has struck root in Europe due to the voluntary effort of pioneers like Thomas Huxley and others. Voluntary effort will likewise have to be mobilised in this country to disseminate scientific knowledge in rural areas.

2. Educationists may be invited to write popular science books with suitable financial assistance in deserving cases.

3. The country is covered with a net-work of officers under the CD/NES Programmes, etc., and there is hardly any need to superimpose yet another institution to cover such diverse activities like diffusion of scientific knowledge, soil analysis and water analysis.

4. The objectives underlying the Vijnan Mandir Scheme can be achieved if education is properly reoriented and strengthened with due regard to our requirements.

5. A Vijnan Mandir manned by a salaried officer may not produce results commensurate with the outlay involved.

6. Vijnan Mandir Officers will have to be initiated into the correct methods of drawing up survey reports and taking appropriate action thereon.

7. Pathological work in Vijnan Mandirs will have to be done under supervision; otherwise, the standard of work may deteriorate.

8. To expect a Vijnan Mandir to cover a whole district is totally unrealistic. For effective work an Anchal Panchayat with about 20 villages is a suitable jurisdiction.

Planning, Research and Action Institute, Lucknow—(2.12.1959)

1. Vijnan Mandirs may get in touch with science clubs set up by the Education Department, Planning authorities. Prantiya Raksha Dal, etc., and assist them in organising their programmes. Vijnan Mandir Officers may participate in their meetings and deliver lectures, on popular scientific subjects.

2. Teachers and students of educational institutions may be invited to attend talks, demonstrations, etc., arranged at the Vijnan Mandir.

3. Interest in science cannot be created unless the staff themselves have a systematic knowledge of science and are in a position to explain the basic scientific principles on matters affecting the daily life of the peasant.

4. Vijnan Mandirs may arrange simple experiments to catch the imagination of the people on subjects like (i) contamination of water and the action of an antiseptic like Potassium Permanganate; (ii) harmful effects resulting from the use of open kerosene lamps; and (iii) putrefaction of food.

5. Vijnan Mandirs already established may be continued as pilot schemes and the contents of their programme enriched to enhance their utility.

6. Vijnan Mandirs may be integrated with the C.D. Programme.

7. Vijnan Mandirs may work on a 'self-liquidating basis' and help in raising the group mind to the level at which it can appreciate the technical improvements and benefit from them.

8. There is need for an agency like Vijnan Mandirs to educate villagers on the basic scientific principles involved and on measures to be adopted in emergencies.

9. Social Education Organisers in the Blocks do not possess the requisite resources for the work expected of them, nor have they been given laboratory facilities to demonstrate the basic scientific principles involved.

10. There is need to process the findings of research and correlate them to the needs of the cultivators before they are adopted by them.

11. Vijnan Mandir is not a novel idea; county agencies backed by competent scientific knowledge are available in other countries to advise farmers on their problems and help them in adopting improved agricultural methods and practices.

12. The facilities at present available for giving correct technical assistance and guidance to the rural population are too meagre but the problems to be covered are vast. An agency like the Vijnan Mandir will not, therefore, be superfluous.

13. The charter of duties of Vijnan Mandirs is somewhat vague and definite working principles will have to be laid down to give a more concrete shape to the objectives of Vijnan Mandirs.

14. Extension services may be viewed more as technicians rather than as scientists whose sole job is to create an 'awareness' in the minds of the population.

15. The equipment supplied to Vijnan Mandirs are inadequate for the work expected of them.

16. Vijnan Mandirs may maintain constant liaison with various research institutions and other agencies in the country and pass on information to the villagers on different matters. From this angle, a network of Vijnan Mandirs will be helpful.

17. Pathological facilities without medical treatment will serve little purpose.

18. Dovetailing of Vijnan Mandirs with the Blocks is not only feasible but necessary. Feeder programmes are an important facet of C.D. movement and without them Vijnan Mandirs cannot 'artificially incubate conditions in the field.'

19. The term 'Vijnan Mandir' is rather a misnomer as it visualises a team of experts drawn from different fields of science.

20. The officers in charge of Vijnan Mandirs may be given sufficient latitude in conducting investigations and planning their programme of action. It may be open to them to modify their programme in the light of experience gained in the working of Vijnan Mandirs.

Government Agriculture College (Kanpur)—(3.12.1959)

1. While soil analysis by itself may not be difficult, it is unrealistic to expect the officers in charge of Vijnan Mandirs to give correct advice to villagers on the basis of investigations made by them.

2. Vijnan Mandirs may do useful work in educating villagers by arranging demonstrations in matters like plant protection.

3. Unless the rural population is brought to a certain level of education, they cannot understand dry and abstruse scientific principles.

4. The importance of activities designed to increase the material prosperity of the cultivator cannot be minimised; but service alone cannot produce a lasting effect unless the rural population is helped to develop a rational outlook.

5. While the need for soil analysis and pathological examination cannot be disputed, the processes involved are so technical that a well-equipped laboratory under experts is essential. Vijnan Mandirs cannot take up this responsibility with their limited resources; even if they are to do so, they cannot interpret the data and give correct advice to farmers. Considerable experience of conditions in rural areas will be required for interpretation and any incorrect advice may destroy the confidence of the people in scientific methods and practices built up by patient work over a period of years.

6. Vijnan Mandir staff cannot function effectively unless they are associated with and form part of technical departments.

7. Instead of functioning in isolation, Vijnan Mandirs may be attached to Extension Wings of bigger institutions like Agricultural Colleges.

8. Vijnan Mandirs may be attached to Blocks with the Vijnan Mandir Officer functioning as an Extension Officer in Science.

9. An M.Sc. (Agr.) is generally aware of the basic principles involved in analysis of soil and water. About three months' training will be sufficient to help him to 'manipulate' the methods.

10. Provision may be made for special instruction in soil analysis in the curricula of Agricultural Colleges and a directive in this regard from the University Grants Commission to all Universities may be of help.

11. A soil survey unit may take about six years to saturate a Block with soil analysis.

12. Soil and food analysis will have to be kept outside the scope of Vijnan Mandirs, but water analysis may be conducted for assessing hardness, etc.

13. Production of popular scientific literature will have to be given more emphasis.

Vidya Bhavan Rural Higher Institute, Udaipur—(20-12-1959)

1. The Vijnan Mandir Scheme is a good one and should be continued.

2. Block Extension Officers are so pre-occupied with their own problems that they have little time to explain the basic scientific principles underlying the improved practices advocated by them. No facilities are available for the teaching of science in primary and middle schools and the arrangements made in the secondary schools cannot be considered satisfactory. Vijnan Mandirs may, therefore, serve as centres for dissemination of scientific knowledge in rural areas and among students studying in schools.

3. Vijnan Mandirs may work in complete coordination with various research institutions in the country, remain in touch with the latest developments and pass on the results of researches to the villagers in an intelligible manner.

4. Social Education Organisers are generally not in a position to solve local problems. The techniques of social education taught to them only help in passing on the material received from the top down the line, but they do not know how to tackle field problems or how to refer them to outside agencies.

5. To produce better results Vijnan Mandirs may be linked up with the educational institutions and the community development programmes.

6. Till schools are properly equipped and staffed, the need for an agency like the Vijnan Mandir for educating villagers on correct scientific methods cannot be disputed.

7. Dissemination of scientific knowledge cannot be allowed to degenerate into mere publicity work; extension role and dissemination of scientific knowledge will have to be kept separate, though Vijnan Mandirs can work in close collaboration with Blocks.

8. Vijnan Mandir Officers may form part of a separate cadre in the States and their services may be obtained on deputation for definite periods.

9. If the techniques advocated by different agencies have not made sufficient headway in rural areas, it is because systematic efforts to implement them are lacking.

Circuit House, Ajmer—(21.12.1959)

1. Provision of service facilities in Vijnan Mandirs will result in duplication of effort. If it is decided to continue Vijnan Mandirs, their work may be restricted to the educational aspect alone.

2. The general level of education is so low in the country that it will be too optimistic to expect villagers to appreciate the abstract scientific principles or derive benefit from them.

3. Vijnan Mandirs need not have experts drawn from different branches of science and with the resources already available, they can serve as coordinating centre of knowledge.

4. The multi-purpose role envisaged for Vijnan Mandirs cannot be discharged efficiently by Government agencies. Vijnan Mandirs may be entrusted to voluntary agencies, subject to suitable assistance by Government.

5. Vijnan Mandirs may be made over to Rural Institutes engaged in rural development work, subject to financial assistance and supervision of Government.

6. In view of the high percentage of illiteracy in rural areas, written material like books, pamphlets, can only have a very limited appeal. Greater use may be made of visual aids for effective dissemination of knowledge among all classes of people.

7. Competitions may be arranged and prizes awarded to stimulate greater interest in rural problems and to encourage healthy emulation among field workers.

8. Some Vijnan Mandirs may be integrated with Blocks to improve their efficiency. As the Social Education Organisers are generally non-scientific personnel the Vijnan Mandir at the Block level may, after integration, be viewed as the science wing of the Block.

9. Suitable science teachers or agricultural graduates may be obtained on deputation from State Governments.

10. The kits supplied for rapid soil survey are unreliable for accurate work. A graduate in agriculture can handle soil analysis work in a general manner, but greater emphasis will have to be given to this aspect in the curricula of studies in agricultural colleges if this work is to be done efficiently by the students after graduation.

Gandhigram (Madurai District)—(11.1.1960)

1. The object of the scheme, namely, dissemination of scientific knowledge is a laudable one.

2. Educational work may be linked with Block activities where extension services are available to cater to different groups and interests. There is an urgent need for production of simple literature written in attractive style and Vijnan Mandirs can help in the distribution of such material.

3. To produce results, Vijnan Mandir staff will have to mix freely with village leaders, progressive farmers, etc., and spend some days with them to ascertain their needs and problems.

4. Researches made by institutions controlled by the Council of Scientific and Industrial Research generally stop at State capitals and do not filter down to field agencies.

5. Outside agencies may not help in extension work, village teachers may be enlisted for this work. In any case, suitable connecting links will have to be provided to facilitate educational work in rural areas.

6. Health education has not made sufficient headway and even in primary health centres the curative aspect is found to predominate. However, both education and pathological work can be handled by the primary health centres.

7. Vijnan Mandirs can act as a 'clearing house' of knowledge at the district level, but it is doubtful whether they can handle educational work without a suitable liaison agency.

8. The present facilities for soil analysis in the State are inadequate. The soil testing laboratory at Coimbatore is not in a position to serve the needs of the whole State. Vijnan Mandirs may, therefore, be adequately equipped for this important work.

9. Samples of water analysed so far are generally confined to wells sunk with the help of Government subsidies. No facilities exist for the testing of water in private wells.

10. Vijnan Mandir Officers may be trained for chemical analysis of water which is easy; bacteriological analysis is more difficult and requires costly equipment.

11. In the field of cottage industries, there is a vast scope for educating people on correct scientific methods. At present the activities of the Extension Officers (Industry) are mostly confined to the economic sphere and nothing is being done for education of the rural population. Vijnan Mandirs may educate villagers on economic exploitation of the various rural products which are now going waste.

MORE IMPORTANT POINTS MADE DURING DISCUSSIONS AT DIFFERENT VIJNAN MANDIRS

Shapur (Gujerat)—(1.10.1959)

1. Over-centralisation and administrative delays hamper the smooth functioning of the Vijnan Mandir. Vijnan Mandir Officers may be empowered to make purchases of small items like containers for specimens, chemicals, etc., without having to obtain the prior approval of the authorities in Delhi.

2. A generator may be supplied to enable the activities of the Vijnan Mandir being extended to all villages within a radius of about ten miles. Additional equipment like microscopes and furniture at a cost of about Rs. 10,000 is necessary if exhibitions are to be arranged satisfactorily.

3. A mobile van may be provided to facilitate film shows being arranged in rural areas, or alternatively a suitable grant my be placed at the disposal of Vijnan Mandir Officers to enable them to hire transport during exhibitions, melas, etc.

4. Books and pamphlets issued by both the State and the Central Governments on matters like agriculture, health and hygiene, may be made available to the Vijnan Mandir library.

5. The Vijnan Mandir Officer has no power to order any books and the prior permission of the Ministry is necessary before any book is obtained for the library.

6. Facilities for pathological work are generally not available in primary health centres; provision of such facilities in Vijnan Mandirs will meet an essential need of the people in rural areas.

7. Soil testing has an important role in rural economy and should not be given up by Vijnan Mandirs.

8. If Vijnan Mandirs are to function efficiently, the Centre will have to give up the present system of control and entrust the administrative functions to an educational institution or an institution engaged in rural development work.

9. The objective of the Vijnan Mandir Scheme is such that it is difficult to have a 'barometer' to assess the work done by Vijnan Mandirs in a tangible manner. However, if the facilities provided in Vijnan Mandirs are properly utilised, their popularity is bound to grow. This is a definite indication that they are doing good work.

10. There is no need for Vijnan Mandirs to take up cultural activities.

Amravati (Maharashtra)—(5.10.1959)

1. It is surprising that an institution like the Vijnan Mandir should have been left to its own resources without any Central or State guidance.

2. While the success of the Vijnan Mandir depends on the initiative and ability of the Vijnan Mandir Officer, no initiative has in practice been allowed to him in the day to day administration of the Vijnan Mandir.

3. The people in rural areas are not likely to be interested in the activities of the Vijnan Mandir unless some service facilities are provided which will contribute ultimately to their economic betterment.

4. The agency of science will have to be harnessed for solving rural problems and from this angle soil and water analysis are of vital importance.

5. Soil samples are not analysed in the Blocks.

6. Block Extension Officers (Agriculture) cannot handle soil analysis work without further training. The education and training of these officers do not generally equip them for taking up this work.

7. If graduates in agriculture are to undertake soil analysis work, they will have to be given orientation training in soil testing methods for about six months in agricultural colleges.

8. Vijnan Mandirs may undertake the work of enlightening villagers on methods of detection of cows after conception, preparation of bricks of the right type and tanning of leather by simple processes.

9. Villagers do not know how to exploit local resources economically; samples of such material may be sent by Vijnan Mandirs to the National Laboratories and other expert agencies for investigation. The results of studies made at the laboratories and agencies may then be communicated to the villagers.

10. Vijnan Mandirs may be affiliated to voluntary agencies which have built up a clientele in rural areas.

Dimoria (Assam)—(24.10.1959)

1. About the benefits resulting from the activities of Vijnan Mandirs, some progressive farmers mentioned that good work had been done especially in the field of analysis of water.

2. The two Vijnan Mandirs in Assam have succeeded in arousing curiosity in the minds of the population.

Itachunna (West Bengal)—(26.10.1959)

1. Reports of the work done in the National/Regional/State Laboratories are not reaching Vijnan Mandirs; nor has a bibliography been supplied to Vijnan Mandirs to help them in building a useful library.

2. Vijnan Mandirs may be made part of bigger organisations like Blocks to improve their efficiency.

3. Some service programmes are necessary to arouse curiosity and sustain the interest among the rural population.

4. The officers selected to work in Vijnan Mandirs should possess the necessary rural background.

5. There is need to constitute local committees to advise Vijnan Mandirs about the plan of action and for reviewing the work done.

Barsul (West Bengal)—(26.10.1959)

1. A survey of local problems has been made in some villages, but there has been no guidance about the preparation of reports based on the survey or the action to be taken thereon.

2. Even the books and pamphlets supplied to the Blocks are not reaching the Vijnan Mandirs. Vijnan Mandirs are not also in the picture in regard to researches conducted at National, Regional and State laboratories.

3. The appointment of a separate laboratory assistant is necessary to conduct pathological work in Vijnan Mandirs.

4. Cultural programmes for the preservation of rural arts and crafts may be taken up with advantage.

Sundernagar (Himachal Pradesh)—(20.11.1959)

1. Vijnan Mandirs have a useful role to play in disseminating correct scientific knowledge in rural areas.

2. Pathological work may be done by the Vijnan Mandir staff, though interpretation of results can be left to experts.

3. The Block Extension Officers have little time to attend to the educational aspects. The gap in this field of activity may be filled by Vijnan Mandirs by educating villagers on correct scientific methods and improved agricultural practices.

4. Equipments included in the original Vijnan Mandir Scheme were adequate for analytical work, but some cuts have been made in the revised scheme. The cuts will have to be restored if analysis work is to be done by Vijnan Mandirs on a satisfactory basis.

5. Training of the Vijnan Mandirs staff for about one year in all may be necessary for proper discharge of the duties and functions of Vijnan Mandirs.

6. Vijnan Mandirs may be integrated with Blocks, subject to suitable assistance and guidance being given by the Central Government.

7. The State Governments have no voice in the administration of Vijnan Mandirs. This is neither satisfactory nor adequate. In order to get the State Governments interested in the scheme, both recurring and non-recurring expenditure may be shared between the Centre and the States on a suitable basis, say in the ratio of 3:1.

8. The success of Vijnan Mandirs cannot be ensured unless better arrangements are made to enlist popular support and also to provide technical assistance, guidance, etc.

9. A considerable portion of the time of Vijnan Mandir Officers is spent in compiling various reports or in filling *pro formas*, etc. Some clerical assistance is necessary to attend to this work.

Sehore (Madhya Pradesh)—(27.11.1959)

1. The Vijnan Mandir Scheme is a good one and should be continued.

2. The location of Vijnan Mandirs at the headquarters of Blocks is preferable.

3. Vijnan Mandirs may be provided with a mobile van fitted with equipment and audio-visual aids.

4. Instead of confining their activities to some fixed centres, Vijnan Mandirs may be moved from place to place at appropriate intervals.

5. As science has made very little impact, especially in rural areas, Vijnan Mandirs may be administered as a separate agency for the next ten years or so till the present leeway is made up.

6. Human nature being what it is, service facilities are essential to win over the people and keep them interested in the work of Vijnan Mandirs.

7. Facilities for pathological work have been established at the primary health centres and need not be duplicated in Vijnan Mandirs. It is not desirable to take a doctor from his place of duty and give him some additional remuneration for doing a job in Vijnan Mandirs which he is expected to do as part of his normal work.

8. A small sub-committee of the Zila Parishad or the Panchayat Committee consisting of village leaders and other prominent persons of the area will be of help in programme-planning.

9. Institutions like Vijnan Mandirs cannot function unless the man on the spot is enthused over the work he is doing and allowed sufficient latitude in the day to day work.

10. There is scope for defining the duties and functions of Vijnan Mandirs on a clearer basis.

11. Vijnan Mandirs can conduct useful publicity in enlightening people on methods of family planning and on the need to arrest the alarming growth of population.

Masauli (Uttar Pradesh)—(2.12.1959)

1. Vijnan Mandirs provide the necessary framework for diffusion of scientific knowledge and may be made to breathe the spirit of science, if properly worked and developed.

2. Vijnan Mandir staff and extension officers cannot produce results unless office and routine work are reduced.

3. There is need to interpret rules and regulations liberally without undue emphasis on minor details. Otherwise, Vijnan Mandirs may tend to become too formal and mechanical in operation.

4. The Vijnan Mandirs can do useful work in training and developing local leadership through 'rural' Vijnan Mandirs and in arousing the interest of population in the developmental programmes. An attempt is already being made here to associate local people in planning programmes through 'rural' Vijnan Mandirs. In the initial stages they will have to be guided by the 'official' Vijnan Mandirs to enable them to find their feet.

5. Prior to the establishment of the Vijnan Mandir, the farmers did not know which agency they should approach for solution of their problems. With the advent of the Vijnan Mandir, such difficulties have become a thing of the past.

6. The role of Vijnan Mandirs is comparable to that of County Agents in the U.S.A.; with some more equipment and man-power, Vijnan Mandirs can give even better service in rural areas.

7. The Vijnan Mandir has succeeded in creating a favourable atmosphere and things hitherto hidden in the dark have been lit up by the knowledge flashed by it.

8. Vijnan Mandir functioning in complete coordination with the Block Development Officer would be an ideal arrangement.

9. Vijnan Mandirs need not be placed under Panchayat Samitis, as non-officials in villages are generally not interested in such work.

10. Fixation of targets for Vijnan Mandirs is not necessary.

11. If targets are related to such aspects as are specific and recognizable, the more important but intangible aspect like diffusion of knowledge and its impact on the minds of the villagers may suffer.

12. The equipment supplied to the Vijnan Mandirs is inadequate and requires strengthening. An additional outlay to the tune of Rs. 5,000 per annum may be necessary on equipment, library, etc.

13. A suitable contingency grant may be placed at the disposal of the Vijnan Mandir Officer for the setting up of a small nursery for rearing and distributing plants of medicinal value or of economic importance to villagers.

Nilokheri (Punjab)—(9.12.1959)

1. Some work had been started on soil analysis with the help of rapid soil testing kits but this work has been discontinued for want of chemicals.

2. Without adequate scientific knowledge, Social Education Organisers cannot be expected to educate villagers on correct scientific principles involved in matters affecting their day to day life.

3. As 'temples' of learning, Vijnan Mandirs may diffuse scientific knowledge through educational charts, models, etc.

4. While Vijnan Mandirs may work in close association with Blocks, they may remain separate entities at the District level.

5. Facilities for detection of food adulteration have an educational value which cannot be ignored. Vijnan Mandirs may, therefore, be provided with facilities for detection of adulteration of ghee, *atta*, etc.

6. There is need to carry to villages the results of research and investigations conducted at various research institutions in the country in a manner intelligible to them and this work may be undertaken by Vijnan Mandirs.

7. Education in institutions can reach school children only and not the adult population. Nor can they take up extension work as they have a tight curricula to be gone through according to schedule.

8. Scholars and technical experts may be invited to give lectures and talks at Vijnan Mandirs. The talks and lectures may be collected in the form of a journal and distributed to schools.

9. Vijnan Mandirs may participate in fairs and melas in the neighbourhood and exhibit museum specimens, etc. For this purpose the museum may be developed in three Sections: (i) Section I containing 'static' exhibits to be kept permanently at the Vijnan Mandir; (ii) Section II containing exhibits which may be transported on important occasions; and (iii) Section III containing other mobile exhibits and charts.

10. Vijnan Mandirs may be run by the Central Government on a 'tapering basis'. Thereafter they may be transferred to the State Governments.

11. Vijnan Mandir Officer may contribute articles on simple scientific subjects for distribution through the State Public Relations Officer.

12. A sub-committee may be set up under the chairmanship of the Deputy Commissioner of the District in which the Vijnan Mandirs are located to advise them on their programme of action.

Dabok, Udaipur (Rajasthan)—(20.12.1959)

1. The Vijnan Mandir has a useful role to play in educating people in scientific methods and in removing them from their superstitions and ignorance.

2. Since the establishment of the Vijnan Mandir at Dabok, a general feeling of enthusiasm has been created in the minds of villagers who have come to look upon the Vijnan Mandirs as a dispensary for treatment of their agricultural and other problems.

3. No facilities are available in Blocks for soil analysis, and kits for rapid soil survey have not been supplied. Soil samples have, therefore, to be sent to far-off places like Jaipur and Jodhpur for analysis and advice. Being close to people in rural areas, Vijnan Mandirs can give them elementary advice and guidance.

4. Delays which are inevitable in any Government organization can be got over by transferring Vijnan Mandirs to voluntary organizations like Rajasthan Vidyapeeth, subject to financial assistance and audit by the Government.

5. Social Education Organisers do not have the necessary scientific background and cannot attend to the work of dissemination of scientific knowledge.

Pisangan (Rajasthan)—(12.12.1959)

1. Social Education Organisers cannot handle the work of Vijnan Mandirs as they do not possess the requisite scientific background.

2. Blocks are not equipped for analytical work and it is desirable to retain the Vijnan Mandir as a separate entity.

3. The location of the Vijnan Mandir in a wing of the Block office has helped coordination of activities with the Block extension agencies. However, much depends upon personal relations of Vijnan Mandir Officers and Block Development Officers.

4. For efficient administration, Vijnan Mandirs can be made over to Panchayat Samitis, subject to technical guidance being provided by the departments concerned.

5. Frequent inspections by regional inspectors will help in the efficient working of Vijnan Mandirs.

6. The proposal of taking persons from State Governments is not desirable because deputationists will be eager to get back to their parent departments and may not take sufficient interest in their work.

Vicarabad (Andhra Pradesh)—(5.1.1960)

1. The Vijnan Mandir was set up in March 1957, but complete equipment were not received till about January 1958.

2. Ores containing a high percentage of iron were sent to the Regional Laboratory at Hyderabad, but samples were returned with the remark that they were not suitable for economic exploitation as they contained only 45 per cent. of iron. It may be worthwhile to send samples to Jamshedpur for examination and expert opinion.

3. No separate advisory committee has been set up for the Vijnan Mandir, but the Panchayat Committee is serving as an advisory committee. District Officers attend the meetings of the Committee.

4. Vijnan Mandirs fulfil a useful role by serving as a liaison with the C.D. Blocks and the Technical Departments on the one hand and the rural population on the other.

5. As a multi-purpose agency, the Vijnan Mandir can do useful work for the benefit of rural population.

6. Being close to the villager, the Vijnan Mandir can do soil analysis in the presence of farmers and this helps educational work.

7. It may not be possible to saturate a whole State with soil analysis unless a unit is established in each district.

8. The work done by the Vijnan Mandir in the psychological field of developing scientific temper cannot be assessed in a short period.

9. While Vijnan Mandirs cannot cover an entire district, it should be possible for them to hold periodic discussions with the Presidents of the various Panchayat Samitis, who would report back to the villagers the knowledge derived by them and this will help the spread of knowledge.

10. Even though the primary objective of a Vijnan Mandir is dissemination of knowledge, some service facilities are necessary to win the hearts of the people.

11. Vijnan Mandirs can do useful work to popularise family planning methods.

12. Pathological examination is not being done at the primary health centre. Even though the Doctor has the necessary training for it, equipment required is not available.

R.V.P. Pudur (Kerala)—(7.1.1960)

1. Pathological work at the Vijnan Mandir is conducted by the doctor of the local dispensary whose services have been obtained on a part-time basis. No facilities are available at the dispensary for analytical work and even primary health centres have no facilities for this work.

2. The basic objective of dissemination of scientific knowledge cannot be achieved by laboratory work alone and greater emphasis may, therefore, be laid on propaganda and publicity.

3. Vijnan Mandirs cannot work in isolation. Integration with Community Development Blocks will be of help in organizing and planning the programme of action.

4. The present system of administration from Delhi is unsatisfactory and Vijnan Mandirs may be worked on a pilot project basis through different agencies.

Coimbatore (Madras)—(7.1.1960)

1. There is need for providing security of tenure for Vijnan Mandir staff. Officers of comparable status in States like Block Development Officers enjoy gazetted status, while Vijnan Mandir Officers are non-gazetted even though their scale of pay is somewhat higher in certain States. This is a handicap and Vijnan Mandir Officers are unable to get through their work with brother officers on an equal footing.

Service in Vijnan Mandirs is like a blind alley without any prospect of promotion to higher ranks. This has led to stagnation and frustration and made service less attractive to young men of talent. Some avenues of promotion will have to be provided for better efficiency.

2. The training given to Vijnan Mandir Officers has no relation to the role and functions of Vijnan Mandirs and the equipment made available to them. The training will have to be properly reoriented to the needs and problems of villagers.

3. There is obviously something lacking in University education and the disparity in the knowledge possessed by an average science graduate in India and by one in the West is alarming.

4. Accommodation for Vijnan Mandirs may be built according to specifications to steer clear of local loyalties and affiliations. For the purpose of holding meetings, discussions, etc., a lecture hall may also be provided.

5. Vijnan Mandirs may institute prizes to encourage talents and to inculcate a spirit of healthy emulation among the members of Science Clubs.

6. A tool kit costing about Rs. 500/- may be provided to each Vijnan Mandir.

Periyanaickenpalayam (Madras)—(8.1.1960)

1. There is need for a separate institution for propagating scientific knowledge and inculcating in the rural population a scientific attitude to practical problems.

2. Administration of Vijnan Mandirs from Delhi is not conducive to efficiency and will have to be decentralised.

3. In view of the need for coordination between the Block and the Vijnan Mandir, the Block is an adequate coverage for a Vijnan Mandir.

4. Service is necessary to attract people and may be utilised as a channel for spreading scientific knowledge.

5. Vijnan Mandirs can take up soil analysis by the rapid testing methods.

T. Kallupatti (Madras)—(10.1.1960)

1. No soil analysis is being done in the Vijnan Mandir.

2. Samples of water have been analysed to assess suitability for irrigation. On the basis of advice given, the pattern of crops has been adjusted in a few cases.

3. There are no facilities for testing water in the wells sunk by private parties or in old wells. The Vijnan Mandir is not doing water analysis for drinking purposes. While equipment for chemical examination is already available, additional equipment will be needed for bacteriological tests.

4. Vijnan Mandirs may be provided with a person trained in pathological work for conducting tests of blood, sputum, stools and urine.

5. A mobile unit is necessary with facilities for arranging film-shows.

6. Given necessary training, social education organisers can undertake the work of dissemination of knowledge.

7. Integration of Vijnan Mandirs with Blocks will help effective coordination between the two agencies.

8. The addition of a cultural wing to Vijnan Mandirs will shift the emphasis from its primary objective of creating a science-consciousness among the rural population.

9. The weightage given to the official element in the advisory committee at present constituted is too heavy and needs to be reduced.

Mayasandra (Mysore)—(13.1.1960)

1. It is not desirable to integrate Vijnan Mandirs with the Block and adding another extension officer at the Block level.

2. The Vijnan Mandir Scheme has a distinct role to play and should continue.

3. It is not necessary to add a cultural wing to Vijnan Mandirs.

4. Supply of equipment to Vijnan Mandirs should be properly planned to avoid unnecessary time-lag in starting work at the laboratory.

5. For effective functioning of Vijnan Mandirs, there is need for some inspecting authority at the local level.

Ormanjhi (Bihar)—(16.3.1960)

1. Despite several handicaps the Vijnan Mandir has been doing very useful work. Soil is tested in the Vijnan Mandir and the advice given has been of help in improving the fertility of the soil and in getting better yields.

2. Provision of a transport as well as a generator is essential for the efficient working of Vijnan Mandirs.

3. Vijnan Mandirs can study local problems and suggest suitable solutions.

4. A science museum in a Vijnan Mandir is very useful in educating students and adults.

5. The objectives of Vijnan Mandirs need to be clearly defined.

6. The working of Vijnan Mandirs and Blocks should be closely linked. Vijnan Mandirs may serve as field centres and all Government activities may be channelled through Blocks.

7. Vijnan Mandir Officers may be directly recruited as persons on deputation may not take sufficient interest. On the contrary, he may be constantly on the look-out for promotion in his parent department.

8. No arrangements exist for residential accommodation for the staff working in Vijnan Mandirs. Provision of residential quarters to the staff is necessary.

Hinjlicut (Orissa)—(20.3.1960)

1. The proposal to withdraw pathological work from the scope of Vijnan Mandirs is unfortunate.

2. The work of Vijnan Mandirs does not involve duplication of work; on the contrary it is complementary to the work done by Blocks.

3. The meetings of Science Clubs are not regularly held and whatever is taught in the meetings is not of much use.

4. The Vijnan Mandir Officer should work in coordination with the Block, though he may operate as a separate functionary.

5. There should be a local advisory committee to supervise the work of Vijnan Mandirs.

Kapashera (Delhi)—(11.4.1960)

1. The Vijnan Mandir at Kapashera has been of much help to the people and it will be a great loss to the local population if it is closed.

2. On the basis of analysis done by Vijnan Mandirs, in places where the available water is not suitable for wheat, barley and *barseem* are being raised with advantage.

3. Facilities for clinical examination are not available in villages and provision of these facilities in Vijnan Mandirs will be of much help in diagnosis.

4. The extension agencies are adequately equipped to educate villagers on improved farming practices and methods and they are also able to organise demonstrations to the satisfaction of villagers.

5. As a number of agencies are already working on various aspects of rural uplift in this area, a separate agency is not called for.

6. Vijnan Mandirs may be attached to selected Blocks as an experimental measure and the work assessed after a period of time before embarking on further expansion.

7. If the idea is to have one Vijnan Mandir per district, it is illogical to attach them to Blocks.

APPENDIX I

APPOINTMENT OF ASSESSMENT COMMITTEE

Extract from Order No. F.1(19)/59-VM dated the 14th October, 1959 issued by the Ministry of Scientific Research and Cultural Affairs

1. Sanction of the President is accorded to the constitution with effect from 14th September, 1959 of an Assessment Committee with the following members to review the working of Vijnan Mandirs, and consider the advisability of enlarging their scope by the addition of cultural activities:—

1. Shri Balvantray G. Mehta, M.P.—Chairman.
2. Shri M. P. Bhargava, M.P.—Member.
3. Shri Muhammed Khuda Bukhsh, M.P.—Member.
4. Shrimati Yashoda Reddy, M.P.—Member.
5. Shri N. K. Sreenivasan, Under Secretary to the Government of India, Ministry of Scientific Research and Cultural Affairs—Secretary.

2. The Chairman of the Committee shall have powers to coopt additional members up to a maximum of three, at any one time.

Extract from Letter No. 1/19/59-VM dated the 2nd September 1959 addressed by Prof. Humayun Kabir, Minister for Scientific Research and Cultural Affairs to the Chairman and Members of the Assessment Committee on Vijnan Mandirs

"The terms of reference being:—

(i) How far have the Vijnan Mandirs fulfilled their objectives?

(ii) What are the difficulties they have faced and how can these be overcome?

(iii) Is there any need to change the nature and extent of the assistance given by the States?

(iv) The desirability of widening the scope of Vijnan Mandirs and of adding a Cultural Wing to them.

(v) Any other suggestions for improving the work of Vijnan Mandirs".

Extract from Order No. 1/19/59-VM dated the 24th November, 1959 regarding cooption of Shri G. Ramachandran and Thakur Phool Singh Ji as Members of the Assessment Committee on Vijnan Mandirs

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With reference to para 2 of this Ministry's Order No. 1/19/59-VM., dated the 14th October, 1959, the *ex-post-facto* sanction of the President is accorded to the following non-officials being coopted by the Chairman as members of the Assessment Committee on Vijnan Mandirs with effect from the 17th October 1959 in accordance with para 2 of order referred to above:—

1. Shri G. Ramachandran.
2. Thakur Phool Singh Ji.

APPENDIX II

QUESTIONNAIRE

Points for consideration in connection with the Assessment of the Working of the Vijnan Mandirs

NOTE:

Vijnan Mandirs are scientific centres established in rural areas for the dissemination of scientific knowledge through lectures, demonstrations, etc., and also for the development of a scientific temper among the rural population.

I. *Location*

1. The Vijnan Mandirs are located at the sites recommended by State Governments. Accommodation is provided by State Governments in view of the benefits accruing to the rural population from these Mandirs. Do you think that assistance available from State Governments in the shape of accommodation is adequate? And if not, what further responsibilities they should be asked to share for better functioning of these Mandirs?

II. *Administrative Arrangements*

2. Is the existing administrative pattern of the Vijnan Mandirs adequate for its role and functions in so far as numbers, training and functions of the personnel are concerned?
3. Would you recommend the posts of Vijnan Mandir Officer/ Assistant Vijnan Mandir Officer being filled (a) from open market after suitable training, or (b) by persons obtained on deputation from State Governments, educational institutions, etc., for definite periods?
4. What arrangements would you suggest to improve the efficiency of the Vijnan Mandirs without extra expenditure?
5. What improvements would you suggest for giving continued technical guidance to the Vijnan Mandir staff?
6. Do you think that the duties and responsibilities of the Vijnan Mandir staff have been clearly defined? If not, what suggestions would you like to offer for efficient administration?
7. Do you think it desirable to enlarge/reduce the area of operation of the Mandirs? If so, what would be the optimum number of villages, area (in square miles), and population (in thousands) that should be included in the area covered by the Mandir?
8. What powers should be given to the Vijnan Mandir Officer in regard to the disciplinary control of the staff working under him and other matters for proper administration?
9. Do you think that the programme of activities, as now developed, is satisfactory? How far has this programme succeeded in educating the villagers in the application of science in their day to day life?
10. What suggestions would you like to make to ensure that the programme of work is realistic and in line with the felt needs of the people?

11. Is it necessary to fix any physical targets to assess the working of the Vijnan Mandirs? If so, what are your suggestions?

12. Do you consider that any follow-up should be kept to ensure that the villagers act according to the technical advice given or techniques imparted to them in matters relating to agriculture, crop protection, irrigation, rural sanitation, etc.? If so, what arrangements would you suggest with due regard to the resources available at the Mandirs?

13. Do you consider it necessary for the Mandirs to organize peripatetic parties for undertaking village to village visits and ascertain the needs of the rural population? If so, what should be their frequency?

14. Do you consider that the equipments and literature available to Mandirs are adequate for dissemination of scientific knowledge? If not, what additions would you suggest?

15. Do you think that the present arrangements for supervising the work of the Vijnan Mandirs by occasional visits by officers from Delhi and by issue of directives adequate? If not, do you consider that any arrangements should be made with the State Governments for technical supervision and guidance by their officers, like Director of Public Instruction, Development Commissioner, District Planning Officer and District Agriculture Officer, etc., or whether a separate agency should be established under the Central Government, such as Zonal Inspectors for supervision of Vijnan Mandirs at close quarters?

III. *Science Clubs and Museums*

16. Do you think that the Rural Science Clubs organised by the Vijnan Mandirs are functioning efficiently? If not, what improvement would you suggest? Do you recommend organization of separate science clubs for different age groups, women, etc.?

17. Do you think that the pattern of Science Museum, as at present developed, is adequate to arouse curiosity and interest of the rural population? If not, what measures would you suggest to make the museum an efficient agency for spread of knowledge without undue expenditure?

IV. *Facilities for Analytical work*

18. Some facilities have been provided for soil analysis, water analysis and human pathological work. Do you think that the emphasis on the 'Service' aspect, as developed in the Vijnan Mandirs, is likely to militate against its functioning as an efficient agency for dissemination of scientific knowledge? If not, what suggestions have you to make for the development of Vijnan Mandirs without involving over-lapping or duplication of activities with other agencies which may also be doing a similar type of work?

19. Facilities have been provided in a few Vijnan Mandirs for simple human pathological work, like urine as well as blood analysis, as such facilities were not generally available in rural areas. As Vijnan Mandirs are essentially educational in

character, the facilities have been withdrawn. Do you think that the provision of these facilities is beneficial to the rural population, and whether provision of such facilities in all Vijnan Mandirs would not result in duplication of effort by agencies of State Governments?

V. *People's Participation*

20. Do you consider that the present arrangements for association of the local people with the running of the institution, satisfactory? What steps would you suggest to mobilize local leadership and to bring out a satisfactory liaison between official and non-official agencies, such as Panchayats, functioning in that area?

21. In some places separate local advisory committees for Vijnan Mandirs are functioning under the chairmanship of the District Collector. Do you think that the local advisory committees should continue to function or whether they should be replaced by a Sub-committee of the Block Advisory Committee for proper integration of activities?

VI. *Coordination with Block and Other Agencies*

22. At the annual conference on Community Development held at Mount Abu in May 1958, it was recommended that the Vijnan Mandir Officer should function as a full-fledged member of the Block team for the purpose of coordination of the various activities of the Vijnan Mandirs with those of the Blocks. Do you think that this recommendation will help in bringing about the necessary coordination?

23. The Vijnan Mandirs are located as far as possible as adjuncts to educational institutions. Do you think that facilities available in the educational institutions are being properly utilized for spreading scientific information among the people? If not, what improvements would you suggest?

VII. *Cultural Wing*

24. It has been suggested that scope of the Vijnan Mandirs might be enlarged by adding a Cultural Wing with the following programme:—

(i) (a) Establishment of Rural Institutes for the purpose of arranging folk dances, community singing, exhibition of paintings, etc.

(b) Promotion of folk dramas.

(c) Needle work, lace making etc.

(d) Exhibition of films etc.

(ii) Establishment of Rural Art Museum, which would concentrate on rural art including puppetry.

(iii) Development of Libraries containing books on popular cultural subjects, photography, charts, depicting Indian art, sculpture, etc. The Library would also contain literature for children on both scientific and cultural topics.

(iv) Annual competitions to induce interest in painting, clay modelling, drama, folk songs, etc.

Do you consider that (a) the addition of cultural activities, as suggested above, would ensure that arts and crafts which are now in a decadent stage will not altogether die, or (b) whether such addition is likely to divert the Vijnan Mandirs from their primary objective of dissemination of scientific knowledge?

25. If the need for the addition of a cultural wing is accepted, what personnel and equipments would you suggest for the type of cultural programme envisaged above?

26. Apart from academic qualifications, what special qualification in drama, dance or in the literary field would you suggest for the Officer-in-charge of the Cultural Wing?

27. In case the cultural programme as suggested above is not considered adequate for preservation of rural arts and crafts, what improvements would you suggest without undue extra expenditure?

APPENDIX III

List of Ministries, State Governments, Universities, Colleges, Organisations, Educationists and Others, who furnished replies to the Questionnaire or sent written Memoranda to the Committee

SECTION 1—THE FORD FOUNDATION IN INDIA

1. Dr. Douglas Ensminger, Representative in India.
2. Dr. Joseph Stepanek, Consultant in Small Industries.

SECTION 2—MINISTRIES, ETC.

*1. Ministry of Community Development and Cooperation.
2. Ministry of Education.
3. Ministry of Food and Agriculture.
4. Ministry of Health.
5. Indian Agricultural Research Institute, New Delhi.
6. Planning Commission.

SECTION 3—STATE GOVERNMENTS

1. Andhra Pradesh.
2. Assam.
3. Bihar.
*4. Bombay.
5. Kerala.
6. Madras.
7. Mysore.
8. Punjab.
9. Rajasthan.

Field Officers of the State Governments

1. Collector, Udaipur, Rajasthan.
2. District Magistrate, Dhenkanal, Orissa.
3. Shri M. L. Kakkar, RAS, Zonal Development Officer, Udaipur Division, Udaipur, Rajasthan.
4. Smt. E. S. Thyalambal, Distt. Social Education Officer, Coimbatore.
5. Shri A. Rajamanickam, Distt. Publicity Officer, Coimbatore.
6. Shri B. B. Mahanty, Distt. Social Education Organiser, Dhenkanal, Orissa.
7. Distt. Agriculture Officer, Dhenkanal, Orissa.
8. Sub-Divisional Officer, Basirhat, West Bengal.
9. Shri K. M. Jain, Community Project Officer (Ind.), Pilot Project, Pisangan, Rajasthan.
10. Shri S. K. Sen, In-charge, Primary Health Centre, Pisangan, Rajasthan.

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* Have no comments to offer.

11. Dr. D. N. Goswami, Civil Assistant Surgeon, Civil Hospital, Pisangan, Rajasthan.
12. Shri K. Ponnuswamy, B.D.O., Udumalpet.
13. Block Development Officer, Haroa, West Bengal.
14. Shri N. Chevana, B.D.O., Perianaickenpalayam, Madras.
15. Block Development Officer, Binapur II, P.O. & H.Q. Belpahari, Distt. Midnapur, West Bengal.
16. Shri Achutananda Naik, B.D.O., Hinjlicut, Distt. Ganjam, Orissa.
17. A.A.-*cum*-B.D.O., Kharagpur.
18. Shri M. Balakrishnan, B.D.O., T. Kallupatti, Distt. Madurai (Madras).
19. Vikas Adhikari, Panchayat Samiti, Mavli, Rajasthan.
20. Chief Organiser, Public Cooperative Centre, Pisangan, Rajasthan.

SECTION 4—UNIVERSITIES AND COLLEGES

Andhra Pradesh

1. Prof. M. S. Krishnan, Head of the Department of Geophysics, J.V.D. College of Science and Technology, Waltair.
2. Principal, Maharajah's College, Vizianagaram.
3. Shri V. Suryaprakasam, Head of the Department of Physics, P.R. Government College, Kakinada.

†4. Shri S. Subramanyam, Principal, Sir C.R.R. College, Eluru.

†5. Shri G. V. Krishnamurty, Head of the Chemistry Department, Sir C.R.R. College, Eluru.

6. Shri V. Rama Rao, Principal-in-charge, Agriculture College, Bapatla.
7. Sri K. Rajamannar, Principal, Government Arts College, Rajahmundry.
8. Sri E. Lakshminatha Rao, Principal, W.B.G. College, Bhimavaram.
9. Shri A. S. Thyagaraju, Principal, S.R.R. & C.V.R. Government College, Vijayawada.

   (Replies also received from Heads of the Departments of Physics, Chemistry and Natural Science of the above college).

**Delhi*

Himachal Pradesh

†Principal, Government College, Rampur-Bushahr, Distt. Mahasu, H.P.

Jammu and Kashmir

†1. Dean, Faculty of Education, University of J. & K.

2. Shri S. N. Wakhaloo, Head of the Post-Graduate Department of Geology, University of J. & K.

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* Delhi University have no comments to offer.

† Received through the Registrar of the concerned University.

Kerala

†1. Dr. K. Bhaskaran Nair, Chairman, Post-Graduate Board of Studies in Zoology, University of Kerala, Trivandrum.

†2. Dr. C. S. Venkateswaran, D.P.I. (Retd.), Kerala and Chairman, Post-Graduate Board of Studies in Physics, University of Kerala, Trivandrum.

†3. Dr. A. Narayanan Poti, Chairman, Post-Graduate Board of Studies in Chemistry, University of Kerala (Calicut).

†4. Shri K. I. Verghese, Chief Professor and Head of the Department of Zoology, Maharaja's College, Ernakulam, University of Kerala.

†5. Shri A. Raman, Professor of Botany, Maharaja's College, Ernakulam.

†6. Shri S. Gopala Menon, Professor of Physics, Maharaja's College, Ernakulam.

†7. Dr. N. S. Wariyar, Professor of Chemistry, University College, Trivandrum.

†8. Shri T. B. Thomas, Head of Department of Physics, Union Christian College, Alwaye.

Madhya Pradesh

†1. Shri A. L. Pandey, Principal, S.B.R. College, Bilaspur.

†2. Shri B. B. Lahiri, Chairman, Lahiri Degree College, Chirimiri.

†3. Shri N. C. Verma, Head of the Department of Botany, Government Arts and Science College, Durg.

†4. Vice-Principal, Narmada Mahavidyalaya, Hoshangabad.

Maharashtra and Gujarat

*1. Shrimati Nathibai Damodar Thackersy Women's University, Bombay.

*2. University of Poona.

†3. Shri Y. G. Yagnik, Dean, Faculty of Science, Gujarat College, Ahmedabad.

4. Shri K. A. Thaker, Dean, Faculty of Science, University of Marathwada, Aurangabad.

5. Shri Y. D. Bhave, Principal, R.R. Lalan College, Bombay.

6. Shri M. G. Deshmukh, Principal, Government College of Arts and Science, Aurangabad.

7. Shri K. B. Vyas, Principal and Shri G. C. Amin, Head of Chemistry Department, M. N. College, Visnagar, Distt. Mehsana.

8. Rev. Herbert A. De Souza, S. J., Principal, St. Xavier's College, Ahmedabad.

9. Dr. S. S. Joshi, Professor of Physics, Junagadh.

10. Shri L. B. Kajale, Principal, College of Science, Nagpur and Dean, Faculty of Science, University of Nagpur.

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* Have no comments to offer.

† Received through the Registrar of the concerned University.

Mysore

Indian Institute of Science, Bangalore.

Punjab

†1. Shri Ramchand Paul, University Professor and Head of the Chemistry Department, Hoshiarpur.

†2. Head of the Department of Pharmacy, University of Punjab.

†3. Prof. Dr. P. N. Mehra, D.Sc., F.N.I., Dean, Faculty of Science and Head of the Department of Botany, University of Punjab.

†4. Principal, Medical College, Amritsar.

†5. Principal, Khalsa College, Amritsar.

†6. Principal, Brijindra College, Faridkot.

†7. Principal, Government College, Rupar.

†8. Principal, Government College, Ludhiana.

†9. Principal, Government College, Gurdaspur.

†10. Principal, Government College, Chandigarh.

†11. Shri M. S. Sohal, Lecturer, Government College, Solan.

Rajasthan

†Dr. S. M. Mittra, Dean, Faculty of Science, Birla College, Pilani.

Uttar Pradesh

1. Dr. M. Ray, D.Sc., F.N.I., Registrar, Agra University.

*2. Principal, College of Science, Banaras Hindu University, Varanasi.

†3. Principal, Women's College, Banaras Hindu University, Varanasi.

†4. Principal, Udai Pratap College, Banaras.

5. Shri R. K. Tandon, Principal, Government Agriculture College, Kanpur.

West Bengal

*Registrar, University of Calcutta.

SECTION 5—ORGANISATIONS, EDUCATIONISTS AND OTHERS

Organisations

1. Secretary, Gandhigram Rural Institute, Gandhigram, Distt. Madurai.

2. Secretary, Gandhi Smarak Nidhi and Chairman, Gandhi Niketan Ashram, Madurai.

3. Director, Vidya Bhaan Rural Higher Institute, Udaipur.

4. Director, Planning Research and Action Institute, Lucknow.

5. Allahabad Agricultural Institute (A Christian Institute of Rural Life), Allahabad.

6. Principal, Balwant Rajput College, Agra, U.P.

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* Have no comments to offer.

† Received through the Registrar of the concerned University.

Educationists and Others

1. Shrimati Savitri Nigam, M.P.
2. Shrimati Indumati Chimanlal, Khagpur, Ahmedabad.
3. Shri E. W. Ariyanayakam, Hindustani Talimi Sangh, Sevagram.
4. Dr. R. Nagendran, F.R.S.C. (Eng.), Bangalore.
5. Shri Nanabhai Bhatt, Director, Lok Bharti, Sanosara.
6. Shri Dwarika Singh, Director, Rural Institute of Higher Studies, Birouli, Darbhanga.
7. Shri G. Vasudev Pai, Secretary, Samaj Mandir Sabha, Mysore.
8. Sri Ramakrishna Mission Vidyalaya, Coimbatore.
9. Dr. R. V. Ramkrishna, Indian Aid Mission, Nepal, Kathmandu.
10. Shri Ishwerbhai Patel, Charotar Education Society, Anand.
11. Shri V. S. Sharma, Daizy Bank, Simla-1.
12. Shri T. Isaac John, Deputy Director, Social Education Organisers' Training Centre, Shri Ramakrishna Mission Vidyalaya, Coimbatore.
13. Shri Maganbhai Patel, Director, Institute of Agriculture, Anand.
14. Shri K. N. Duraiswamy, Principal, Rural Extension Training Centre, T. Kallupatti.
15. Principal, Graduates Basic Training Centre, Mangrol, Saurashtra.
16. Shri K. Vedantam, Principal, School of Agriculture, S.R.K.M. Vidyalaya, Coimbatore.
17. Shri Indra Narayan Kundu, Secretary, Prabuddha Bharat Sangh Shiksha Samsad, Itachunna, Hooghly.
18. Shri Harisadan Chakravarty, President, Distt. Youth Congress, Hailakhandi.
19. Captain Subodh C. Dutta, Editor, 'The Sentinel', Hailakhandi.
20. Dr. K. M. D. Patro, Canneron Memorial Hospital, Amadalavalasa.
21. Shri R. A. Swamiappau, R.V.P. Pudur, Kerala.
22. Shri Mohendra Kumar Bhattacharjee, Secretary, Bar Association, Hailakhandi.
23. Shri B. Narayanamurthy, President, Panchayat Samiti, Amadalavalasa, Distt. Srikakulam.
24. Shri K. S. Sivalingam, Kozhinjampara, Distt. Palghat, Kerala.
25. Shri Babu Singh Chib, President, Rural Science Club (PM), Satrayan, R.S. Pura, Jammu.
26. Shri Ugeshwar Thakur, Member, VM Advisory Committee, Ormanjhi.
27. President, VM Rural Science Club, S.V. Nagram.
28. Shri G. S. Krishnaswamy, Works Superintendent, Sarajnan Karyalaya, S. V. Nagram.
29. Shri D. K. Misra, Head Master, Government High School and Multi-purpose School, Pisangan, Rajasthan.

30. Head Master, Government Multi-purpose Higher Secondary School, Sardhana, Rajasthan.
31. Shri K. Pullayanaidu, Head Master, Board of Multi-purpose School, Tanukee.
32. Rev. Father G. M. Manuel, Head Master, St. Paul's School, Kozhinjampara, Kerala.
33. Shri B. V. Sanyasi Rao, Head Master and Correspondent, Maharaja K's Multi-purpose School, Vizianagaram.
34. Shri J. Venkata Rao, Head Master, B.H. School, Amadalavalasa.
35. Principal, Government Multi-purpose Higher Secondary School, Haveli-Kharagpur, Bihar.
36. Shri P. Bangarraju, Head Master and Correspondent, M.S. N.C., Multi-purpose School, Jagannaickpur, Kakinada.
37. Shri D. J. Sardespande, Superintendent, Rajapur High School, Rajapur, Distt. Ratnagiri, Bombay.
38. Sri D. Ramiah Naidu, Head Master, S. V. High School, Vellore.
39. Sri N. Chinnasami Naidu, Head Master, Mani High School, Pappanaickenpalayam, Coimbatore.
40. Shri K. C. Pandey, Head Master, Brindaban Vidyapith, Hinjlicut, Orissa.
41. Sri S. Krishnamurthy, Head Master, Subramania Sastriar High School, Arni, N. Arcot Distt.
42. Sri M. J. Sargunam, Principal and Correspondent, Union High School, Coimbatore.
43. Head Mistress, Government Secondary and Basic Training School for Women, Coimbatore.
44. K. S. Manavala Iyengar, Head Master, Board High School, Cheyyar, N. Arcot.
45. Sri C. M. Bastia, Principal, I.Sc. College, Angul, Orissa.
46. Principal, Government Higher Secondary School, Chala, Delhi.

SECTION 6—PERSONS WHO HAVE SENT THEIR CONSIDERED VIEWS IN THE LIGHT OF THE DISCUSSIONS HELD WITH THE COMMITTEE

1. Dr. S. R. Das, Upacharya, Visva Bharati.
2. Shri K. G. Saiyidain, Secretary, Ministry of Education.
3. Dr. C. R. Naidu, M.B.B.S., M.R.C.S. (Eng.), L.R.C.P. (London), Director of Public Health, Andhra Pradesh.
4. Prof. K. N. Kaul, F.L.S., Director, National Botanical Gardens, Lucknow.
5. Shri K. D. Sethi, Director of Education, Himachal Pradesh.
6. Shri A. C. Devegowda, Director of Public Instruction, Mysore.
7. Shri Akbarbhai Nagori, Director, Sarvodaya Ashram, Shahpur.

8. Shri S. R. Londhe, Director, Rural Institute, Sivaji Nagar, Amravati.
9. Shri K. L. Bordia, Director, Vidhya Bhavan Rural Institute, Udaipur, Rajasthan.
10. Shri D. Roy, Adhyaksha Palli Samgathana Vibhag, Sriniketan.
11. Shri Sugata Das Gupta, Director, S.E.Os., Training Centre, Sriniketan.
12. Prof. Surendra Mohan Dattatreya, Nilokheri.

SECTION 7—VIJNAN MANDIR OFFICERS/OFFICERS-IN-CHARGE, VIJNAN MANDIRS

1. Shri A. S. Rawat, V.M.O., Pisangan, Distt. Ajmer, (Rajasthan).
2. Shri B. Behra, V.M.O., Angul, Distt. Dhenkanal (Orissa).
3. Shri B. C. Goswami, O/IC Vijnan Mandir, Dimoria, Distt. Kamrup (Assam).
4. Shri B. N. Raghavendrachari, V.M.O., Devarayasamudram, Distt. Kolar (Mysore).
5. Shri C. V. Venkatachalam, V.M.O., S.R.K. Vidyalaya, Coimbatore (Madras).
6. Shri C. L. Sanghi, V.M.O., Sardarshahar, Distt. Churu (Rajasthan).
7. Dr. G. K. D. Roy, V.M.O., Hailakhandi, Distt. Cachar (Assam).
8. Shri G. Ramachandran, V.M.O., Chengannur, Distt. Alleppey (Kerala).
9. Shri G. L. Sumbali, V.M.O., Ranbir Singh Pura (J. & K.).
10. Shri H. S. Nema, V.M.O., Sehore, Distt. Sehore (M.P.).
11. Shri H. Sreemulanathan, V.M.O., R.V. Pudur, Distt. Palghat (Kerala).
12. Shri H. R. Saini, V.M.O., Nilokheri, Distt. Karnal (Punjab).
13. Mrs. Hanna Bhaskar Rao, V.M.O., S.V. Nagram, Distt. N. Arcot (Madras).
14. Shri H. N. Shrivastava, V.M.O., Haveli-Kharagpur, Distt. Monghyr (Bihar).
15. Shri L. K. Mahapatra, O/IC Vijnan Mandir, Bhadrak, Distt. Balasore (Orissa).
16. Dr. M. N. Sadaphal, V.M.O., Kapashera (Delhi).
17. Shri M. G. Shome, O/IC Jhilimili, Distt. Bankura (W. Bengal).
18. Shri N. N. Ratnam, V.M.O., T. Kallupatti, Distt. Madurai (Madras).
19. Shri N. C. Das, V.M.O., Ergoda, Distt. Midnapur (W. Bengal).
20. Shri P. Chaudhary, V.M.O., Ormanjhi, Distt. Ranchi (Bihar).
21. Shri P. Gupta, O/IC Vijnan Mandir, Haroa (W. Bengal)
22. Shri S. R. Parwatikar, O/IC Vijnan Mandir, Vicarabad, Distt. Hyderabad (Andhra Pradesh).
23. Shri U. S. Patnaik, V.M.O., Hinjlicut, Distt. Ganjam (Orissa).
24. Shri V. S. R. Anjaneyulu, V.M.O. and Shri M. Narayan Rao, A.V.M.O., Amadalavalasa. Distt. Srikakulam (Andhra).
25. Shri V. Ravikumar, V.M.O., Ariyagoundampatti, Distt. Salem (Madras).
26. Shri V. S. Yalavigi, V.M.O., Mayasandra, Distt. Tumkur (Mysore).

APPENDIX IV

List of Vijnan Mandirs Visited by the Committee

State	Location
Andhra Pradesh	.. Vicarabad, Distt. Hyderabad.
Assam	.. Dimoria, Distt. Kamrup.
Bihar	.. Ormanjhi, Distt. Ranchi.
Delhi	.. Kapashera.
Gujerat	.. Shapur, Distt. Junagadh.
Himachal Pradesh ..	.. Sundernagar, Distt. Mandi.
Kerala	.. Ramavarmapuram—Pudur (near Kozhinjampara) Distt. Palghat.
Madhya Pradesh ..	.. Sehore, Distt. Sehore.
Madras	.. Sri Ramakrishna Mission Vidyalaya, Distt. Coimbatore
	T. Kallupatti Distt. Madurai.
Maharashtra	.. Amravati, Distt. Amravati.
Mysore	.. Mayasandra, Distt. Tumkur.
Orissa	.. Hinjlicut, Distt. Ganjam.
Punjab	.. Nilokheri, Distt. Karnal.
Rajasthan	.. Dabok, Distt. Udaipur.
	Pisangan, Distt. Ajmer.
Uttar Pradesh	.. Masauli, Distt. Barabanki.
West Bengal	.. Basul, Distt. Burdwan.
	Itachunna, Distt. Hooghly.

APPENDIX V

Extracts from Reports of Study Groups set up at different places at the instance of the Committee

REPORT OF THE STUDY GROUP OF VIJNAN MANDIR OFFICERS

1. The functions of the Vijnan Mandir and the duties of the staff are not clearly defined and much is left to the initiative of the officers. This has resulted in unequal and lopsided development of Vijnan Mandirs according to the tastes and inclinations of the officers concerned and there is not a common pattern. To ensure uniformity and balanced development, the scheme should be drawn up with adequate details in the various spheres of work and the Vijnan Mandir Officer should be made responsible to achieve certain targets.

2. The library is one of the most important wings of the Vijnan Mandir as it has the dual function of attracting people to the Vijnan Mandir as well as educating them. A recurring grant of not less than Rs. 500 may be earmarked for the library and the reading room and the Vijnan Mandir Officer may be empowered to utilise this amount for the purchase of suitable books, journals, magazines, etc.

3. Organisation of the museum is hampered due to lack of suitable furniture, containers, and essential chemicals for the purpose, as well as inexperience and lack of training to the staff in this type of work. Though a sum of Rs. 3,000 has been included in the scheme for the setting up of a museum, up till now hardly a sum of Rs. 500 has been spent.

The museum should include working scientific models depicting important and useful scientific principles affecting the day to day life of the people. But under the present set-up Vijnan Mandirs are themselves expected to prepare these models, but with the limited facilities available, it wil not be possible to prepare worthwhile and displayable models which will attract the attention of adults. It would be much better if these models are made centrally and supplied to Vijnan Mandirs. Besides, models on physiology, evolution genetics, etc., should also be supplied to the Vijnan Mandirs.

4. The aim should be to organise one science club in every Block, preferably to serve as the 'Apex Club' of the various young farmers' clubs organised by the Block. The science club at the Vijnan Mandir should function as a central organisation for all science clubs at Block levels for purposes of organising science exhibitions, science talent competitions, holding annual functions, etc., and for inviting eminent scientists to address the members. There should be adequate provision for the conduct of science club activities.

5. The various administrative problems and bottle-necks that hinder the smooth functioning of Vijnan Mandirs can be solved only by decentralisation of authority and delegating necessary powers to the man on the spot to plan and execute the approved programmes. Problems of administrative delays have of late been accentuated by the increase in the number of Vijnan Mandirs.

The Vijnan Mandir Officer may be given gazetted status to provide him with adequate financial powers to meet all recurring expenses on laboratory, museum and library. He may also be empowered to exercise adequate administrative control over the staff working in the Vijnan Mandir.

6. The present staff position of the Vijnan Mandir is unsatisfactory in view of the multifarious activities of this institution and needs considerable strengthening. The suggested pattern is:—

(1) One Vijnan Mandir Officer (gazetted) ..	*Qualifications*—M.Sc. first or second class in Chemistry, Agriculutre or Biology, with a minimum of three years' research, teaching or administrative experience in development works.
(2) One Assistant Vijnan Mandir Officer (non-gazetted).	*Qualifications*—M.Sc. or B.Sc. (Hons.) in Chemistry, Agriculture or Biology.

NOTE—Vijnan Mandir Officer and Assistant Vijnan Mandir Officer posted to every Vijnan Mandir should be of different and complementary qualifications and this should be ensured by proper selection and posting.

(3) Laboratory Assistants (two posts) ..	*Qualifications*—(1) B.Sc. in Chemistry with a minimum of at least one year analytical experience. (2) B.Sc. Biology or Agriculture with a minimum of one year experience in plant protection and other agricultural extension work.
(4) Lower division clerk (one post) ..	*Qualifications*—S.S.L.C. passed with typewriting lower grade.
(5) Driver for Station Wagon (one post) ..	*Qualifications*—Minimum of three years' experience.
(6) Laboratory Attendant (one post) ..	*Qualifications*—S.S.L.C. passed or failed with some experience in laboratory work.
(7) Peon (one post)	*Qualifications*—Proficiency in the regional language.
(8) Gardener-cum-watchman (one post) ..	*Qualifications*—Some experience in Horticulture.

7. The training at present given to the officers of the Vijnan Mandir at the Indian Agricultural Research Institute, Public Health Laboratory, Delhi, and other places is unrealistic and does not take into account the resources available in the Vijnan Mandirs and has little relationship with the field problems faced by the Vijnan Mandir Officers. So, a comprehensive and realistic course of training should be drawn up giving full details of the work expected of Vijnan Mandirs and the training imparted should be in the same methods with the very same equipments to be used in Vijnan Mandirs.

Such a training can be imparted only by a specially arranged course at a separate training institution or 'Prototype Vijnan Mandir' set up specially for that purpose. The training course should include the testing procedures, identification of common pests and diseases, museum techniques and model making. Both the officers of the Vijnan Mandir should receive full training and should be in a position to carry on the work of the Vijnan Mandir independently.

8. The chances of promotion to Vijnan Mandir Officers is bound to be very limited in view of the paucity of posts of higher cadres in the scheme. So the only possible course appears to be the provision of a good time-scale with an annual increment of Rs. 25. This

will make the post comparable to those of other scientific departments under the Government of India as the increment for Junior Scientific Officers, Senior Scientific Assistants, etc., is the same.

9. Detailed instructions about the tests to be done and procedure to be followed should be drawn up for the guidance of Vijnan Mandir Officers. As most of the tests are done by simple arbitrary methods there is little scope for improvisation and so training in the exact procedures is essential.

10. It would be a very good idea to encourage the Vijnan Mandir staff to prepare translations in regional languages of good scientific books. But since such books are not likely to be a success financially, especially in languages like Malayalam which is spoken only in a small area, there must be some provision to subsidise their publication.

11. Every Vijnan Mandir may be given facilities to bring out a monthly science leaflet in the local language on matters of general interest to the villager. It is also desirable for the Ministry to compile and circulate to all Vijnan Mandirs a monthly bulletin which will *inter alia* contain articles of scientific interest contributed by the Vijnan Mandir Officers. Such a bulletin will be of help to V.M.Os. in exchanging their ideas and experiences.

STUDY GROUP, SUNDER NAGAR, HIMACHAL PRADESH

(Shri Bishan Das, Magistrate, First Class, Sundernagar, Convenor)

1. The assistance provided by the Administration for the Vijnan Mandir is inadequate at present because of defective location and insufficient accommodation for the institution. The location is in a corner where people cannot easily know if there is any Vijnan Mandir. Also the accommodation for research and demonstration is inadequate. A new building should be constructed spacious enough to accommodate suitably the Vijnan Mandir, its laboratory and library. Electricity and water facilities are essential. Residential quarters may also be constructed for the staff of the institution.

2. A clerk, two laboratory technicians (both graduates) and a Chaukidar may be appointed in each Vijnan Mandir, in addition to the present staff. The Vijnan Mandir Officers after their selection, but before their appointment, may receive training for one year and thereafter refresher courses may be arranged for them after every three to five years. Appointment of Vijnan Mandir Officers from persons taken on deputation may be avoided, but when recruitment is made it will be open to persons already in service to apply.

3. The following are some suggestions for improving the efficiency of Vijnan Mandirs without extra expenditure:—

(i) The Vijnan Mandir Officers should be afforded an opportunity to visit other Vijnan Mandirs, National and Regional Laboratories and bring new ideas to their institutions;

(ii) A Vijnan Mandir journal should keep them abreast of latest developments and advancement in the field of Science;

(iii) Coordination between Vijnan Mandirs and field staff of Blocks and allied departments should be made active and effective;

(iv) The State Departments and Panchayats should find it a centre where their doubts and difficulties in the matter of science and techniques can find a ready solution;

(v) The museum of the Vijnan Mandirs should attract, for display, minerals, herbs and other articles of wonder found by any person in the locality;

(vi) Suitable National and Regional Laboratory experts should visit Vijnan Mandir Laboratories to bring them on more sufficient lines.

4. For continued technical guidance of Vijnan Mandir's staff:

(i) Seminars and refresher courses should be organised;

(ii) Opportunities should be afforded to them to visit National Laboratories and other Vijnan Mandirs;

(iii) A Vijnan Mandir journal should be started giving results of researches held in the country and abroad;

(iv) They should be made to compile papers on various topics and submit them to their directorate for editing, publication and circulation.

5. The duties and responsibilities of the Vijnan Mandir Officer are not clearly defined. These should be well-defined and should include duties such as under:—

The Vijnan Mandir Officer should (i) organise and manage the institution; (ii) arrange and conduct lectures and demonstration for the purpose of dissemination of scientific knowledge among the villagers and (iii) arrange and conduct various tests and analysis (pathological, water, ghee and soil).

The Assistant Vijnan Mandir Officer should assist the Vijnan Mandir Officer in his work and take over half the load from him in the institution as well as in the field.

6. The following suggestions are made in respect of the programme of Vijnan Mandirs:—

(i) The Vijnan Mandir should be equipped with a mobile van fully fitted for demonstrations in the field;

(ii) each panchayat should be encouraged to visit the Vijnan Mandir at least once during its life tenure;

(iii) the Gram Sewak of each circle should organise groups of farmers and artisans to visit the Vijnan Mandir, so that in the course of, say, five years, the whole of his circle is fully saturated;

(iv) during festival occasions and fairs in the district, the Vijnan Mandirs should put up stalls for demonstration and diplay purposes;

(v) the field staff of the Blocks and allied departments should refer their problems demanding a scientific solution and demonstration to Vijnan Mandirs and the latter should keep the field staff posted with demonstrations or/and tests.

7. Targets should be fixed and may include the following:—

(i) To hold demonstrations in the field so that in three years each and every Panchayat circle of the District is covered;

(ii) Vijnan Mandir Officer and Assistant Vijnan Mandir Officer should each be on tour in turn, for 120 days a year;

(iii) typical soils of each village should be analysed for purposes of crops and the whole district should be covered in five years, and

(iv) at least 140 lectures, shows and displays should be held by each Vijnan Mandir Officer.

8. The Vijnan Mandirs should maintain a record of their tests, analysis, lectures and demonstrations; and the Vijnan Mandir Officers should verify during their visits to Panchayats whether the advice given by them is being followed up.

9. A duplicator for cyclostyling the hand-outs, informative notes, etc., for distribution among public, should be provided to each Vijnan Mandir with the necessary stationery and an operator. An Electric Generator, for a 16 m.m. Projector, to enable display of films where electricity does exist should also be provided.

10. Vijnan Mandirs should be linked up with a Central Laboratory for technical guidance and the local Director of Education should inspect it regularly and periodically. Appointment of Zonal Inspectors by the Centre will not then be necessary.

11. The service aspect of Vijnan Mandirs does not militate against its functioning for dissemination of scientific knowledge. On the other hand, it is a welcome complement which alone adds purpose and realism to the programme of Vijnan Mandirs. The analysis and tests should be provided for as originally envisaged. The facilities for pathological work originally provided is very essential. The Study Group recommends restitution of the equipment originally proposed to be supplied for the purpose.

12. The local members of Territorial Council or Legislative Assembly, as the case may be, the Members of Parliament from the area and the members of the local bodies and the heads of institutions and offices should be actively associated with the Vijnan Mandirs.

As a Vijnan Mandir is now proposed to cover one district, the District Planning and Development Committee, which at present comprises all the groups mentioned above, should become the Advisory Committee of the Vijnan Mandir for the district.

13. Vijnan Mandir Officer should work as a technical guide and adviser to the Block teams in the District in complete coordination with them.

14. To add a cultural wing to Vijnan Mandirs at this stage will not be conducive to the fulfilment of the main purpose of the Vijnan Mandirs. The cultural wing will not only detract from the value and standing of the Vijnan Mandirs, but will make their name a misnomer.

STUDY GROUP—COIMBATORE

(Dr. K. M. Sebastine, Systematic Botanist, Botanical Survey of India, Convenor)

1. There should be at least one Vijnan Mandir for each District, located preferably centrally in the District. The building should provide a Museum Hall, 30×20 ft. (dust proof); Laboratory Hall 20×15 ft.; Library-cum-reading room 20×10 ft.; Auditorium 30×15 ft.; Store 20×10 ft.; Office 20×10 ft. (total area required 1,950 sq. ft.). The building should be provided with water and power supply. It is considered essential to have two acres of land attached to the building for maintaining a demonstration plot for seasonal improved varieties of crops, poultry keeping and apiary.

2. The present staff position in Vijnan Mandirs is inadequate and should be strengthened by the addition of the following posts.

(i) 2 Laboratory Assistants (Laboratory Assistant should be a graduate in Science).
(ii) 1 Lower Division Clerk-cum-typist.
(iii) 2 Peons.
(iv) 1 Gardner.
(v) 1 Watchman.

3. Vijnan Mandir Officer should be a gazetted officer, with necessary financial and administrative powers for the supervisory control of staff functioning in the Vijnan Mandir. The Vijnan Mandir Officers should be recruited direct from open market.

4. The proper functioning of the Vijnan Mandirs can be ensured by close coordination of the Vijnan Mandir with the District Advisory Council specially formed under the chairmanship of the District Collector. The Vijnan Mandir Officer should be a member of the Council, besides his being a member of the District Development Council, or Zila Parishad. This arrangement will help the Vijnan Mandir Officer to get a better insight into local problems.

5. Vijnan Mandir Officers may be given comprehensive and more intensive training in various institutions like the National Laboratories, Agricultural Research Institutes, Veterinary Institutes and Public Health Laboratories, so that they may have a fairly good idea of solving the scientific problems of the common man. It is also suggested that the officers should be allowed to undergo periodic refresher courses so that they may be acquainted with recent developments.

6. The duties of the Vijnan Mandir Officers have not been defined. As the Vijnan Mandirs have to enlighten the public on various scientific problems, related to their day to day life, the selection of candidates to posts of Vijnan Mandir Officers and Assistant Vijnan Mandir Officers may as far as possible be made from graduates in different branches of science.

7. The programme of work is not realistic. Better coordination with village level workers, social educational institutions and training camps should be brought into the activities of the Vijnan Mandirs so that the felt needs of the people are catered for.

8. No fixed physical targets are necessary at this stage; however, the activities of the Vijnan Mandirs must be judged periodically.

9. Occasional visits of officers from Delhi for inspecting and guiding the work of Vijnan Mandirs is not enough. Separate Regional Vijnan Mandir Officers (Zonal) of technical competence should be appointed to supervise the activities of Vijnan Mandirs.

10. The aim should be to organise one science club in every Block preferably to serve as the 'Apex Club' of the various young farmer clubs organised by the Block. The science club at the Vijnan Mandir should function as a central organisation of all the science clubs at Block levels for purposes of organising science exhibitions, science talent competitions, holding annual functions, etc., and for inviting eminent scientists to address the members. Adequate provision may be made for the conduct of science club activities.

11. Each Vijnan Mandir should also have a mobile science unit to take to villages for exhibition and demonstration, interesting scientific equipments, exhibits, films, models, etc., in accordance to the ever-changing needs of the community. A mobile van will afford better opportunity for establishing contacts with the people. Vijnan Mandir Officers may be coopted as members of District Development Council, under the chairmanship of the Collector.

12. Pathological work should be limited to demonstration purposes only.

13. The Vijnan Mandir Officer may be made member of the District Development Council or Zila Parishad.

STUDY GROUP—GAUHATI

The following job chart for Vijnan Mandirs is suggested:—

1. Laboratory work—Soil analysis, water analysis, food analysis, pathological examination of (i) human (ii) plant and (iii) common veterinary diseases.

2. Rural problems—Survey and their scientific solutions at the Vijnan Mandir. The Mandir should be equipped for solutions of such rural problems in the laboratory.

3. A mobile van fitted with audio-visual equipment. This is for participation in the rural melas, exhibitions and markets.

4. Museum—(i) Zoological; (ii) Botanical; (iii) Geological; (iv) Physiologocal; (v) Archaeological specimens, etc. etc.

The different surveys such as Botanical Survey of India, etc., and National Laboratories etc., may supply the specimens, models, etc., for developing a full-fledged museum.

5. Models—Scientific models of various types for explaining the working principles.

6. Establishment of science clubs in high schools—The students should participate in the local melas, exhibitions etc., with their resources.

7. Training of science teachers of all types of schools in the Vijnan Mandir.

8. A small herbarium attached to the Vijnan Mandir.

9. Auditorium for science club meetings, film shows, etc., in the Vijnan Mandir itself.

10. Establishment of a library of scientific books. These books should be in the regional languages.

11. Science talent search and encouragement of such local talents.

STUDY GROUP—ITACHUNNA (WEST BENGAL)

(Convenor: Shri Inder Narayan Kundu, Prabuddha Bharat Sangha Siksha Samsad)

1. An auditorium will be helpful for proper functioning of Vijnan Mandir. This will help in conducting scientific demonstrations giving lectures, conducting symposium on scientific subjects and use of audio-visual unit (Epidiascope and projector) during day time. As rented houses are not available in rural areas, provision for staff quarters is essential.

2. One clerk-cum-store-keeper, preferably an Intermediate in Science (trained) and one medical man where medical facilities are not available may be added to the present staff.

3. Posts in Vijnan Mandirs may be filled from the open market after suitable training, preferably with experience in rural and social work.

4. Arrangements may be made for giving continued technical guidance from the Regional or National Laboratories or Universities.

5. Area of operation should be reduced for the present. Activities of the Vijnan Mandir may be confined to a Thana with about 100 villages (optimum area in square miles 20, optimum population 50,000) for the present.

6. Vijnan Mandir Officers may be given such powers as vest in heads of other offices and institutions of the State and the Central Government.

7. There is no need to fix any physical target. Work may be conducted according to the local problems and conditions.

8. Application of 'Result Demonstration' may be introduced in the work schedule of Vijnan Mandirs. In every village such men may be selected who will act according to guidance of Vijnan Mandir personnel. Just in the same way 'Result Demonstration' on better agricultural methods may be introduced in selected cultivators' fields to promote an impetus among other cultivators to apply such methods.

9. A local advisory committee is essential for proper functioning of Vijnan Mandir in cooperation with the people.

10. A cultural wing will divert the primary objective of the Vijnan Mandir. However, in order to make science homely, arrangements may be made to coordinate the activities of Vijnan Mandir with the cultural life of the locality.

APPENDIX VI

List of Institutions, States which the Committee visited and persons whom the Committee met including Representatives of Ministries.

SECTION 1—FORD FOUNDATION IN INDIA

1. Dr. Douglas Ensminger, Representative in India.
2. Dr. Joseph Stepanek, Consultant in Small Industries.

SECTION 2—MINISTRIES, ETC.

1. Community Development and Co-operation	
Shri M. C. Nanavati	Director of Social Education, Ministry of Community Development and Cooperation.
2. Council of Scientific and Industrial Research	
Dr. H.A.B. Parpia	Officer on Special Duty, C.S.I.R. (Extension Services).
3. Education	
Shri R.K. Kapur	Dy. Educational Adviser, Secondary Education Division.
Shri Shyam Narain	Asstt. Educational Adviser, Rural Institutes.
4. Food and Agriculture	
Shri J.V.A. Nehemiah	Extension Commissioner.
5. Health	
Dr. Y.K. Subramanian	Asstt. Director-General.
Dr. P.R. Dutt	Asstt. Director-General.
Indian Agricultural Research Institute	
Dr. S. P. Raychaudhuri	Chief Soil Survey Officer.
Dr. R. V. Tamhane	Head of the Division of Soil Science and Agricultural Chemistry.
6. Indian Agricultural Research Institute	
Dr. O.P. Gautam	Professor of Agronomy.
7. Planning Commission	
Dr. K. P. Basu	Officer on Special Duty (Scientific Research).
Shri D. P. Nair	Director (Edr.).
8. University Grants Commission	
Dr. C.D. Deshmukh	Chairman, U.G.C.
Prof. K. S. Krishnan, F.R.S. ..	Member U.G.C., and Director, National Physical Laboratory.
Prof. Anand Kumar	Member, U.G.C.
Dr. B.D. Laroia	Development Officer, U.G.C.
9. Ministry of S.R. & C.A.	Prof. M.S. Thacker, Secretary.
	Shri A.K. Ghosh, I.C.S., Joint Secretary.
	Shri A.V. Venkateswaran, Financial Adviser.
	Shri M.M. Kusari, I.A.S., Deputy Secretary.
	Shri N. K. Sreenivasan, Under Secretary.
	Dr. S. Prasad, Special Officer.
	Shri Natesa Iyer, Senior Scientific Officer.

SECTION 3—INSTITUTIONS VISITED

Serial No.	State	Institutions visited	Persons who participated in the discussions
1	Gujarat	1. Sarvodaya Ashram, Shapur	Shri Akbarbhai Nagori and others.
		2. Lok Bharti, Sanosara	Shri Nanabhai Bhatt and others.
2	Madras ..	1. Gandhigram Rural Institute, Gandhigram.	1. Shri V. Krishnamurti, Executive Secretary. 2. Shri R. Srinivasan, Dy. Director, SEOTC. 3. Shri S. K. Natarajan, Lecturer in Animal Husbandry. 4. Shri A. Govindachari, Soil Scientist. 5. Shri R. S. Balagopalan, Civil Engineer. 6. Shri R. Srinivasan, General Secretary. 7. Shri S.B. Mandagere, Head of the Deptt. of Village Industries. 8. Shri G. Selvaranga Raju, Instructor in Agriculture. 9. Dr. N.R. Ramakrishnan, Director, P.H.P. 10. Kumari Lalithambika, Secy., Cultural Committee. 11. Kumari N. Sarla, Supdt., Children Home. 12. Dr. Kanakam Chandrasekharan, Medical Officer.
		2. Gandhi Niketan, T. Kallupatti.	1. Shri K. Arunachalam, Secy., Gandhi Smarak Nidhi and Gandhi Niketan Ashram. Madurai and others.
3	Rajasthan ..	1. Vidya Bhavan Rural Higher Institute, Udaipur.	1. Shri K. L. Bordia, Director. 2. Shri G.B. Hooja, I.A.S., Collector, Udaipur. 3. Dr. (Miss) D.K. Mistri, In-charge, Mukhya Sevika Wing. 4. Shri B.L. Marwaha, Vice-Principal, Orientation Training Centre, Udaipur. 5. Shri K. N. Srivastava, Deputy Director, Vidyabhavan. 6. Shri B.L. Bhaduria, Pradhan, Panchayat Samiti. 7. Shri S.C. Talesara, In-charge Agr. Instt., Udaipur. 8. Shri G.B. Mathur, Lecturer. 9. Shri Badri Lal, Extension Asstt., Udaipur. 10. Shri G.S. Sankhla, Vikash Adhikari.
		2. Discussion at Ajmer Circuit House.	1. Shri Hari Bhau Upadhya, Finance Minister, Rajasthan. 2. Shri Mukerji, Collector, Ajmer. 3. Shri D. Vable, Principal, Dayanand College, Ajmer. 4. Shri Y.M. Chakradeo, Head of the Chemistry Deptt., D.A.V. College.

Serial No.	State	Institutions visited	Persons who participated in the discussions
			5. Shri B.N. Sharma, Head Master, V.N. High School, Ajmer. 6. Shri N.K. Kotia, Lecturer in Chemistry, Govt. College, Ajmer. 7. Shri Navin Chandra Sharma, Senior Science Teacher, Dayanand Higher Secondary School.
		3. Hatundi Ashram, Ajmer	1. Manager, Hatundi Ashram.
4	Uttar Pradesh ..	1. Sheila Dhar Institute of Soil Science.	Dr. N.R. Dhar, D.Sc. (Lond. & Paris).
		2. Planning Research and Action Institute, Lucknow.	1. Dr. Ram Das, Director. 2. Shri C. K. Varma, Dy. Director. 3. Dr. R.K. Mukerji, Director of Agriculture. 4. Dr. B. S. Sehgal, Sr. Associate R.H. 5. Shri M. Chaube, S.A. (Ext.). 6. Dr. K.K. Singh, S.A. to R.L.A. 7. Dr. R.D. Singh, Rural Life Analyst. 8. Shrimati Krishna Bai Nimbkar, Specialist, Women's Programme. 9. Shri G.M. Sinha, Supdt., and other staff members of P.R.A.I.
		3. Government Agriculture College, Kanpur.	1. Dr. R. K. Tandon, Principal. 2. Dr. R.S. Mathur, Plant Pathologist to Govt. of U.P., Kanpur. 3. Dr. R. R. Agarwal, Agricultural Chemist to Govt. of U.P., Kanpur. 4. Dr. G.N. Pathak, Economic Botanist. 5. Dr. A.N. Pathak, Professor of Chemistry. 6. Dr. Babu Singh, Professor of Botany. 7. Dr. J.N. Sharma, Prof. of Agriculture. 8. Dr. A.S. Srivastava, Entomologist. 9. Dr. J.S. Garg, Asstt. Prof., Agri. Economics.
		4. Allahabad Agricultural Institute, Naini, Allahabad.	1. Dr. J.B. Chitambar, Head, Extension Deptt. 2. Shri H.S. Azariah, Head, Ag. Ec. and Rural Sociology, Extension Deptt. 3. Dr. O.B. Tandon, Head, Animal Husbandary Deptt. 4. Mr. J.N. Warner, Head, Dairy Technology Deptt.

Serial No.	State	Institutions visited	Persons who participated in the discussions
			5. Mrs. T. Chitambar, Offg. Head, Home Economics Deptt. 6. Dr. C. O. Das, Head, Chemistry Deptt. 7. Dr. W. K. Wesley, Head, Biology Deptt. 8. Mr. T. Dean, Head, Horticulture Deptt. 9. Dr. S.E. Roy, Head, Agronomy Deptt. 10. Mr. C.V. Paul, Head, Agricultural Engg. Deptt. 11. Mr. Moses Das, Agri. Economics & R.S. Deptt. 12. Dr. J.C. Gideon, Chemistry Deptt.
5	West Bengal	Vishva Bharati ..	Committee's visit had to be cancelled in view of the Puja holidays but the Committee had discussions at Calcutta with: 1. Shri K.C. Chaudhary, Acting Vice-Chancellor. 2. Shri S.N. Roy, Director, Palli Sangathan Vibhaga Sriniketan.

SECTION 4—STATES VISITED

S. No.	State	Persons who participated in the discussions
1	Andhra Pradesh ..	1. Shri M. P. Pai, I.C.S., Chief Secretary, and Development Commissioner. 2. Shri C. Narasimham, I.A.S., Secretary, Planning and Additional Development Commissioner. 3. Shri I. J. Naidu, I.A.S., Secretary, Agriculture. 4. Major K. N. Rao, Director of Medical Services. 5. Dr. C. R. Naidu, Director of Public Health. 6. Dr. Vaman Rao, Dy. Director of Public Instruction. 7. Shri M. Khasim Adami, Hqs. Dy. Director of Agriculture. (Other District Officers like D.A.O., D.H.O., D.V.O., D.M.O., also attended).
2	Assam	1. Shri Dharnidhar Basumati, M.P. 2. Shri Liladhar Barooah, M.P. 3. Shrimati Pushpa Lata Das, M.P. 4. Miss Amal Prabha Das, Kasturba Centre, Gauhati. 5. Shri M. S. Bhatnagar, I.A.S., Additional Secretary to Assam Government. 6. Shri A. Shyam, Asstt. Development Commissioner. 7. Shri S. C. Rajkhowa, D.P.I., Assam. 8. Miss Neera Dogra, Chairman, Central Social Welfare Board. 9. Dr. S. K. Chakravarti, Civil Surgeon, Kamrup. 10. Shri I. P. Chowdhary, Director of Information & Publicity. 11. Prof. B. Sanjiva Rao, Professor of Chemistry, Gauhati University. 12. Prof. P. C. Mahanta, Head of the Physics Deptt., Gauhati University. 13. Shri H. Goswami, Principal, Cotton College, Gauhati. 14. Shri B. D. Choudhary, Dy. Director, Health Services. 15. Shri T. R. Hazarika, Dy. Director, Veterinary Department. 16. Shri I. Mallick, Director, Veterinary Department. 17. Shri S. C. Choudhary, Joint Director, Agriculture. (Other Officers of the State Government like D.A.O., D.V.O., Development Officers etc. also attended.)

Serial No.	State	Persons who participated in the discussions
3	Bihar	1. Shri Saran Singh, I.A.S., Education Secretary. 2. Shri S. C. Misra, I.A.S., Secretary, Deptt. of Community Development. 3. Shri K. Ahmed, D.P.I. 4. Shri G. M. Hassan, Director, Health and Medical Services. 5. Shri B. P. Akhauri, Director of Agriculture. 6. Shri S. Nath, Under Secretary, Education Department. 7. Shri B. N. Sinha, Asstt. Director of Youth Welfare. 8. Shri R. N. Roy, Dy. Director, Education (Planning). 9. Shri Shanti Prasad, Regional Dy. Director of Education. 10. Shri Govind Saran, Distt. Education Officer. 11. Shri B. M. Sharma, Administrator, Turki, Vaishali. 12. Shri B. P. Sinha, Co-ordinator, Extension Service.
4	Bombay	1. Shri Mohammed Abdulla, I.A.S., Joint Secretary, Education Department. 2. Shri Kapadnis, Principal, Science College, Karad. 3. Dr. D. V. Chickarmane, Dy. Director, Education. 4. Shri Ishwarbhai Patel, Charotar Education Society, Anand. 5. Shri B. S. Londhe, Director, Rural Institute, Amravati.
5	Himachal Pradesh	1. Shri B. N. Maheshwari, I.A.S., Chief Secretary. 2. Shri L. S. Negi, Director of Agriculture. 3. Shri K. L. Sethi, Director of Education. 4. Shri Bishan Chander, Finance Secretary. 5. Shri C. L. Kapila, Dy. Development Commissioner. 6. Shri S. L. Kapoor, Director of Industries. 7. Shri V. S. Sharma, Director of Social Welfare. 8. Dr. (Mrs.) A. C. Parmar, Director of Health Services. 9. Shri Sant Ram Kanga, Member of Territorial Council.
6	Kerala	1. Shri N. E. S. Raghavachari, I.C.S., Chief Secretary. 2. Shri C. K. Kerala Varma, I.A.S., Education Secretary. 3. Shri S. Narayanswamy, I.A.S., Dy. Secretary, Planning & Development Department. 4. Shri V. Ramachandran, I.A.S., Dy. Secretary, Education Department. 5. Shri Rama Varma, Director of Public Instruction. 6. Shri M. Janardhanan Nair, Jt. Director, Agriculture (Education). 7. Dr. T. Bhaskara Menon, Dy. Director of Health Services.
7	Madhya Pradesh ..	1. Shri P. S. Bapna, I.A.S., Development Commissioner. 2. Shri M. G. Karnikar, I.A.S., Commissioner, Bhopal Division. 3. Shri S. C. Verma, I.A.S., Dy. Development Commissioner. 4. Shri L .C. Gupta, Education Secretary. 5. Shri S. K. Sen, I.A.S., Dy. Secretary, Agriculture Department. 6. Dr. M. M. Mehta, Director of Economics and Statistics. 7. Shri Rama Rao, Dy. Director of Agriculture. (Heads of Science Departments of local colleges and others also attended.)
8	Madras	1. Shri R. A. Gopalaswamy, I.C.S., Development Commissioner. 2. Shri K. Srinivasan, I.A.S. Education Secretary. 3. Shri A. Venkatesan I.A.S., Director of Agriculture. 4. Shri G. Venkatachalapaty, Addl. Dev. Commissioner. 5. Dr. N. Parthasarathy, Director of Public Health. 6. Dr. D. Pattabiraman, Director of Animal Husbandry. 7. Dr. K. G. Veeraraghavan, Chief Water Analyst, King Institute Guindy. 8. Shri S. Palaniswamy, Dy. Director of Public Instruction. 9. Dr. U. Maruthi Rao, Asstt. Director of Medical Services. 10. Shri K. Subrahmanyam, I.A.S., Dy. Secretary, (R.D. & C.A.). 11. Shri P. K. Hanumantha Rao, Dy. Secretary, (R.D. & C.A.).
9	Mysore	1. Shri N. S. Hiranaiyya, I.A.S., Chief Secretary. 2. Shri G. V. K. Rao, I.A.S., Additional Development Commissioner. 3. Shri A. C. Devegowda, Director of Public Instruction.

Serial No.	State	Persons who participated in the discussions
		4. Shri M. Mallaraj Urs, Director of Agriculture.
		5. Shri P. R. Dubbashi, I.A.S., Dy. Development Commissioner.
		6. Shri C. Gopal Raj Chetty, Dy. Director of Public Health.
		7. Shri B. Subba Rao, I.A.S., Under Secy., Planning & Development Department.
10	Orissa	1. Shri M. H. Burney, I.A.S., Secy., Health Department.
		2. Dr. H. B. Mohanty, Addl. Secy., P. & C., Deptt.
		3. Shri S. M. Patnaik, I.A.S., Jt. Secy., Development Department
		4. Shri R. N. Sahu, Director of Health.
		5. Shri M. Patra, Dy. Director of Animal Husbandry & Veterinary Services.
		6. Shri P. K. Mahapathra, Dy. Secy. (C.D.) (Training).
		7. Shri B. Misra, Dy. Director of Agriculture.
		8. Shri B. Misra, Dy. Director of Public Instruction.
		9. Shri S. C. Ghosh, Under Secy., Home Department (P.R.).
		10. Shri J. Das, Under Secy., P. & C. Deptt.
		11. Dr. P. V. Raghavendra Rao, Asstt. Director of Health Services
11	Rajasthan ..	1. Dr. Rawat, Assistant Director of Medical and Health.
		2. Shri Samarth Raj, Director of Agriculture.
		3. Shri B. N. Handa, Director of Animal Husbandry.
		4. Shri A. P. Dewan, I.A.S., Joint Development Commissioner.
		5. Shri Umaid Singh, R.A.S., Dy. Development Commissioner.
		6. Shri B. L. Dashora, R.A.S., Dy. Development Commissioner.
		7. Shri H. S. Rawat, Director, Training (Development).
		8. Shri S. M. L. Srivastava, Dy. Director of Social Education.
		9. Dr. Bajaj, Dy. Director, Animal Husbandry.
12	West Bengal ..	1. Dr. D. M. Sen, Education Secretary.
		2. Lt. Gen. Chakravarty, Health Secretary.
		3. Shri S. B. Roy, I.A.S., Joint Development Commissioner.
		4. Shri P. N. Sen Gupta, Dy. Secretary, Education Department.
		5. Shri B. K. Niyogi, Chief Inspector of Secondary Education.
		6. Dr. H. K. Nandi, Director of Agriculture.
		7. Swami Lokeswara Ananda Maharaj, Ramakrishna Mission, Calcutta.

SECTION 5—VIJNAN MANDIRS VISITED BY THE COMMITTEE

State	Vijnan Mandir	Persons, who participated in the discussions
Andhra Pradesh ..	Vicarabad Distt., Hyderabad.	1. Shri C. M. Lal, Dy. Collector.
		2. Dr. Khaja Hamiduddin, Adm. D.M.O. Hyderabad Distt.
		3. Dr. Ahmeduddin Md., District Veterinary Officer, Hyderabad Distt.
		4. Dr. S. N. Iqbal, Medical Officer, Civil Hospital Vicarabad, and part-time Doctor, Vijnan Mandir, Vicarabad.
		5. Shri Manik Rao, Distt. Agriculture Officer.
		6. P. Lal Reddy, President Panchayat Samiti, Mominpeth.
		7. President Panchayat Samiti, Vicarabad.
		8. Dr. Canneran, Medical Officer, Crawford Mission Hospital, Vicarabad.
		9. Shri S. R. Parwatikar, A.V.M.O.
Assam	Dimoria, Distt. Kamrup	1. Shri M. S. Bhatnagar, I.A.S., Addl. Secy.
		2. Shri A. Shyam, Addl. Dev. Commissioner.
		3. Shri T. R. Hazarika, Deputy Director, Veterinary Department.
		4. Shri G. C. Hazarika, Planning Commission, P.E.O.
		5. Shri S. K. Chakravarti, Civil Surgeon, Kamrup.

State	Vijnan Mandir	Persons who participated in the discussions
		6. Shri S. Deka, Distt. Veterinary Officer. 7. Shri C. D. Gogoi, Professor of Zoology, Cotton College, Gauhati. 8. Shri D. Gogoi, Inspector of Schools. 9. Kumari Indra Chakravarti, S.E.O. 10. Dr. G. K. D. Roy, V.M.O. Hailkhandi. 11. Shri B. C. Goswami, A.V.M.O., Dimoria. (Members of Local Advisory Committee, some progressive farmers, teachers of local educational institutions and others numbering over 50 were present).
Bihar	Ormanjhi, Distt. Ranchi	1. Shri S. K. Chakravarty, I.A.S., Deputy Commissioner, Ranchi. 2. Shri S.C. Mishra, I.A.S., Secy., C.D. Deptt. 3. Shri Ehsan Ahmed, S.D.O., Ranchi. 4. Shri C. P. Sinha, Principal, Teachers, Training College, Ranchi and Regional Dy. Director of Education, Chotanagpur, Ranchi. 5. Ramanup Sharma, Dy. Supdt. of Education, Ranchi. 6. Shri H. N. Prasad, Divisional Social Education Organiser, Ranchi.
Bombay	Amravati, Distt. Amaravati.	1. Shri S. R. Londhe, Secretary, Shri Shivaji Education Society, Amravati. 2. Shri H. S. Paranjpe, Distt. Project Officer. 3. Shri Pimplikar, Distt. Agr. Officer. 4. Shri Badhe, Dy. Director, Gandhi Gramodhog Mandir. 5. Shri Ramtake, Block Panchayat Officer. 6. Shri Mahalle, Member, Young Farmer's Association. 7. Shrimati Mahalle, Chief Instructor, Home Science Training Centre. 8. Shri Kanade, Community Project Officer. 9. Shri Chitari, Principal, Agriculture Diploma Course, Rural Institute. 10. Shri Dabir, Officer-In-charge, Cotton Breeding Scheme, I.C.A.R. 11. Shri Moghe, Lecturer in Extension Rural Institute. 12. Shri Dohatonde, Superintendent, Basic Agriculture School. 13. Shri S. D. Patwardhan, V.M.O.
	Shahpur, Distt. Sorath	1. Asstt. Collector, Junagadh, and Chairman Local Advisory Committee. 2. Dr. Joshi, Prof. of Physics, Junagadh. 3. Shri Akbarbhai Nagori, Sanchalak, Sarvodaya Ashram. 4. Shri S. R. Velanker, V.M.O. 5. Shri P. T. Purohit, A.V.M.O. (Some representatives of local educational institutions, mebmers of Science Club, some farmers and the Sarpanch of Shahpur also attended).
Delhi	Kapashera, Delhi ..	1. Shri Gopi Nath Aman, Chairman Public Relations Committee, Delhi. 2. Shri C. L. Anand, A.D.M., Delhi. 3. Shri Sultan Singh, Manure and Fertilizer Officer, Delhi. 4. Dr. Joginder Singh. 5. Dr. Shivnath Singh, Bijwasan. 6. Dr. V. N. Gupta, Veterinary Surgeon. 7. Shri Amichand, Village Pradhan.

State	Vijnan Mandir	Persons who participated in the discussions
		8. Shri Sultan Singh, B.D.O. Najafgarh. 9. Shri S. Singh, Principal, Govt. High School, Chaula. 10. Shri K. L. Gandhi, Principal, Govt. H. S., Delhi Cantt. 11. Dr. M. N. Sadaphal, V.M.O. 12. Shri B. R. Modi, A.V.M.O.
Himachal Pradesh ..	Sundernagar, Distt. Mandi	1. Shri K. L. Sethi, Director of Education. 2. Shri H. R. Mahajan, Dy. Commr., Mandi. 3. Shri C. L. Kapila, Dy. Dev. Commissioner. 4. Shri Bishan Das, Magistrate Ist Class. 5. Shri S. S. Saini, Distt. Ag. Officer, Mandi. 6. Shri R. V. Singh, D.F.O., Suket, Sundernagar. 7. Shri N. Agnihotri, C.P.O. (Ind.). 8. Shri S. S. Goyal, S.D.O. Suket. 9. Shri H. C. Bharadwaj, Principal, Polytechnic, Sundernagar. 10. Shri M. Kumar, B.D.O., Balh Block, Sundernagar. 11. Shri Ganga Singh, Pleader, Sundernagar. 12. Shri B. K. Sharma, V.M.O. 13. Shri C.S. Bal., A.V.M.O. (Some members of the Small Town Committee Sundernagar, Presidents of Panchayats and progressive farmers were also present).
Kerala	Ramavarmapuram, Pudur	1. Shri A.N.U. Mannadi Nayar, Banker and Agriculturist, Kozhinjampara. 2. Shri M. Madhavan Unni Nayar, M.B.B.S., Assistant Surgeon, Kozhinjampara. 3. Shri N.R. Venkatachalam, B.D.O. 4. Shri R.P. Swamiappau Gouder. 5. Shri T. V. Venkateswaran, Retired Head Master. 6. Shri V. Ravikumar, V.M.O., Ariyagoundampatti. 7. Shri H. Sreemulanathan, V.M.O., R.V.P., Pudur. (Some officers and prominent Agriculturists all numbering 29 were also present).
Madhya Pradesh ..	Sehore, Distt. Sehore ..	1. Shri Umrao Singh, M.L.A. 2. Shri Harikishan Singh, M.L.A. 3. Shri Amarchand Rohilla, President Distt. Congress Committee. 4. Shri P.V. Naidu, Dy. Collector. 5. Shri Agarwal, Civil Surgeon. 6. Shri Kazi Raoof Ahmad, D.A.O. 7. Shri Dev, Executive Engineer, P.W.D. 8. Dr. Bhatt, Principal, R.A.K., Agricultural Institute, Sehore. 9. Dr. A.K. Gupta, Principal, Government Degree College. 10. Shri Y.N. Bhatele, Asstt. Prof., Government Degree College. 11. Shri V.K. Shrivastava, Asstt. Prof., Government Degree College. 12. Shri K.K. Shrivastava, Asstt. Prof., Government Degree College. 13. Shri Verma, Asstt. Prof., Government Degree College. 14. Shrimati N. Gupta, Principal, M.L. Higher Secondary School.

State	Vijnan Mandir	Persons who participated in the discussions
		15. Shri Sultan Mohammad Khan, Pleader. 16. Shri Desai, Manager, Bhopal Sugar Industries, Sehore. 17. Shri H.S. Nema, V.M.O. 18. Shri P.S. Bhadauria, V.M.O. Nowgong, M.P. (Some other officers like B.D.Os. and progressive farmers were also present).
Madras	Sri Ramakrishna Mission Vidyalaya, Coimbatore.	1. Shri Avinasilingam Chettiyer M.P. R.K. Mission Vidyalaya. 2. Shri K. Abhoja Shetty, Principal, Forest College. 3. Dr. Sebastine, Systematic Botanist, Botanical Survey of India. 4. Shri K. Vedantam, Principal, School of Agriculture, S.R.K. Mission Vidyalaya. 5. Shri A. Mariakulandai, Principal, Agr. College, Coimbatore. 6. Shri K. Subramanian, Distt. Agr. Officer. 7. Dr. G.T. Gopalakrishna Naidu, D.H.O. 8. Shri N. Ramakrishnan, P.A. to Collector. 9. Shri C.V. Venkatachalam, V.M.O.
	T. Kallupatti, Distt. Madurai.	1. Shri R. Subbiah Pillai, D.A.O. Madurai. 2. President Panchayat Board, P. Subbalapuram, T. Kallupatti Block. 3. Shri R. Guruswamy, President Panchayat Board, T. Kallupatti and Secretary, Gandhi Niketan, T. Kallupatti. 4. Shri Thiagarajan, Head Master. 5. Block Development Officer, T. Kallupatti. 6. Shri Subramania Iyer, Member, B.D.C. 7. Shri N. Nataraja Ratnam, V.M.O.
Mysore	Mayasandra, Distt. Tumkur	1. Dr. M.B. Bhavani Singh. 2. Shri G.S. Kori, Distt. Agriculture Officer, Tumkur. 3. Miss. Vatsala H. Dudihalli, A.V.M.O., Moodbidri. 4. Shri B.N. Raghavendrachar, V.M.O., Devarayasamudram. 5. Shri V.S. Yalavigi, V.M.O., Mayasandra. 6. Shri M. S. Satyanarayan, A.V.M.O. Mayasandra. (Head Masters and teachers of the local institutions, functionaries of the Block and progressive farmers were also present).
Orissa	Hinjlicut, Distt. Ganjam	1. Dr. Mohanty, Addl. Secretary. 2. Shri C. Venkataramani, I.A.S., Collector, Ganjam. 3. Shri S.K. Mishra, Civil Surgeon, Ganjam. 4. Shri P.C. Mohanti, Distt. Agr. Officer. 5. Shri B. Chakravarti, Distt. Health Officer, Ganjam. 6. Shri P.C. Mohanti, Distt. Public Relations Officer, Ganjam. 7. Shri A.S. Khan, Rev. Divisional Officer, Chattarpur. 8. Shri A. Naik, B.D.O., Hinjlicut. 9. Shri S.K. Nanda, V.M.O., Bhadrak. 10. Shri B. Behra, V.M.O., Angul. 11. Shri Patnaik, V.M.O., Hinjlicut. (Some functionaries of the Block, a few teachers and students were also present).

State	Vijnan Mandir	Persons who participated in the discussions
Punjab	Nilokheri, Distt. Karnal	1. Shri D.D. Sharma, I.A.S., Dy. Commissioner. 2. Shri S.N. Sehgal, Jt. Director, Public Instruction, Chandigarh. 3. Shri Joginder Singh, B.D.O. (Headquarter), Chandigarh. 4. Shri Gurmit Singh, Distt. Public Relations Officer, Karnal. 5. Shri Gian Singh, Distt. Development Officer, Karnal. 6. Shri S.M. Dattatreya, P.E.S. (Retd.) Journalist, Nilokheri. 7. Shri Jage Ram Dehuja, Distt. Agriculture Officer, Karnal. 8. Shri Ram Labhaya, Inspector of Schools, Ambala Division. 9. Shri K.P. Gupta, Director Social Education Organisers' Training Centre, Nilokheri. 10. Shri Jai Singh, Block Development Officer, Nilokheri. 11. Shri H.R. Saini, V.M.O. 12. Shri S.B. Verma, A.V.M.O. (Some other officers of the State Government, a few non-officials including Sarpanches of nearby villages also attended).
Rajasthan.. ..	Dabok, Distt. Udaipur	1. Shri Janardhan Rai Nagar, Vice-Chancellor, Rajasthan Vidyapeeth. 2. Shri Kesari Singh, D.A.O. 3. Shri Chironji Lal Sharma, D.V.O. 4. Shri J.N. Sharma, B.D.O. 5. Shri Hirji Soni, Pradhan Panchyat Samiti. 6. Shri Shakhtawat, B.D.O., Pisangan. 7. Shri P.D. Gemawat V.M.O. 8. Shri Musafir Singh, A.V.M.O. (Some progressive farmers etc. also attended).
	Pisangan, Distt. Ajmer..	1. Shri Bhagirath Tewari, Sarpanch, Gram Panchyat, Pisangan. 2. Shri S.K. Sen, Civil Asstt. Surgeon. 3. Shri A.S. Rawat, V.M.O., Pisangan. (A number of progressive farmers, teachers and functionaries of the Block were also present).
Uttar Pradesh ..	Masauli, Distt., Barabanki	1. Begum Anis Kidwai, M.P. 2. Shri G.S. David, I.A.S., Dy. Commissioner, Distt. Barabanki. 3. Dr. B,K. Mukerjie, Director of Agriculture (U.P.). 4. Prof. K.N. Kaul, Director, National Botanical Gardens, Lucknow. 5. Shri T.V.N. Krishnan, Plant Protection Officer. 6. Dr. R.P. Misra, Medical Officer, Baragaon, Hospital. 7. Shri R.N. Oberoi, Distt. Planning Officer, Barabanki. 8. Shri B.M. Dixit, Distt. Livestock Officer. 9. Shri A.K. Mathur, Block Development Officer. 10. Shri Abdul Rauf Kidwai. 11. Shri Nasirul Rehman Kidwai. 12. Shri B.N. Agnihotri, V.M.O. 13. Shri R.C. Agarwal, A.V.M.O.

State	Vijnan Mandir	Persons who participated in the discussions
West Bengal ..	Barsul, Distt. Burdwan	1. Shri J. Bose, D.D.O., Burdwan. 2. Shri J. Sanyal, B.D.O., Burdwan. 3. Shri Ajit Sen Gupta, Distt. Officer for Physical Education and Youth Welfare Burdwan. 4. Shri Jitinder Mohan Das, Pradhan, Barsul Anchal Panchayat. 5. Shri H.N. Gupta, Principal, Regional Cooperative Training Institute, Barsul. 6. Shri Gopendra Krishna Dey, Pleader. 7. Shri P.R. Sen Gupta, V.M.O. 8. Shri S.N. Mandal, A.V.M.O. (Officers of the State Government like Extension Officers and non-officials like members of Anchal Panchayats and progresive farmers also attended).
	Itachunna, Distt. Hooghly	1. Shri Vijiwalkanti Nathray, Superintendent of Agriculture, Howrah, Hooghly. 2. Shri S. Sen, Circle Officer, Sadar and Pandna, (Hooghly). 3. Shri S.L. Roy, Sub-Divisional Agricultural Officer (Hooghly). 4. Shri H.K. Roy, Senior Lecturer in English, Itachunna Degree College. 5. Inder Narain Kundu, Secretary Prabuddha Bharat Sangh Shiksha Sansad (Hooghly). 6. P. Chanda, Head Master, S.N. Institute, Itachunna. 7. Shri Nagendranath Shibpathy, Vice-President, Itachunna Kalyan Samiti. 8. Shri M.L. Ghosh, Special Officer, Universal Primary Education, West Bengal. 9. Shri A.K. Ray, V.M.O., Itachunna. 10. Shri N.C. Das, V.M.O., Ergoda. 11. Shri M.G. Shome, A.V.M.O., Jhilimili 12. Shri P.K. Gupta, V.M.O., Haroa. (Some non-officials, teachers of local educational institutions and progressive farmers also attended).

APPENDIX VII

Statement showing number of days spent by the Committee on Tour and on Discussions at Delhi

1. Number of days spent on tour	54
2. Number of days devoted to discussions at New Delhi	13

APPENDIX VIII

Statement showing the Distribution of Vijnan Mandirs and the Dates of their Establishment

State	Location of Vijnan Mandir	Date of establishment
Andhra Pradesh ..	1. Amadalavalasa, Distt. Srikakulam	8-6-59
	2. Kapileswarapuram, Distt. East Godavari	27-11-58
	3. Vicarabad, Distt. Hyderabad	25-2-57
Assam	1. Dimoria, Distt. Kamrup	8-3-57
	2. Hailakhandi, Distt. Cachar	9-3-57*
Bihar	1. Haveli Kharagpur, Distt. Monghyr	28-4-59
	2. Ormanjhi, Distt. Ranchi	13-3-57
	3. Vaishali, Distt. Muzaffarpur	22-4-59
Bombay	1. Amravati (Shivajinagar), Distt. Amravati	7-1-59
	2. Shapur, Distt. Junagadh	2-3-57
Delhi	1. Kapashera, Via Delhi Cantt.	16-8-53
Himachal Pradesh ..	1. Sundarnagar-2 (Bhojpur), Distt. Mandi	17-6-57
Jammu and Kashmir	1. Ranbir Singh Pura, Distt. Jammu	28-1-58
Kerala	1. Chengannur, Distt. Alleppey	20-3-59
	2. Ramavarmapuram Pudur, Distt. Palghat	18-9-56
Madhya Pradesh ..	1. Nowgong, Distt. Chattarpur	14-7-59
	2. Sehore, Distt. Sehore	9-2-57
Madras	1. Ariyagoundampatti, Distt. Salem	14-3-59
	2. Sri Ramakrishna Mission Vidyalaya, Distt. Coimbatore	17-9-56
	3. S.V. Nagram, Distt. North Arcot	16-3-59
	4. T. Kallupatti, Distt. Madurai	28-6-55
Mysore	1. Devarayasamudram, Distt. Kolar	20-5-59
	2. Mayasandra, Distt. Tumkur	23-5-59
	3. Moodbidri, Distt. South Kanara	17-4-59
Orissa	1. Angul, Distt. Dhenkanal	17-3-59
	2. Bhadrak, Distt. Balasore	16-3-59
	3. Hinjlicut, Distt. Ganjam	7-3-57
Punjab	1. Nilokheri, Distt. Karnal	10-1-59
Rajasthan ..	1. Dabok, Distt. Udaipur	6-2-59
	2. Pisangan, Distt. Ajmer	8-2-57
	3. Sardarshahr, Distt. Churu	11-3-59
	4. Sumerpur, Distt. Pali	22-2-57
Uttar Pradesh ..	1. Masauli, Distt. Barabanki	16-7-55
West Bengal ..	1. Barsul, Distt. Burdwan	29-11-57
	2. Ergoda, Distt. Midnapur	13-3-59
	3. Haroa, Distt. 24-Parganas	13-3-59
	4. Itachunna, Distt. Hooghly	13-3-59
	5. Jhilimili, Distt. Bankura	17-3-59

*Originally established at Arunachal, District Cachar on 9-3-1957 and shifted to Hailakhandi on 18-7-1959.

SUMMARY

(Number of Vijnan Mandirs established in each year)

Year	Number	
1953-54	1	Established by C.S.I.R.
1954-55	Nil	
1955-56	2	
1956-57	11	
1957-58	4	
1958-59	13	
1959-60 (To-date)	7	
Total ..	38	

APPENDIX IX

List of Vijnan Mandirs where facilities for Pathological Work are available

(Position as on 31-12-1959).

SECTION 1—VIJNAN MANDIRS WHERE THE PATHOLOGICAL WORK IS BEING DONE BY DOCTORS, WHOSE SERVICES HAVE BEEN OBTAINED ON A PART-TIME BASIS FROM THE STATE GOVERNMENTS CONCERNED.

1. Kapashera .. .. (Delhi)
2. Masauli .. .. (U.P.)
3. Ramavarmapuram-Pudur .. .. (Kerala)
4. Shapur .. .. (Gujarat)
5. Sundernagar .. .. (Himachal Pradesh)
6. T. Kallupatti .. .. (Madras)
7. Vicarabad .. .. (Andhra Pradesh)

SECTION 2—VIJNAN MANDIRS WHERE EQUIPMENTS FOR PATHOLOGICAL WORK ARE AVAILABLE IN ADDITION TO ABOVE SEVEN VIJNAN MANDIRS.

1. Barsul .. .. (West Bengal)
2. Dimoria .. .. (Assam)
3. Hailakhandi .. .. (Assam)
4. Hinjlicut .. .. (Orissa)
5. Nilokheri .. .. (Punjab)
6. Ormanjhi .. .. (Bihar)
7. Pisangan .. .. (Rajasthan)
8. Ranbir Singh Pura .. .. (Jammu and Kashmir)
9. Sehore .. .. (Madhya Pradesh)
10. Sri Ramakrishna Mission Vidyalaya, Coimbatore .. (Madras)
11. Sumerpur .. .. (Rajasthan)

APPENDIX X

List of Equipments etc., authorised for Supply to each Vijnan Mandir

SECTION I—LIST OF EQUIPMENTS

Serial No.	Name of Equipment	Specifications Desired
1	Aquarium ..	Size 3′ × 2′ or any other size with glass sheets and metal corners.
2	Balance (Analytical)	Capacity 200 gms: sensitivity 1/10th of a m.g.: in glass case, complete with analytical weight box containing 100 gms. to 1 mg. wts.
3	Balance (Physical)	Capacity 200-250 gms-Sensitivity 1 mg. in glass case with a set of weight box.
4	Bouycos Hydrometer	A.S.T.M. Type.
5	Comparator Lovibond's	Helige (German). NEO Ph comparator with 2 graduated superior tubes, complete with colour discs, bakelite trousing, 2 acid proof vitrified troughs with normal 13 mm liquid depth. One frosted plate, one special daylight filter, 2 test tubes, suitable for all colour discs and troughs up to 40 mm liquid depth. Universal Indicator.
6	Distilled water plant (portable)	Electric still fitted with immersion heater, with safety self-ejecting cut out and triple vapour baffle. All parts easily accessible for cleaning. The still to be supplied with 3 ft. connecting cable and vertical bracket for securing the still on the wall, out-put about 3 litres/hr., Rating 2500 W, operation 220 volts AC. . . . . or any other suitable model working on stove.
7	Dissecting Box. ..	Containing all the 13 instruments including German hollow ground razor, all instruments of superior quality in velvet lined box.
8	Forcep long ..	Highly nickel plated size about 10-12″.
9	Hot air Oven ..	Single, walled copper constructed, outside duly covered with asbestos. With air regulator and thermometer tubular, on iron stand, operated with burner or stove having one rack. Size 12″×12″×12″.
10	Hot Plates ..	German make with three controlling switches working on 220 volts. A.C.
11	Kjeldahl's Assembly	Complete with digestion stand and distillation stand for 9 estimations. Wattage-3400. Electrically heated with rotary snap switch and separate leggle switch for each flask to work with 220 volts AC.
12	Microscope (Simple)	Mechanical tube length 10 mm. graduated draw tube, fixed square stage with built on graduated mechanical stage; 2 objectives 10× & 45 Eye piece 5×, 16× fine adjustment of double lever type or single; Tripple nose-piece, interchangeable: Magnification 50X-1000X. Complete in polished wooden cabinet with lock and key arrangement, with ground glass filter and a pointer adjustable for demonstration.
13	Microscope (Dissecting).	Square stage 85mm × 75mm, clear stage glass and matted glass, stage (attachable) Focussing by rack and pinion motion, joints, arm for magnifier, with 10X and 20X eye piece, complete in wooden box, lock and key.
14	Magnifying lenses ..	Foreign make fitted with handle 3-4″ size.
15	Mounting Boards and Pins.	Soft wooden 12″ ×12″ with thin layer of cork, with standard drawing pins.
16	Press (Plant) ..	Press for the preservation of botanical plants.
17	Rearing cage. ..	Cages Guinea Pig 10″×9″×9″ very superior Indian make.
18	Soil Sampler. ..	Indian make for taking soil samples from fields, portable size.
19	Stop Watch ..	Best Swiss make, 1/10th of a second.
20	Sand Bath ..	Tinned with copper, size 6″
21	Sieves	Sieves of different meshes (O. I mm to 2 mm) 8″ dia., Indian or Foreign.
22	Thermometers. ..	0-110 deg. C in ½ deg. sub-division, length 260 mm. 0-360 deg. C in 1 deg. sub-division, length 340 mm. 30-240 deg. F. in ½ deg. sub-division, length 260 mm. 30-400 deg. F in 1 deg. sub-division, length 300 mm. and maximum and minimum thermometer.

SECTION II—LIST OF GLASS EQUIPMENTS AND LABORATORY ACCESSORIES ETC.

Serial No.	Name of equipment	Desired specifications
		Glass equipments
1	Bottles (Reagent)	Narrow and wide mouthed.
2	Blue Glasses ..	Size 4″ × 4″
3	Beakers	Capacity 50,250,500 and 1000 cc.
4	Burettes	50 cc.
5	Buchner Funnels	Standard Laboratory size.
6	Bottles (dropping)	4 oz and 2 oz size.
7	Bell Jars ..	8″ and 12″ size.
8	Cylinders (measuring).	Cap. 100 and 1000 cc.
9	Crucibles (Gooch)	With rubber bearing and adapter.
10	Condensers ..	Leibieg's 8″ and 12″ size.
11	Desiccators ..	8″ and 10″ dia.
12	Droppers ..	Ordinary.
13	Distilling Heads ..	(Kjeldahl's) with trap and cones, resistance glass having two bends for use with veritical condenser.
14	Flasks (Measuring)	50,100 and 250 cc.
15	Flasks (Conical) ..	500 and 250 cc.
16	Flasks (Digestion)	500 cc. Pyrex Kjeldahl's flasks.
17	Funnels	size 6″ and 3″.
18	Flasks (Round bottomed).	5000 and 1000 cc.
19	Flasks (Flat bottomed).	1000 cc.
20	Gas collecting jars	with covers.
21	Glass tubing ..	Assorted size.
22	Glass rodding ..	Assorted size.
23	Jars (Museum) ..	Rectangular with lid-Sigcol, sizes 20 × 10 × 5 cm and 20 × 12 × 10 cms.
24	Jars (Museum) ..	Cylindrical with cover glass plates, round, size 5″ dia × 7″ Height Sigcol.
25	Mirrors	Convex, concave and plane mirrors of various sizes.
26	Lenses	Concave and convex of various sizes
27	Pettri dishes ..	2·5 dia.
28	Pipettes	20 cc, 100, and 5 cc, all graduated.
29	Pneumatic troughs	Stone.
30	Spirit lamp	Glass 4 oz capacity.
31	Test tubes ..	Ordinary standard size.
32	Test tubes (Hard glass).	6″ long.
33	Thistle funnels ..	————
34	Watch Glasses ..	4-6″ size.
35	Woulf's bottle ..	Standard size.
		Wooden Equipments
1	Dissecting board	Size 10″ × 12″
2	Stand (Burette) ..	Teak wood.
3	Stand (Test Tube)..	for 12 test tubes.
4	Stand (Funnel) ..	Ordinary.
5	Slide Box ..	Capacity of holding 500 slides.
6	Insect collection boxes	Cork lined for the preservation of insect specimens.

Serial No.	Name of equipment	Desired specifications
	Iron equipments	
1	Blow pipe ..	Nickel plated.
2	Clamp & Boss heads	Ordinary, black painted.
3	Cork borer ..	Set of 12, chromium plated.
4	Files	Trangular size 6″
5	Pinch cocks ..	Ordinary.
6	Rings	4″ and 6″
7	Stand (Iron) ..	Black, painted ordinary.
8	Stand (Tripod) ..	Ordinary.
9	Spirit lamp (metallic)	Size 6 oz cap.
10	Tongs .. .	nickel plated.
11	Magnet, bar and horse-shoe.	
	Porcelain equipments	
1	Basins (Porcelain)	4″ dia.
2	Basins (Silica)	Do.
3	Beehive shelves ..	Ordinary.
4	Crucibles (Porcelain)	5 cm dia.
5	Clay pipe trangles	3-4 size.
6	Mortar and pestle	Porcelain glazed outside only, size No. 4, 160 mm outside dia; with pestle.
7	Spot plates ..	Size 6″×6″
	Miscellaneous	
1	Asbestos sheet ..	Size of 40″ ×40″ with variation in thickeness.
2	Beaker holders (Tongs)	N.P.
3	Corks Bark ..	Assorted size.
4	Cork sheets ..	Thickness 3/16″, 1/16″ and 5/16″
5	Entomological pins	For pinning insects.
6	Filter paper ..	Whatman No. 1 11 cms.
7	Filter paper ..	Whatman No. 40, 41 and 42.
8	Pencils Glass marking)	English.
9	Rubber stoppers ..	Different sizes.
10	Tubing (Rubber) ..	Assorted size.
11	Tubing (Pressure)	Do.
12	Trays (dissecting) ..	Big and small size 6×8″ and 10×12″
13	Water bath ..	Copper with one opening add concentric ring.
14	Wire gauze ..	Size 6″×6″ with asbestos sheet in the middle.
15	Hypodermic needles	Various sizes.

Section III—LIST OF CHEMICALS

1. Acid Sulphuric.
2. Acid Nitric.
3. Acid Hydrochloric.
4. Acetic Acid (Glacial).
5. Acid Oxalic.
6. Ammonium hydroxide.
7. Ammonium Oxalate.
8. Ammonium chloride.
9. Ammonium molybdate
10. Alcohol (Isopropyl).
11. Alcohol (Methyl).
12. Alizarine Red.
13. Barium chloride.
14. Bromocresol green.
15. Bromocresol purple.
16. Bromothymol blue.
17. Barium sulphate.
18. Cobalt Nitrate.
19. Chloroform.
20. Carbon bisulphide.
21. Cotton blue stain.
22. Chlorophenol Red.
23. Calcium chloride (Coml.).
24. Canada Balsam.
25. Diphenyl amine.
26. Darco-G. 60.
27. Eosine.
28. Ferrabin.
29. Ferrous Ammonium Sulphate.
30. Furfurol.
31. Gentian Violet.
32. Glycerine.
33. Hematin.
34. Lactophenol.
35. Methyl Blue.
36. Methyl Red.
37. Methyl Orange.
38. Potassium Nitrate.
39. Potassium Chloride.
40. Potassium Dichromate.
41. Potassium Ferricynide.
42. Potassium Ferrocynide.
43. Potassium Permanganate.
44. Potassium Periodate.

45. Potassium Iodide.
46. Potassium Chromate.
47. Phenolphathalein.
48. Phenol red.
49. Paranitro benzene—Aza Resorcinol.
50. Pumice stone.
51. Potassium hydroxide.
52. Potassium Cynide.
53. Paraffin Wax.
54. Sodium hydroxide.
55. Sodium dichromate .
56. Sodium thiocynate.
57. Sodium molybdate.
58. Sodium phosphate.
59. Sodium nitrate.
60. Sodium chloride.
61. Sodium carbonate.
62. Sodium acetate.
63. Sodium bicarbonate.
64. Stannous Oxalate.
65. Stannous Chloride.
66. Silver nitrate.
67. Tetra methyl-di-amino Diphenyl methone.
68. Titan Yellow.
69. Toluene.
70. Thymol blue.
71. Universal indicator.
72. Xylol.
73. Zinc metal.
74. Formaline.

SECTION IV—FURNITURE AND FIXTURES AS PER REVISED SCHEME

Serial No.	Description	Quantity required
	All items made of pure teak wood.	
1	Working table 8′×2½′ ×3′ with two sets of drawers and a sink 12″ ×9″ ×12″ fitted with water tap and locking arrangement. The surface should be coated with fire-proof material	1
2	Working table 4′ ×2½″ ×3′ with a set of two drawers and a sink 9″×9″ fitted with water tap and locking arrangement. The surface should be coated with fire-proof material	1
3	Long plain table 6′×3′×2½′ with two drawers and locking arrangement	1
4	Office table 4′×2½′ with rexin top and four drawers on one side and a cupboard with two compartments on the other with locking arrangements ..	1
5	Office table 3′ ×2½′×2½′ with rexin top and four drawers and locking arrangements	1

Serial No.	Description	Quantity required
6	Plain Table for balance $2\frac{1}{2}' \times 3' \times 3'$ with two drawers and locking arrangement.	1
7	Stools of standard sizes (3 of si ze $2\frac{1}{2}$ ft. for laboratory & 2 of size $1\frac{1}{2}$ ft. for Laboratory bearer and peon) of size $1\frac{1}{2}'$	5
8	Almirah wooden Kiose $6' \times 3' \times 1\frac{1}{2}'$ with 4 compartments and locking arrangement	1
9	Museum display cases (sides and top of glass) $3' \times 2' \times 4'$	2
10	Towel rack $5' \times 4'$ with 3 rods	1
11	Chairs with arms and cane seats (Singapur cane)	3
12	Reagent racks $2' \times 2\frac{1}{2}' \times 12''$ with 2 steps	4
13	Benches $6' \times 15'' \times 18''$	3
14	Almirah with glass shutters for display of specimens $6' \times 3' \times 1\frac{1}{2}'$ with four racks and locking arrangement	5
15	Notice Board—$2' \times 3'$	1
16	Steel Almirah-Godrej Patent 'Storewel' (Minor)	2
17	Steel rack enclosed type (Godrej)	2
18	Electric fan (Table)	1
19	Cycle	1
20	Fixtures, internal electric installation etc.	

APPENDIX XI

List of Vijnan Mandirs where Laboratories were not set up

(Position as on 31-12-1959)

1	Amadalavalasa	(Andhra Pradesh).
2	Ariyagoundampatti	(Madras).
3	Chengannur	(Kerala).
4	Devarayasamudram	(Mysore).
5	Ergoda	(West Bengal).
6	Haveli-Kharagpur	(Bihar).
7	Itachunna	(West Bengal).
8	Jhilimili	(West Bengal).
9	Kapileswarapuram	(Andhra Pradesh).
10	Moodbidri	(Mysore).
11	Mayasandra	(Mysore).
12	Nowgong	(Madhya Pradesh).
13	Ranbir Singh Pura	(Jammu & Kashmir)
14	S.V. Nagram	(Madras).
15	Vaishali	(Bihar).

APPENDIX XII

Statement showing Details of Analytical Work done in the Vijnan Mandirs

(Till end of 1959)

Serial No.	Location	Number of samples analysed		
		Soil	Water	Food
1	Angul	2	10	2
2	Amravati	nil	10	nil
3	Barsul	110	37	nil
4	Bhadrak	15	nil	8
5	Coimbatore	7	1	6
6	Dabok	2	2	nil
7	Dimoria	47	nil	nil
8	Hailakhandi	44	34	3
9	Haroa	5	4	nil
10	Hinjlicut	83	52	nil
11	Kapashera	128	185	3
12	Masauli	45	18	50
13	Nilokheri	60	nil	72
14	Ormanjhi	nil	nil	5
15	Pisangan	44	32	43
16	Ramavarmapuram Pudur	235	46	48
17	Sardarshahar	4	3	22
18	Sehore	30	52	nil
19	Shahpur	nil	63	nil
20	Sumerpur	42	21	nil
21	[Sundarnagar	134	52	nil
22	T. Kallupatti	nil	67	nil
23	Vicarabad	550	nil	10
		1,587	689	272

APPENDIX XIII

GOVERNMENT OF INDIA

SCIENTIFIC POLICY RESOLUTION

New Delhi, the 4th March 1958/13th Phalguna, 1879

No. 131/CF/57—The key to national prosperity, apart from the spirit of the people, lies, in the modern age, in the effective combination of three factors—technology, raw materials and capital of which the first is perhaps the most important, since the creation and adoption of new scientific techniques can, in fact, make up for a deficiency in natural resources, and reduce the demands on capital. But technology can only grow out of the study of science and its applications.

2. The dominating feature of the contemporary world is the intense cultivation of science on a large scale, and its application to meet a country's requirements. It is this, which, for the first time in man's history, has given to the common man in countries advanced in science, a standard of living and social and cultural amenities, which were once confined to a very small privileged minority of the population. Science has led to the growth and diffusion of culture to an extent never possible before. It has not only radically altered man's material environment, but, what is of still deeper significance, it has provided new tools of thought and has extended man's mental horizon. It has thus influenced even the basic values of life, and given to civilization a new vitality and a new dynamism.

3. It is only through the scientific approach and method and the use of scientific knowledge that reasonable material and cultural amenities and services can be provided for every member of the community, and it is out of a recognition of this possibility that the idea of a welfare state has grown. It is characteristic of the present world that the progress towards the practical realisation of a welfare state differs widely from country to country in direct relation to the extent of industrialisation and the effort and resources applied in the pursuit of science.

4. The wealth and prosperity of a nation depend on the effective utilisation of its human and material resources through industrialisation. The use of human material for industrialisation demands its education in science and training in techni skills. Industry opens up possibilities of greater fulfilment for the individual. India's enormous resources of man-power can only become an asset in the modern world when trained and educated.

5. Science and technology can make up for deficiencies in raw materials by providing substitutes, or, indeed, by providing skills which can be exported in return for raw materials. In industrialising a country, a heavy price has to be paid in importing science and technology in the form of plant and machinery, highly paid personnel and technical consultants. An early and large scale development of science and technology in the country could therefore greatly reduce the drain on capital during the early and critical stages of industrialisation.

6. Science has developed at an ever-increasing pace since the beginning of the century, so that the gap between the advanced and

backward countries has widened more and more. It is only by adopting the most vigorous measures and by putting forward our utmost effort into the development of science that we can bridge the gap. It is an inherent obligation of a great country like India, with its traditions of scholarship and original thinking and its great cultural heritage, to participate fully in the march of science, which is probably mankind's greatest enterprise today.

7. The Government of India have accordingly decided that the aims of their scientific policy will be:—

(i) to foster, promote, and sustain, by all appropriate means, the cultivation of science, and scientific research in all its aspects—pure, applied, and educational;

(ii) to ensure an adequate supply, within the country, of research scientists of the highest quality, and to recognize their work as an important component of the strength of the nation;

(iii) to encourage, and initiate, with all possible speed, programmes for the training of scientific and technical personnel, on a scale adequate to fulfil the country's needs in science and education, agriculture and industry, and defence;

(iv) to ensure that the creative talent of men and women is encouraged and finds full scope in scientific activity;

(v) to encourage individual initiative for the acquisition and dissemination of knowledge, and for the discovery of new knowledge, in an atmosphere of academic freedom;

(vi) and, in general, to secure for the people of the country all the benefits that can accrue from the acquisition and application of scientific knowledge.

The Government of India have decided to pursue and accomplish these aims by offering good conditions of service to scientists and according them an honoured position, by associating scientists with the formulation of policies, and by taking such other measures as may be deemed necessary from time to time.

APPENDIX XIV

A brief note on the work done by some Vijnan Mandirs

1. VICARABAD, HYDERABAD DISTRICT (ANDHRA PRADESH) (ESTABLISHED: FEBRUARY 1957)

1. The Vijnan Mandir is housed in a private building and is suitable for the display of museum exhibits, laboratory work and holding of meetings of Science Clubs. The building is in the nature of a garden house and in the surrounding land, improved methods of agriculture are being practised. The farm comes in handy for explaining to the people in rural areas improved methods of cultivation to increase the yield with the use of improved seeds, fertilisers, etc.

2. *Science Museum*—The museum has a representative collection of botanical and zoological specimens and samples of rocks and minerals. Some of the specimens were collected by the Vijnan Mandir staff, while others were obtained from different sources like the Central Institute of Leather Technology, the Birbal Sahni Institute of Palaeobotany, the State Agriculture and Forest Departments and the Osmania University. Attractive charts and posters are on display showing the various aspects of plant protection, health education, etc. On the human pathological side, there are some interesting specimens presented by the local Mission Hospital which include a big size foetus with an abnormal development of the cranial bones known as 'Anencephalus'. The Science Exhibitions arranged by the Vijnan Mandir during melas, district seminars and other occasions of local importance have proved popular. During the *Khariff* season, 1959, a demonstration plot was laid out to demonstrate the preparation of seed beds, planting of vegetables and orchards.

3. *Advice on Local Problems*—With the assistance of the Khadi and Village Industries Board, demonstrations were arranged by the Vijnan Mandir in about 20 villages on improved methods of *Gur* manufacture. Preparation of *Khandsari* sugar and carbon-clarified *Gur* was shown at some places.

4. Simple methods for the preservation of fruit products like Jam, lemon squash, etc., are explained with demonstrations. Improvements in local practices like distillation of oil from Rosa grass, which is locally available, are also shown to the people.

5. *Laboratory Work*—The need for soil and water analysis is explained to villagers and soil samples are collected from surrounding villages and analysed for determining available Nitrogen, PH value, percolation rate, water-holding capacity, etc. On the basis of the results of analysis, manurial recommendations have been given. The Village Level Workers are also requested to take necessary follow-up action.

Facilities for clinical work are provided with the help of a part-time Doctor obtained from the local State Government hospital. The Vijnan Mandir is reported to have done good work in educating people on prevention of leprosy in the area.

2. RAMAVARAMAPURAM PUDUR, DISTRICT PALGHAT, (KERALA) (ESTABLISHED: SEPTEMBER 1956)

1. *Science Museum*—Specimens of local flora and fauna are on display in the museum. Specimens of human foetus in various stages of development, as also of cattle foetus are exhibited. Models of seed-treating drum, cowdung gas plant, Janata Frigidaire, prepared by the Vijnan Mandir are on display and scientific devices such as electric bell, rain gauge, etc., are also exhibited.

2. *Demonstrations and Exhibitions*—Demonstrations followed by lectures are arranged in the Vijnan Mandir premises on subjects like soil testing, use of improved seeds, fertilisers, manures, and insecticides and control of pests and plant diseases. Simple experiments on physical phenomena like surface tension, magnetism and electricity are demonstrated to the members of Rural Science Clubs.

3. The Vijnan Mandir participated in a number of exhibitions held by State departments and by the Block agencies. Lectures on popular subjects like Agriculture, Public Health, Village Sanitation, etc., are given by Vijnan Mandir staff at educational institutions, the Village Leaders' Training Camps and at other gatherings of villagers.

4. *Laboratory Work*—Facilities are available in the Vijnan Mandir for analytical work, including clinical examination. Manurial recommendations given on the basis of investigations conducted at the Vijnan Mandirs have helped adoption of improved methods of cultivation. Likewise, the identification of plant pests in the presence of villagers and advice about the measures to be adopted for their control have facilitated the adoption of scientific methods of plant protection. Through demonstrations, lectures, etc., the Vijnan Mandir has been able to impress on the cultivators the need for growing green manure plants. Certain improved varieties of seeds recommended by the Vijnan Mandir have been adopted with considerable success.

3. PISANGAN, DISTRICT AJMER (RAJASTHAN) (ESTABLISHED FEBRUARY 1957)

1. *Science Museum*—The Vijnan Mandir has set up an attractive museum and about 6 specimens of a varied type including local flora and fauna, diseased plants, medicinal plants, rocks and minerals, fossils, etc. The museum exhibits have been arranged in a lively manner with a view to attract the attention of the visitors. Working model of cowdung gas plant, electric motors, steam turbine, etc., are on display in the Vijnan Mandir museum. Experiments on hydrophonics are also conducted. The Vijnan Mandir museum has become a centre of attraction for the villagers and students of the area and plays an important role in dissemination of scientific knowledge.

2. Exhibitions, demonstrations, film-shows, etc., are organised from time to time. The exhibition stall put up by the Vijnan Mandir at the Pushkar Fair attracted considerable attention and was awarded the first prize in 1959.

3. In collaboration with the Geological Survey of India, a scheme for the training of non-technical personnel in prospecting minerals

and making them mineral-conscious was implemented. An experiment to evaluate the efficacy of weedicides on certain obnoxious weeds of the area was carried out in coordination with the State authorities. The advice given by the Vijnan Mandir to control certain diseases of plants like chillies and papaya has succeeded in creating an enthusiasm in the minds of the people.

4. A Hobby Circle has been initiated by the Vijnan Mandir with a view to discover the aptitude of the members for craft work and also encourage them to attain the necessary skill in crafts like papier-mache, leather tanning, etc. The members of the Hobby Circle are also taught methods of first-aid, village sanitation and the making of interesting scientific specimens. Twenty members of the Hobby Circle have qualified to receive the First-Aid Certificate of St. John's Ambulance Society of India.

4. MASUALI, DISTRICT BARABANKI (UTTAR PRADESH) (ESTABLISHED: JULY 1955)

1. The Vijnan Mandir is housed in a building donated by Shri Ratansey K. Vissanji of Bombay. The foundation stone of this Vijnan Mandir was laid by the Prime Minister on 12th December, 1954. The Vijnan Mandir started functioning from 16th July, 1955.

2. *Science Museum*—The Vijnan Mandir has a good collection of specimens pertaining to plant diseases, insects and pests, medicinal plants and herbs, weeds, fishes, minerals, etc. Instructive charts and illustrated posters on plant diseases and insects and on subjects like nutrition and public health, are on display. The museum has been of considerable help in making the Vijnan Mandir a centre of attraction.

3. *Advice on Local Problems*—The Vijnan Mandir has made a survey of plant diseases prevailing in the area. The infected and diseased plant tissues are examined in the Vijnan Mandir and advice given to the cultivators. Problems which cannot be solved by the Vijnan Mandir at its level are referred to the Plant Pathologist to the Government of Uttar Pradesh and the Plant Pathology Section of the Indian Agricultural Research Institute, for investigation and advice. Efforts made by the Vijnan Mandir in tackling plant diseases has had a considerable effect on the outlook of the people who have come to realise the need for adopting timely scientific measures for the protection of crops. Insects and pests brought by the farmers are examined and identified at the Vijnan Mandir. Such pests as cannot be identified, are referred to the appropriate authorities for necessary action.

4. *Laboratory Work*—Facilities for clinical examination are available in the Vijnan Mandir with the help of a part-time doctor obtained from the local State Government hospital. The Vijnan Mandir has been able to meet the requirements of the rural dispensaries located within a radius of about ten miles.

5. To associate the people in rural areas in planning the programme of work, an attempt is being made to start 'rural' Vijnan Mandirs. These 'rural' Vijnan Mandirs are reported to have become potential centres of scientific and cultural activity. Meetings are arranged at these centres regularly and experts from Government departments are invited to advise villagers on their problems.

6. The Vijnan Mandir has selected the Jeori village for intensive work. The efforts made by the Vijnan Mandir, are reported to have encouraged villagers to organise the following activities in the village:—

(i) a school for children;
(ii) an adult education class;
(iii) about 20 acres have been brought under plough;
(iv) a common first-aid dispensary and
(v) a playing ground for children.

5. SUNDERNAGAR, DISTRICT MANDI (HIMACHAL PRADESH) (ESTABLISHED: JUNE 1957)

1. *Science Museum*—Despite the shortage of accommodation, the Vijnan Mandir has succeeded in organising a good museum containing specimens of a varied type. Apart from specimens of local flora and fauna and of diseased plants, the following experiments of general scientific interest are arranged:—

(i) Inclined plane;
(ii) Osmosis and osmotic pressure;
(iii) Harmonium by Hydrogen Gas;
(iv) Hydrogen gas explosion;
(v) Invisible ink; and
(vi) Scientific garden.

2. *Advice on Local Problems*—(1) In order to make the people 'fertiliser-minded', several experiments were made on potato crops in collaboration with other agencies. Manurial recommendations were also given on the basis of soil analysis made in the Vijnan Mandir. Advice was given on the steps to be taken to eradicate certain weeds present in wheat fields. The introduction of a special type of weedicide for this purpose is understood to have resulted in some saving of labour, apart from increasing the yield. The Vijnan Mandir is also taking special steps to propagate the cultivation of a special type of wheat after sugarcane is harvested.

(2) The Vijnan Mandir made special investigations to ensure whether there was any scientific basis for the belief that onion, garlic and ginger have a deterrent effect on snakes. As a result of the studies made on the three snakes kept in the Vijnan Mandir, it was established that this was untrue and that on the other hand naphthalene had a definite deterrent effect. The result of the investigations was published in *Current Science* and in some newspapers and also brought to the notice of the Block Development Officers in the district for information and guidance.

3. *Laboratory Work*—Facilities are available in the Vijnan Mandir for analysis of soil, water and for clinical examination. Investigations in the Vijnan Mandir showed that the incidence of anaemia in the area was mainly due to Hookworm infection.

4. The Vijnan Mandir arranges lectures and demonstrations on suitable occasions. Stalls are put up by the Vijnan Mandir during important fairs in the area. The Small Town Committee, Sundernagar, has commended the exhibits displayed by the Vijnan Mandir at the Nalwar Fair in March 1960, which is stated to be the biggest cattle fair in Himachal Pradesh.

6. SEHORE, DISTRICT SEHORE (MADHYA PRADESH) (ESTABLISHED: FEBRUARY, 1957)

1. *Science Museum*—The museum includes specimens of local flora and fauna of economic importance. Specimens of insect pests, plant diseases of common crops of the area, beneficial insects, pests affecting cattle, round-worms, different varieties of fish of economic importance and aquatic plants including insectivorous plants are on display. Besides posters, coloured plates and charts have also been exhibited. Some models of popular scientific inventions, such as cow-dung gas plant, smokeless *chula,* janata frigidaire, telephone, telegraph, dynamo, steam turbine, etc., have been kept in the Vijnan Mandir Museum. Some clay models showing the internal anatomy of frog etc., prepared by the Vijnan Mandir Officer are also on display.

2. *Advice on Local Problems*—A survey was conducted of the medicinal plants of this area with a view to examining whether their use by the people had any scientific basis. The efficacy of a little known herb used in some areas as a cure for cobra bite was investigated with encouraging results and was also brought to the notice of the laboratories concerned for further investigation and advice.

3. A survey of water of a number of wells in Sehore and neighbouring villages was conducted to assess their suitability for consumption. The results of survey were communicated to the parties concerned who were also advised on measures to eradicate water-borne diseases. Discussions at meetings of Science Clubs and demonstrations were arranged to explain to the people the need for using wholesome water. The State medical and health authorities were kept in the picture.

Investigations were also conducted into cases of excessive fish mortality and cattle abortions. The investigations showed that fish mortality in the local river was due to a fungus disease and that cattle abortions were brought about by rinder-pest infection. The results of the investigations were reported to the authorities concerned for necessary action. A survey was conducted by the Vijnan Mandir into the diet habits of the people in a few villages. The survey disclosed that fruits and vegetables which grown in plenty in this area were not available in the off-season, as the people were generally not aware of the techniques for their preservation. The Vijnan Mandir conducted a practical course on the methods of preparation and preservation of fruits and vegetable products for about 90 persons including primary school teachers and women with the assistance of an expert from the State Horticulture Department. Demonstrations were given on methods of preparation of squashes, jellies, jams, etc.

4. The Vijnan Mandir carried out investigations into an insect pest of the sugar crop in the area. The investigations showed that the insect pest itself was attacked by a fungus disease. The fungus was cultured in the Vijnan Mandir to examine whether it could be used for biological control of the insect pest. The problem was also referred to the authorities concerned for further investigation. The wilting of the tobacco plants was also studied and advice given

to the farmers on methods for the eradication of a root-parasite which was found to be responsible for the damage.

5. The Vijnan Mandir arranged special demonstrations, lectures, etc., in cooperation with the State Government on important occasions like *Rabi* and *Kharif* Campaigns, Green Manure Week, Prohibition Week, Vanamahotsava Week and Family Planning Week to explain the scientific basis of the various programmes launched by the State Government.

6. Apart from arranging some exhibitions at its own premises, the Vijnan Mandir participated in the '*Vikas Mela*' held at Budni in December 1958. With the assistance of technical agencies of the State, special lectures were arranged on scientific methods of pisciculture, sericulture, scientific cultivation, etc.

APPENDIX XV

Details of Office Work to be done in Vijnan Mandirs

1. Maintenance of
   (i) Receipt, Issue and Stamp Account registers.
   (ii) Cash Book.
   (iii) Stock Registers of consumable and non-consumable stores.
   (iv) Library Stock and Issue Registers.
   (v) Records of analytical work done in Vijnan Mandir.
   (vi) Records of the Pathological work done in Vijnan Mandir.
   (vii) Records of minutes of the meetings of the local Advisory Committee and Science Club held in Vijnan Mandir.
   (viii) Records of advices given by Vijnan Mandir to the visitors on various rural problems.
   (ix) Texts of talks, lectures and demonstrations arranged by Vijnan Mandir.
2. Drawing up of Survey Reports.
3. Compilation of Progress Reports.
4. Submission of returns, statements, bills, etc.:
   (i) Monthly expenditure statement duly supported by certified sub-vouchers.
   (ii) (a) Quarterly stock return together with list of breakages;
   (b) Quarterly requisition for chemicals and stores and other miscellaneous requirements, and
   (c) Indents for service stamps and stationery.
   (iii) Invoices and bills from suppliers.
   (iv) Acquittance role of the Vijnan Mandir staff every month.

5. Correspondence regarding short and defective supplies of stores, chemicals, etc.

6. Correspondence with the District Officers and the Block authorities with regard to arranging common programmes in melas, seminars, etc., like holding of demonstrations, film-shows, exhibitions etc.

7. Correspondence with various institutions and organisations for procuring films, film-strips, mu[illegible]mens, charts, posters and literature for the Vijnan Mandir rea[illegible]om.

8. Miscellaneous correspondence with the institutions and individuals regarding cases referred to Vijnan Mandirs for investigation and advice.

9. Follow-up action in matters referred to other organisations by Vijnan Mandir.

10. Issue of circulars and notices regarding programmes arranged by Vijnan Mandir e.g. meetings of the Science Club, holding of competitions, demonstrations etc.

11. Issue of invitations to scientific personnel, educationists and non-officials to participate in Vijnan Mandir activities.

12. Correspondence for arranging meetings of the local advisory committee. Preparation of agenda for discussion and recording minutes of meetings, etc.

13. Other miscellaneous office work.

APPENDIX XVI

Qualifications and Experience Prescribed for the posts of Vijnan Mandir Officers and Assistant Vijnan Mandir Officers

Vijnan Mandir Officers

M.Sc. degree in Agriculture, Biochemistry, Botany, Chemistry or Zoology. Experience of research or field work or of holding a responsible position in their respective fields for a minimum period of two years. Candidates having experience of social or village welfare work will be preferred.

Assistant Vijnan Mandir Officers

M.Sc. degree in Agriculture, Biochemistry, Botany, Chemistry or Zoology. Candidates with B.Sc. (Hons.) degree in Agriculture, Biochemistry, Botany, Chemistry or Zoology with experience of laboratory work or field work for a minimum period of two years will also be considered. Experience of social or village welfare work will be considered an additional qualification.